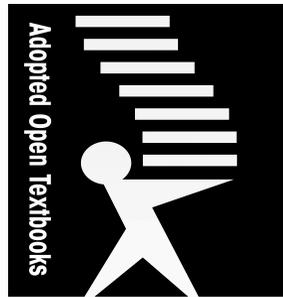


Accounting Principles:
A Business Perspective,
Financial Accounting (Chapters 9 – 18)

A Textbook Equity Open College Textbook

originally by

Hermanson, Edwards, and Maher



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9 Receivables and payables

9.1 Learning objectives

After studying this chapter, you should be able to:

- Account for uncollectible accounts receivable under the allowance method.
- Record credit card sales and collections.
- Define liabilities, current liabilities, and long-term liabilities.
- Define and account for clearly determinable, estimated, and contingent liabilities.
- Account for notes receivable and payable, including calculation of interest.
- Account for borrowing money using an interest-bearing note versus a non interest-bearing note.
- Analyze and use the financial results—accounts receivable turnover and the number of days' sales in accounts receivable.

9.2 A career in litigation support

What is litigation support? It does not mean working in an attorney's office. It involves assisting legal counsel in attempting to gain favorable verdicts in a court of law. Persons involved in litigation support generally work for a public accounting firm, a consulting firm, or as a sole proprietor or in partnership with others. An experienced litigation support person can expect to earn an income well into six figures.

Litigation support in a broad sense encompasses fraud auditing, valuation analysis, investigative accounting, and forensic accounting. The practice of litigation support involves assisting legal counsel in such things as product liability disputes, shareholder disputes, contract breaches, and major losses reported by entities. These investigations require the accountant to gather and evaluate evidence to assess the integrity and dollar amounts surrounding the aforementioned situations.

The accountant can be, and often is, requested to serve as an expert witness in a court of law. This experience requires knowledge of accounting and auditing in addition to possessing good communication skills, appropriate credentials, relevant

experience, and critical information that could result in successful resolution of the issue.

What kind of person pursues litigation support as a career? It takes a very special individual. The person must be part accountant, part auditor, part lawyer, and part skilled businessperson. An undergraduate accounting degree, an MBA, and a law degree would be the perfect educational background needed for such a career. Many universities offer a combined MBA/JD program. Such a program fulfills the graduate needs of the litigation support person.

In addition to the degree, work experience in the business sector is essential. A career in public accounting, industry, or with a government agency would serve as valuable experience in pursuing a career in litigation support.

Much of the growth of business in recent years is due to the immense expansion of credit. Managers of companies have learned that by granting customers the privilege of charging their purchases, sales and profits increase. Using credit is not only a convenient way to make purchases but also the only way many people can own high-priced items such as automobiles.

This chapter discusses receivables and payables. For a company, a **receivable** is any sum of money due to be paid to that company from any party for any reason. Similarly, a **payable** describes any sum of money to be paid by that company to any party for any reason.

Primarily, receivables arise from the sale of goods and services. The two types of receivables are accounts receivable, which companies offer for short-term credit with no interest charge; and notes receivable, which companies sometimes extend for both short-and long-term credit with an interest charge. We pay particular attention to accounting for uncollectible accounts receivable.

Like their customers, companies use credit, which they show as accounts payable or notes payable. Accounts payable normally result from the purchase of goods or services and do not carry an interest charge. Short-term notes payable carry an interest charge and may arise from the same transactions as accounts payable, but they can also result from borrowing money from a bank or other institution. Chapter 4 identified accounts payable and short-term notes payable as current liabilities. A company also incurs other current liabilities, including payables such as sales tax payable, estimated

product warranty payable, and certain liabilities that are contingent on the occurrence of future events. Long-term notes payable usually result from borrowing money from a bank or other institution to finance the acquisition of plant assets. As you study this chapter and learn how important credit is to our economy, you will realize that credit in some form will probably always be with us.

9.3 Accounts receivable

In Chapter 3, you learned that most companies use the accrual basis of accounting since it better reflects the actual results of the operations of a business. Under the accrual basis, a merchandising company that extends credit records revenue when it makes a sale because at this time it has earned and realized the revenue. The company has earned the revenue because it has completed the seller's part of the sales contract by delivering the goods. The company has realized the revenue because it has received the customer's promise to pay in exchange for the goods. This promise to pay by the customer is an account receivable to the seller. Accounts receivable are amounts that customers owe a company for goods sold and services rendered on account. Frequently, these receivables resulting from credit sales of goods and services are called **trade receivables**.

When a company sells goods on account, customers do not sign formal, written promises to pay, but they agree to abide by the company's customary credit terms. However, customers may sign a sales invoice to acknowledge purchase of goods. Payment terms for sales on account typically run from 30 to 60 days. Companies usually do not charge interest on amounts owed, except on some past-due amounts.

Because customers do not always keep their promises to pay, companies must provide for these uncollectible accounts in their records. Companies use two methods for handling uncollectible accounts. The allowance method provides in advance for uncollectible accounts. The direct write-off method recognizes bad accounts as an expense at the point when judged to be uncollectible and is the required method for federal income tax purposes. However, since the allowance method represents the accrual basis of accounting and is the accepted method to record uncollectible accounts for financial accounting purposes, we only discuss and illustrate the allowance method in this text.

Even though companies carefully screen credit customers, they cannot eliminate all uncollectible accounts. Companies expect some of their accounts to become uncollectible, but they do not know which ones. The matching principle requires deducting expenses incurred in producing revenues from those revenues during the accounting period. The allowance method of recording uncollectible accounts adheres to this principle by recognizing the uncollectible accounts expense in advance of identifying specific accounts as being uncollectible. The required entry has some similarity to the depreciation entry in Chapter 3 because it debits an expense and credits an allowance (contra asset). The purpose of the entry is to make the income statement fairly present the proper expense and the balance sheet fairly present the asset. **Uncollectible accounts expense** (also called doubtful accounts expense or **bad debts expense**) is an operating expense that a business incurs when it sells on credit. We classify uncollectible accounts expense as a selling expense because it results from credit sales. Other accountants might classify it as an administrative expense because the credit department has an important role in setting credit terms.

To adhere to the matching principle, companies must match the uncollectible accounts expense against the revenues it generates. Thus, an uncollectible account arising from a sale made in 2010 is a 2010 expense even though this treatment requires the use of estimates. Estimates are necessary because the company sometimes cannot determine until 2008 or later which 2010 customer accounts will become uncollectible.

Recording the uncollectible accounts adjustment A company that estimates uncollectible accounts makes an adjusting entry at the end of each accounting period. It debits Uncollectible Accounts Expense, thus recording the operating expense in the proper period. The credit is to an account called Allowance for Uncollectible Accounts.

As a contra account to the Accounts Receivable account, the **Allowance for Uncollectible Accounts** (also called Allowance for doubtful accounts or Allowance for bad debts) reduces accounts receivable to their net realizable value. **Net realizable value** is the amount the company expects to collect from accounts receivable. When the firm makes the uncollectible accounts adjusting entry, it does not know which specific accounts will become uncollectible. Thus, the company cannot enter credits in either the Accounts Receivable control account or the customers' accounts receivable subsidiary ledger accounts. If only one or the other were credited,

the Accounts Receivable control account balance would not agree with the total of the balances in the accounts receivable subsidiary ledger. Without crediting the Accounts Receivable control account, the allowance account lets the company show that some of its accounts receivable are probably uncollectible.

To illustrate the adjusting entry for uncollectible accounts, assume a company has USD 100,000 of accounts receivable and estimates its uncollectible accounts expense for a given year at USD 4,000. The required year-end adjusting entry is:

Dec. 31	Uncollectible Accounts Expense (-SE)	4,000	
	Allowance for Uncollectible Accounts (-A)		4,000
	To record estimated uncollectible accounts.		

The debit to Uncollectible Accounts Expense brings about a matching of expenses and revenues on the income statement; uncollectible accounts expense is matched against the revenues of the accounting period. The credit to Allowance for Uncollectible Accounts reduces accounts receivable to their net realizable value on the balance sheet. When the books are closed, the firm closes Uncollectible Accounts Expense to Income Summary. It reports the allowance on the balance sheet as a deduction from accounts receivable as follows:

Brice Company Balance Sheet 2010 December 31

Current assets		
Cash		\$21,200
Accounts receivable	\$ 100,000	
Less: Allowance for uncollectible accounts	4,000	96,000

Estimating uncollectible accounts Accountants use two basic methods to estimate uncollectible accounts for a period. The first method—percentage-of-sales method—focuses on the income statement and the relationship of uncollectible accounts to sales. The second method—percentage-of-receivables method—focuses on the balance sheet and the relationship of the allowance for uncollectible accounts to accounts receivable.

Percentage-of-sales method The **percentage-of-sales method** estimates uncollectible accounts from the credit sales of a given period. In theory, the method is based on a percentage of prior years' actual uncollectible accounts to prior years' credit sales. When cash sales are small or make up a fairly constant percentage of total sales, firms base the calculation on total net sales. Since at least one of these conditions is

usually met, companies commonly use total net sales rather than credit sales. The formula to determine the amount of the entry is:

Amount of journal entry for uncollectible accounts – Net sales (total or credit) x Percentage estimated as uncollectible

To illustrate, assume that Rankin Company's uncollectible accounts from 2008 sales were 1.1 percent of total net sales. A similar calculation for 2009 showed an uncollectible account percentage of 0.9 percent. The average for the two years is 1 percent $[(1.1 + 0.9)/2]$. Rankin does not expect 2010 to differ from the previous two years. Total net sales for 2010 were USD 500,000; receivables at year-end were USD 100,000; and the Allowance for Uncollectible Accounts had a zero balance. Rankin would make the following adjusting entry for 2010:

Dec. 31	Uncollectible Accounts Expense (-SE)	5,000	
	Allowance for Uncollectible Accounts (-A)		5,000
	To record estimated uncollectible accounts (\$500,000 X 0.01).		

Using T-accounts, Rankin would show:

Uncollectible Accounts Expense	Allowance for Uncollectible Accounts
Dec. 31	Bal. before adjustment
Adjustment 5,000	-0-
	Dec. 31
	Adjustment
	Bal. after adjustment
	5,000
	5,000

Rankin reports Uncollectible Accounts Expense on the income statement. It reports the accounts receivable less the allowance among current assets in the balance sheet as follows:

Accounts receivable	\$ 100,000	
Less: Allowance for uncollectible accounts	5,000	\$ 95,000
Or Rankin's balance sheet could show:		
Accounts receivable (less estimated uncollectible accounts, \$5,000)	\$95,000	

On the income statement, Rankin would match the uncollectible accounts expense against sales revenues in the period. We would classify this expense as a selling expense since it is a normal consequence of selling on credit.

The Allowance for Uncollectible Accounts account usually has either a debit or credit balance before the year-end adjustment. Under the percentage-of-sales method, the company ignores any existing balance in the allowance when calculating the

amount of the year-end adjustment (except that the allowance account must have a credit balance after adjustment).

For example, assume Rankin's allowance account had a USD 300 credit balance before adjustment. The adjusting entry would still be for USD 5,000. However, the balance sheet would show USD 100,000 accounts receivable less a USD 5,300 allowance for uncollectible accounts, resulting in net receivables of USD 94,700. On the income statement, Uncollectible Accounts Expense would still be 1 percent of total net sales, or USD 5,000.

In applying the percentage-of-sales method, companies annually review the percentage of uncollectible accounts that resulted from the previous year's sales. If the percentage rate is still valid, the company makes no change. However, if the situation has changed significantly, the company increases or decreases the percentage rate to reflect the changed condition. For example, in periods of recession and high unemployment, a firm may increase the percentage rate to reflect the customers' decreased ability to pay. However, if the company adopts a more stringent credit policy, it may have to decrease the percentage rate because the company would expect fewer uncollectible accounts.

Percentage-of-receivables method The **percentage-of-receivables method** estimates uncollectible accounts by determining the desired size of the Allowance for Uncollectible Accounts. Rankin would multiply the ending balance in Accounts Receivable by a rate (or rates) based on its uncollectible accounts experience. In the percentage-of-receivables method, the company may use either an overall rate or a different rate for each age category of receivables.

To calculate the amount of the entry for uncollectible accounts under the percentage-of-receivables method using an overall rate, Rankin would use:

Amount of entry for uncollectible accounts – (Accounts receivable ending balance x percentage estimated as uncollectible) – Existing credit balance in allowance for uncollectible accounts or existing debit balance in allowance for uncollectible accounts

Using the same information as before, Rankin makes an estimate of uncollectible accounts at the end of 2010. The balance of accounts receivable is USD 100,000, and the allowance account has no balance. If Rankin estimates that 6 percent of the receivables will be uncollectible, the adjusting entry would be:

Dec. 31	Uncollectible Accounts Expense (-SE)	6,000
---------	--------------------------------------	-------

Using T-accounts, Rankin would show:

Uncollectible Accounts Expense		Allowance for Uncollectible Accounts	
Dec. 31		Bal. before	
Adjustment 6,000		Adjustment -0-	
		Dec. 31	
		Adjustment 6,000	
		Bal. after	
		Adjustment 6,000	

If Rankin had a USD 300 credit balance in the allowance account before adjustment, the entry would be the same, except that the amount of the entry would be USD 5,700. The difference in amounts arises because management wants the allowance account to contain a credit balance equal to 6 percent of the outstanding receivables when presenting the two accounts on the balance sheet. The calculation of the necessary adjustment is $[(USD\ 100,000 \times 0.06) - USD\ 300] = USD\ 5,700$. Thus, under the percentage-of-receivables method, firms consider any existing balance in the allowance account when adjusting for uncollectible accounts. Using T-accounts, Rankin would show:

Uncollectible Accounts Expense		Allowance for Uncollectible Accounts	
Dec. 31		Bal. before	
Adjustment 5,700		Adjustment 300	
		Dec. 31	
		Adjustment 5,700	
		Bal. after	
		Adjustment 6,000	

ALLEN COMPANY
Accounts Receivable Aging Schedule
2010 December 31

Customer	Accounts Receivable Balance	Not Yet Due	Days Past Due			
			1-30	31-60	61-90	Over 90
X	\$ 5,000					\$ 5,000
Y	14,000		\$ 12,000	\$ 2,000		
Z	400				\$ 200	200
All others	808,600	\$ 560,000	240,000	2,000	600	6,000
	\$ 828,000	\$ 560,000	\$ 252,000	\$ 4,000	\$ 800	\$ 11,200
Percentage estimated as uncollectible		1%	5%	10%	25%	50%
Estimated amount uncollectible	\$ 24,400	\$ 5,600	\$ 12,600	\$ 400	\$ 200	\$ 5,600

Exhibit 1: Accounts receivable aging schedule

As another example, suppose that Rankin had a USD 300 debit balance in the allowance account before adjustment. Then, a credit of USD 6,300 would be necessary to get the balance to the required USD 6,000 credit balance. The calculation of the necessary adjustment is $[(\text{USD } 100,000 \times 0.06) + \text{USD } 300] = \text{USD } 6,300$. Using T-accounts, Rankin would show:

Uncollectible Accounts Expense		Allowance for Uncollectible Accounts	
Dec. 31		Bal. before	Dec. 31
Adjustment 6,300		Adjustment 300	Adjustment 6,300
			Bal. after
			Adjustment 6,000

No matter what the pre-adjustment allowance account balance is, when using the percentage-of-receivables method, Rankin adjusts the Allowance for Uncollectible Accounts so that it has a credit balance of USD 6,000—equal to 6 percent of its USD 100,000 in Accounts Receivable. The desired USD 6,000 ending credit balance in the Allowance for Uncollectible Accounts serves as a "target" in making the adjustment.

So far, we have used one uncollectibility rate for all accounts receivable, regardless of their age. However, some companies use a different percentage for each age category of accounts receivable. When accountants decide to use a different rate for each age category of receivables, they prepare an aging schedule. An **aging schedule** classifies accounts receivable according to how long they have been outstanding and uses a different uncollectibility percentage rate for each age category. Companies base these percentages on experience. In Exhibit 1, the aging schedule shows that the older the receivable, the less likely the company is to collect it.

Classifying accounts receivable according to age often gives the company a better basis for estimating the total amount of uncollectible accounts. For example, based on experience, a company can expect only 1 percent of the accounts not yet due (sales made less than 30 days before the end of the accounting period) to be uncollectible. At the other extreme, a company can expect 50 percent of all accounts over 90 days past due to be uncollectible. For each age category, the firm multiplies the accounts receivable by the percentage estimated as uncollectible to find the estimated amount uncollectible.

The sum of the estimated amounts for all categories yields the total estimated amount uncollectible and is the desired credit balance (the target) in the Allowance for Uncollectible Accounts.

Since the aging schedule approach is an alternative under the percentage-of-receivables method, the balance in the allowance account before adjustment affects the year-end adjusting entry amount recorded for uncollectible accounts. For example, the schedule in Exhibit 1 shows that USD 24,400 is needed as the ending credit balance in the allowance account. If the allowance account has a USD 5,000 credit balance before adjustment, the adjustment would be for USD 19,400.

The information in an aging schedule also is useful to management for other purposes. Analysis of collection patterns of accounts receivable may suggest the need for changes in credit policies or for added financing. For example, if the age of many customer balances has increased to 61-90 days past due, collection efforts may have to be strengthened. Or, the company may have to find other sources of cash to pay its debts within the discount period. Preparation of an aging schedule may also help identify certain accounts that should be written off as uncollectible.

An accounting perspective:

Business insight

According to the Fair Debt Collection Practices Act, collection agencies can call persons only between 8 am and 9 pm, and cannot use foul language. Agencies can call employers only if the employers allow such calls. And, they can threaten to sue only if they really intend to do so.

Write-off of receivables As time passes and a firm considers a specific customer's account to be uncollectible, it writes that account off. It debits the Allowance for Uncollectible Accounts. The credit is to the Accounts Receivable control account in the general ledger and to the customer's account in the accounts receivable subsidiary ledger. For example, assume Smith's USD 750 account has been determined to be uncollectible. The entry to write off this account is:

Allowance for Uncollectible Accounts (-SE)	750	
Accounts Receivable—Smith (-A)		750
To write off Smith's account as uncollectible.		

The credit balance in Allowance for Uncollectible Accounts before making this entry represented potential uncollectible accounts not yet specifically identified. Debiting the allowance account and crediting Accounts Receivable shows that the firm has identified Smith's account as uncollectible. Notice that the debit in the entry to write off an account receivable does not involve recording an expense. The company recognized the uncollectible accounts expense in the same accounting period as the sale. If Smith's USD 750 uncollectible account were recorded in Uncollectible Accounts Expense again, it would be counted as an expense twice.

A write-off does not affect the net realizable value of accounts receivable. For example, suppose that Amos Company has total accounts receivable of USD 50,000 and an allowance of USD 3,000 before the previous entry; the net realizable value of the accounts receivable is USD 47,000. After posting that entry, accounts receivable are USD 49,250, and the allowance is USD 2,250; net realizable value is still USD 47,000, as shown here:

	Before Write-Off	Entry for Write-Off	After Write-Off
Accounts receivable	\$ 50,000 Dr.	\$750 Cr.	\$ 49,250 Dr.
Allowance for uncollectible accounts	3,000 Cr.	750 Dr.	2,250 Cr.
Net realizable value	\$47,000		\$ 47,000

You might wonder how the allowance account can develop a debit balance before adjustment. To explain this, assume that Jenkins Company began business on 2009 January 1, and decided to use the allowance method and make the adjusting entry for uncollectible accounts only at year-end. Thus, the allowance account would not have any balance at the beginning of 2009. If the company wrote off any uncollectible accounts during 2009, it would debit Allowance for Uncollectible Accounts and cause a debit balance in that account. At the end of 2009, the company would debit Uncollectible Accounts Expense and credit Allowance for Uncollectible Accounts. This adjusting entry would cause the allowance account to have a credit balance. During 2010, the company would again begin debiting the allowance account for any write-offs of uncollectible accounts. Even if the adjustment at the end of 2009 was adequate to cover all accounts receivable existing at that time that would later become uncollectible, some accounts receivable from 2010 sales may be written off before the end of 2010. If so, the allowance account would again develop a debit balance before the end-of-year 2010 adjustment.

Uncollectible accounts recovered Sometimes companies collect accounts previously considered to be uncollectible after the accounts have been written off. A company usually learns that an account has been written off erroneously when it receives payment. Then the company reverses the original write-off entry and reinstates the account by debiting Accounts Receivable and crediting Allowance for Uncollectible Accounts for the amount received. It posts the debit to both the general ledger account and to the customer's accounts receivable subsidiary ledger account. The firm also records the amount received as a debit to Cash and a credit to Accounts Receivable. And it posts the credit to both the general ledger and to the customer's accounts receivable subsidiary ledger account.

To illustrate, assume that on May 17 a company received a USD 750 check from Smith in payment of the account previously written off. The two required journal entries are:

May	17	Accounts Receivable—Smith (+A)	750	
		Allowance for Uncollectible Accounts (-A)		750
		To reverse original write-off of Smith account.		
May	17	Cash (+A)	750	
		Accounts Receivable—Smith (-A)		750
		To record collection of account.		

The debit and credit to Accounts Receivable—Smith on the same date is to show in Smith's subsidiary ledger account that he did eventually pay the amount due. As a result, the company may decide to sell to him in the future.

When a company collects part of a previously written off account, the usual procedure is to reinstate only that portion actually collected, unless evidence indicates the amount will be collected in full. If a company expects full payment, it reinstates the entire amount of the account.

Because of the problems companies have with uncollectible accounts when they offer customers credit, many now allow customers to use bank or external credit cards. This policy relieves the company of the headaches of collecting overdue accounts.

A broader perspective:

GECS allowance for losses on financing receivables

Recognition of losses on financing receivables. The allowance for losses on small-balance receivables reflects management's best estimate of probable losses inherent in the portfolio determined principally on the basis of historical experience. For other receivables, principally the larger loans and leases, the allowance for losses is determined primarily on the basis of management's best estimate of probable losses, including specific allowances for known troubled accounts.

All accounts or portions thereof deemed to be uncollectible or to require an excessive collection cost are written off to the allowance for losses. Small-balance accounts generally are written off when 6 to 12 months delinquent, although any such balance judged to be uncollectible, such as an account in bankruptcy, is written down immediately to estimated realizable value. Large-balance accounts are reviewed at least quarterly, and those accounts with amounts that are judged to be uncollectible are written down to estimated realizable value.

When collateral is repossessed in satisfaction of a loan, the receivable is written down against the allowance for losses to estimated fair value of the asset less costs to sell, transferred to other assets and subsequently carried at the lower of cost or estimated fair value less costs to sell. This accounting method has been employed principally for specialized financing transactions.

(In millions)	2000	1999	1998
Balance at January 1	\$3,708	\$3,223	\$2,745
Provisions charged			
To operations	2,045	1,671	1,603
Net transfers related to companies acquired or sold	22	271	386
Amounts written off-net	(1,741)	(1,457)	(1,511)
Balance at December 31	\$4,034	\$3,708	\$3,223

Source: General Electric Company, 2000 Annual Report.

An accounting perspective:

Uses of technology

Auditors use expert systems to review a client's internal control structure and to test the reasonableness of a client's Allowance for Uncollectible Accounts balance. The expert system reaches conclusions based on rules and information programmed into the expert system software. The rules are modeled on the mental processes that a human expert would use in addressing the situation. In the medical field, for instance, the rules constituting the expert system are derived from modeling the diagnostic decision processes of the foremost experts in a given area of medicine. A physician can input information from a remote location regarding the symptoms of a certain patient, and the expert system will provide a probable diagnosis based on the expert model. In a similar fashion, an accountant can feed client information into the expert system and receive an evaluation as to the appropriateness of the account balance or internal control structure.

Credit cards are either nonbank (e.g. American Express) or bank (e.g. VISA and MasterCard) charge cards that customers use to purchase goods and services. For some businesses, uncollectible account losses and other costs of extending credit are a burden. By paying a service charge of 2 percent to 6 percent, businesses pass these costs on to banks and agencies issuing national credit cards. The banks and credit card agencies then absorb the uncollectible accounts and costs of extending credit and maintaining records.

Usually, banks and agencies issue credit cards to approved credit applicants for an annual fee. When a business agrees to honor these credit cards, it also agrees to pay the percentage fee charged by the bank or credit agency.

When making a credit card sale, the seller checks to see if the customer's card has been canceled and requests approval if the sale exceeds a prescribed amount, such as USD 50. This procedure allows the seller to avoid accepting lost, stolen, or canceled

cards. Also, this policy protects the credit agency from sales causing customers to exceed their established credit limits.

The seller's accounting procedures for credit card sales differ depending on whether the business accepts a nonbank or a bank credit card. To illustrate the entries for the use of nonbank credit cards (such as American Express), assume that a restaurant American Express invoices amounting to USD 1,400 at the end of a day. American Express charges the restaurant a 5 percent service charge. The restaurant uses the **Credit Card Expense account** to record the credit card agency's service charge and makes the following entry:

Accounts Receivable—American Express (+A)	1,330	
Credit Card Expense (-SE)	70	
Sales (+SE)		1,400
To record credit card sales.		

The restaurant mails the invoices to American Express. Sometime later, the restaurant receives payment from American Express and makes the following entry:

Cash (+A)	1,330	
Accounts Receivable – American Express (-A)		1,330
To record remittance from American Express.		

To illustrate the accounting entries for the use of bank credit cards (such as VISA or MasterCard), assume that a retailer has made sales of USD 1,000 for which VISA cards were accepted and the service charge is USD 30 (which is 3 percent of sales). VISA sales are treated as cash sales because the receipt of cash is certain. The retailer deposits the credit card sales invoices in its VISA checking account at a bank just as it deposits checks in its regular checking account. The entry to record this deposit is:

Cash (+A)	970	
Credit Card Expense (-SE)	30	
Sales (+SE)		1,000
To record credit Visa card sales.		

An accounting perspective:

Business insight

Recent innovations in credit cards include picture IDs on cards to reduce theft, credits toward purchases of new automobiles (e.g. General

Motors cards), credit toward free trips on airlines, and cash rebates on all purchases. Discover Card, for example, remits a percentage of all charges back to credit card holders. Also, some credit card companies have reduced interest rates on unpaid balances and have eliminated the annual fee.

Just as every company must have current assets such as cash and accounts receivable to operate, every company incurs current liabilities in conducting its operations. Corporations (IBM and General Motors), partnerships (CPA firms), and single proprietorships (corner grocery stores) all have one thing in common—they have liabilities. The next section discusses some of the current liabilities companies incur.

9.4 Current liabilities

Liabilities result from some past transaction and are obligations to pay cash, provide services, or deliver goods at some future time. This definition includes each of the liabilities discussed in previous chapters and the new liabilities presented in this chapter. The balance sheet divides liabilities into current liabilities and long-term liabilities. **Current liabilities** are obligations that (1) are payable within one year or one operating cycle, whichever is longer, or (2) will be paid out of current assets or create other current liabilities. **Long-term liabilities** are obligations that do not qualify as current liabilities. This chapter focuses on current liabilities and Chapter 15 describes long-term liabilities.

Note the definition of a current liability uses the term operating cycle. An **operating cycle** (or cash cycle) is the time it takes to begin with cash, buy necessary items to produce revenues (such as materials, supplies, labor, and/or finished goods), sell goods or services, and receive cash by collecting the resulting receivables. For most companies, this period is no longer than a few months. Service companies generally have the shortest operating cycle, since they have no cash tied up in inventory. Manufacturing companies generally have the longest cycle because their cash is tied up in inventory accounts and in accounts receivable before coming back. Even for manufacturing companies, the cycle is generally less than one year. Thus, as a practical

matter, current liabilities are due in one year or less, and long-term liabilities are due after one year from the balance sheet date.

The operating cycles for various businesses follow:

Type of Business	Operating Cycle
Service company selling for cash only	Instantaneous
Service company selling on credit	Cash -> Accounts Receivable -> Cash
Merchandising company selling for cash	Cash -> Inventory -> Cash
Merchandising company selling on credit	Cash -> Inventory -> Accounts receivable -> Cash
Manufacturing company selling for cash	Cash -> Materials inventory -> Work in process inventory -> Finished goods inventory -> Accounts Receivable -> Cash

Current liabilities fall into these three groups:

- **Clearly determinable liabilities.** The existence of the liability and its amount are certain. Examples include most of the liabilities discussed previously, such as accounts payable, notes payable, interest payable, unearned delivery fees, and wages payable. Sales tax payable, federal excise tax payable, current portions of long-term debt, and payroll liabilities are other examples.
- **Estimated liabilities.** The existence of the liability is certain, but its amount only can be estimated. An example is estimated product warranty payable.
- **Contingent liabilities.** The existence of the liability is uncertain and usually the amount is uncertain because contingent liabilities depend (or are contingent) on some future event occurring or not occurring. Examples include liabilities arising from lawsuits, discounted notes receivable, income tax disputes, penalties that may be assessed because of some past action, and failure of another party to pay a debt that a company has guaranteed.

The following table summarizes the characteristics of current liabilities:

Type of Liability	Is the Existence Certain?	Is the Amount Certain?
Clearly determinable liabilities	Yes	Yes
Estimated liabilities	Yes	No
Contingent liabilities	No	No

Clearly determinable liabilities have clearly determinable amounts. In this section, we describe liabilities not previously discussed that are clearly determinable—sales tax payable, federal excise tax payable, current portions of long-term debt, and payroll liabilities. Later in this chapter, we discuss clearly determinable liabilities such as notes payable.

Sales tax payable Many states have a state sales tax on items purchased by consumers. The company selling the product is responsible for collecting the sales tax from customers. When the company collects the taxes, the debit is to Cash and the credit is to Sales Tax Payable. Periodically, the company pays the sales taxes collected to the state. At that time, the debit is to Sales Tax Payable and the credit is to Cash.

To illustrate, assume that a company sells merchandise in a state that has a 6 percent sales tax. If it sells goods with a sales price of USD 1,000 on credit, the company makes this entry:

Accounts Receivable (+A)	1,060	
Sales (+SE)		1,000
Sales Tax Payable (+L)		60
To record sales and sales tax payable.		

Now assume that sales for the entire period are USD 100,000 and that USD 6,000 is in the Sales Tax Payable account when the company remits the funds to the state taxing agency. The following entry shows the payment to the state:

Sales Tax Payable (-L)	6,000	
Cash (-A)		6,000

An alternative method of recording sales taxes payable is to include these taxes in the credit to Sales. For instance, the previous company could record sales as follows:

Accounts Receivable (+A)	1,060	
Sales (+SE)		1,060

When recording sales taxes in the same account as sales revenue, the firm must separate the sales tax from sales revenue at the end of the accounting period. To make this separation, it adds the sales tax rate to 100 percent and divides this percentage into recorded sales revenue. For instance, assume that total recorded sales revenues for an accounting period are USD 10,600, and the sales tax rate is 6 percent. To find the sales revenue, use the following formula:

$$\text{Sales} = \frac{\text{Amount recorded for sales account}}{100 \text{ per cent} + \text{sales tax rate}}$$

$$= \frac{\text{USD } 10,600}{106 \text{ per cent}} = \text{USD } 10,000$$

The sales revenue is USD 10,000 for the period. Sales tax is equal to the recorded sales revenue of USD 10,600 less actual sales revenue of USD 10,000, or USD 600.

Federal excise tax payable Consumers pay federal excise tax on some goods, such as alcoholic beverages, tobacco, gasoline, cosmetics, tires, and luxury automobiles. The entries a company makes when selling goods subject to the federal excise tax are similar to those made for sales taxes payable. For example, assume that the Dixon Jewelry Store sells a diamond ring to a young couple for USD 2,000. The sale is subject to a 6 percent sales tax and a 10 percent federal excise tax. The entry to record the sale is:

Accounts Receivable (+A)	2,320	
Sales (+L)		2,000
Sales Tax Payable (+L)		120
Federal Excise Tax Payable		200
To record the sale of a diamond ring.		

The company records the remittance of the taxes to the federal taxing agency by debiting Federal Excise Tax Payable and crediting Cash.

Current portions of long-term debt Accountants move any portion of long-term debt that becomes due within the next year to the current liability section of the balance sheet. For instance, assume a company signed a series of 10 individual notes payable for USD 10,000 each; beginning in the 6th year, one comes due each year through the 15th year. Beginning in the 5th year, an accountant would move a USD 10,000 note from the long-term liability category to the current liability category on the balance sheet. The current portion would then be paid within one year.

An accounting perspective:

Uses of technology

Many companies use service bureaus to process their payrolls because these bureaus keep up to date on rates, bases, and changes in the laws affecting payroll. Companies can either send their data over the Internet or have the service bureaus pick up time sheets and other data. Managers instruct service bureaus either to print the payroll checks or to transfer data back to the company over the Internet so it can print the checks.

Payroll liabilities In most business organizations, accounting for payroll is particularly important because (1) payrolls often are the largest expense that a company incurs, (2) both federal and state governments require maintaining detailed payroll records, and (3) companies must file regular payroll reports with state and federal governments and remit amounts withheld or otherwise due. Payroll liabilities include taxes and other amounts withheld from employees' paychecks and taxes paid by employers.

Employers normally withhold amounts from employees' paychecks for federal income taxes; state income taxes; FICA (social security) taxes; and other items such as union dues, medical insurance premiums, life insurance premiums, pension plans, and pledges to charities. Assume that a company had a payroll of USD 35,000 for the month of April 2010. The company withheld the following amounts from the employees' pay: federal income taxes, USD 4,100; state income taxes, USD 360; FICA taxes, USD 2,678; and medical insurance premiums, USD 940. This entry records the payroll:

2010			
April	30	Salaries Expense (-SE)	35,000
		Employees' Federal Income Taxes Payable (+L)	4,100
		Employees' State Income Taxes Payable (+L)	360
		FICA Taxes Payable (+L)	2,678
		Employees' Medical Insurance Premiums Payable (+L)	940
		Salaries Payable (+L)	26,922
		To record the payroll for the month ending April 30.	

All accounts credited in the entry are current liabilities and will be reported on the balance sheet if not paid prior to the preparation of financial statements. When these liabilities are paid, the employer debits each one and credits Cash.

Employers normally record payroll taxes at the same time as the payroll to which they relate. Assume the payroll taxes an employer pays for April are FICA taxes, USD 2,678; state unemployment taxes, USD 1,890; and federal unemployment taxes, USD 280. The entry to record these payroll taxes would be:

2010			
April	30	Payroll Taxes Expense (-SE)	4,848
		FICA Taxes Payable (+L)	2,678
		State Unemployment Taxes Payable (+L)	1,890
		Federal Unemployment Taxes Payable (+L)	280
		To record employer's payroll taxes.	

These amounts are in addition to the amounts withheld from employees' paychecks. The credit to FICA Taxes Payable is equal to the amount withheld from the employees' paychecks. The company can credit both its own and the employees' FICA taxes to the same liability account, since both are payable at the same time to the same agency. When these liabilities are paid, the employer debits each of the liability accounts and credits Cash.

An accounting perspective:

Uses of technology

One of the basic components in accounting software packages is the payroll module. As long as companies update this module each time rates, bases, or laws change, they can calculate withholdings, print payroll checks, and complete reporting forms for taxing agencies. In addition to calculating the employer's payroll taxes, this software maintains all accounting payroll records.

Managers of companies that have estimated liabilities know these liabilities exist but can only estimate the amount. The primary accounting problem is to estimate a reasonable liability as of the balance sheet date. An example of an estimated liability is product warranty payable.

Estimated product warranty payable When companies sell products such as computers, often they must guarantee against defects by placing a warranty on their products. When defects occur, the company is obligated to reimburse the customer or repair the product. For many products, companies can predict the number of defects based on experience. To provide for a proper matching of revenues and expenses, the accountant estimates the warranty expense resulting from an accounting period's sales. The debit is to Product Warranty Expense and the credit to Estimated Product Warranty Payable.

To illustrate, assume that a company sells personal computers and warrants all parts for one year. The average price per computer is USD 1,500, and the company sells 1,000 computers in 2010. The company expects 10 percent of the computers to

develop defective parts within one year. By the end of 2010, customers have returned 40 computers sold that year for repairs, and the repairs on those 40 computers have been recorded. The estimated average cost of warranty repairs per defective computer is USD 150. To arrive at a reasonable estimate of product warranty expense, the accountant makes the following calculation:

Number of computers sold	1,000	
Percent estimated to develop defects	X 10%	
Total estimated defective computers	100	
Deduct computers returned as defective to date	40	
Estimated additional number to become defective during warranty period	60	
Estimated average warranty repair cost per compute:	X \$ 150	
Estimated product warranty payable	\$9,000	

The entry made at the end of the accounting period is:

Product Warranty Expense (-SE)	9,000	
Estimated Product Warranty Payable (+L)		9,000
To record estimated product warranty expense.		

When a customer returns one of the computers purchased in 2010 for repair work in 2008 (during the warranty period), the company debits the cost of the repairs to Estimated Product Warranty Payable. For instance, assume that Evan Holman returns his computer for repairs within the warranty period. The repair cost includes parts, USD 40, and labor, USD 160. The company makes the following entry:

Estimated Product Warranty Payable (-L)	200	
Repair Parts Inventory (-A)		40
Wages Payable (+L)		160
To record replacement of parts under warranty.		

An accounting perspective:

Business insight

Another estimated liability that is quite common relates to clean-up costs for industrial pollution. One company had the following note in its recent financial statements:

In the past, the Company treated hazardous waste at its chemical facilities. Testing of the ground waters in the areas of the treatment impoundments at these facilities disclosed the presence of certain

contaminants. In compliance with environmental regulations, the Company developed a plan that will prevent further contamination, provide for remedial action to remove the present contaminants, and establish a monitoring program to monitor ground water conditions in the future. A similar plan has been developed for a site previously used as a metal pickling facility. Estimated future costs of USD 2,860,000 have been accrued in the accompanying financial statements...to complete the procedures required under these plans.

When liabilities are contingent, the company usually is not sure that the liability exists and is uncertain about the amount. *FASB Statement No. 5* defines a contingency as "an existing condition, situation, or set of circumstances involving uncertainty as to possible gain or loss to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur".¹

According to *FASB Statement No. 5*, if the liability is probable and the amount can be reasonably estimated, companies should record contingent liabilities in the accounts. However, since most contingent liabilities may not occur and the amount often cannot be reasonably estimated, the accountant usually does not record them in the accounts. Instead, firms typically disclose these contingent liabilities in notes to their financial statements.

Many contingent liabilities arise as the result of lawsuits. In fact, 469 of the 957 companies contacted in the AICPA's annual survey of accounting practices reported contingent liabilities resulting from litigation.²

The following two examples from annual reports are typical of the disclosures made in notes to the financial statements. Be aware that just because a suit is brought, the company being sued is not necessarily guilty. One company included the following note in its annual report to describe its contingent liability regarding various lawsuits against the company:

1 FASB, *Statement of Financial Accounting Standards No. 5*, "Accounting for Contingencies" (Stamford, Conn., 1975). Copyright © by Financial Accounting Standards Board, High Ridge Park, Stamford, Connecticut 06905, USA.

2 AICPA, *Accounting Trends & Techniques* (New York, 2000), p. 100.

Contingent liabilities:

Various lawsuits and claims, including those involving ordinary routine litigation incidental to its business, to which the Company is a party, are pending, or have been asserted, against the Company. In addition, the Company was advised...that the United States Environmental Protection Agency had determined the existence of PCBs in a river and harbor near Sheboygan, Wisconsin, USA, and that the Company, as well as others, allegedly contributed to that contamination. It is not presently possible to determine with certainty what corrective action, if any, will be required, what portion of any costs thereof will be attributable to the Company, or whether all or any portion of such costs will be covered by insurance or will be recoverable from others. Although the outcome of these matters cannot be predicted with certainty, and some of them may be disposed of unfavorably to the Company, management has no reason to believe that their disposition will have a materially adverse effect on the consolidated financial position of the Company.

Another company dismissed an employee and included the following note to disclose the contingent liability resulting from the ensuing litigation:

Contingencies:

...A jury awarded USD 5.2 million to a former employee of the Company for an alleged breach of contract and wrongful termination of employment. The Company has appealed the judgment on the basis of errors in the judge's instructions to the jury and insufficiency of evidence to support the amount of the jury's award. The Company is vigorously pursuing the appeal.

The Company and its subsidiaries are also involved in various other litigation arising in the ordinary course of business.

Since it presently is not possible to determine the outcome of these matters, no provision has been made in the financial statements for their ultimate resolution. The resolution of the appeal of the jury award could have a significant effect on the Company's earnings in the year that a determination is made; however, in management's opinion, the final resolution of all legal matters will not have a material adverse effect on the Company's financial position.

Contingent liabilities may also arise from discounted notes receivable, income tax disputes, penalties that may be assessed because of some past action, and failure of another party to pay a debt that a company has guaranteed.

The remainder of this chapter discusses notes receivable and notes payable. Business transactions often involve one party giving another party a note.

9.5 Notes receivable and notes payable

A note (also called a **promissory note**) is an unconditional written promise by a borrower (**maker**) to pay a definite sum of money to the lender (**payee**) on demand or on a specific date. On the balance sheet of the lender (payee), a note is a receivable; on the balance sheet of the borrower (maker), a note is a payable. Since the note is usually negotiable, the payee may transfer it to another party, who then receives payment from the maker. Look at the promissory note in Exhibit 2.

A customer may give a note to a business for an amount due on an account receivable or for the sale of a large item such as a refrigerator. Also, a business may give a note to a supplier in exchange for merchandise to sell or to a bank or an individual for a loan. Thus, a company may have notes receivable or notes payable arising from transactions with customers, suppliers, banks, or individuals.

Companies usually do not establish a subsidiary ledger for notes. Instead, they maintain a file of the actual notes receivable and copies of notes payable.

Most promissory notes have an explicit interest charge. **Interest** is the fee charged for use of money over a period. To the maker of the note, or borrower, interest is an expense; to the payee of the note, or lender, interest is a revenue. A borrower incurs interest expense; a lender earns interest revenue. For convenience, bankers sometimes calculate interest on a 360-day year; we calculate it on that basis in this text. (Some companies use a 365-day year.)

Principal _____	\$ 2,400.00	July 1, 2010
Payee _____	Sixty days - - - - -	AFTER DATE We PROMISE TO PAY TO
Interest rate _____	THE ORDER OF SAXON CORPORATION	
Maker _____	Twenty-four hundred and no/100 - - - - -	DOLLARS
	AT <u>Saxon Corporation, Lansing Michigan</u>	
	FOR VALUE RECEIVED WITH INTEREST AT THE RATE OF <u>10%</u> PER ANNUM FROM <u>July 1, 2010</u>	
	<small>This note is one of a series of _____ notes of even date herewith, numbered <u>487</u> to <u>--</u> inclusive, and all of said notes shall become immediately payable at the option of the holder hereof on default being made in the payment of anyone at maturity.</small>	
	NO. <u>487</u> DUE <u>August 31, 2010</u>	<u>MOTOR WHEEL COMPANY</u> (SEAL)
		<u>Michael D. Smith, Treasurer</u> (SEAL)

Exhibit 2: Promissory note

The basic formula for computing interest is:

$$\text{Interest} = \text{Principal} \times \text{Rate} \times \text{Time} \quad , \text{ or } \quad I = P \times R \times T$$

Principal is the face value of the note. The **rate** is the stated interest rate on the note; interest rates are generally stated on an annual basis. **Time**, which is the amount of time the note is to run, can be either days or months.

To show how to calculate interest, assume a company borrowed USD 20,000 from a bank. The note has a principal (face value) of USD 20,000, an annual interest rate of 10 percent, and a life of 90 days. The interest calculation is:

$$\text{Interest} = \text{USD } 20,000 \times 0.10 \times \frac{90}{360}$$

Interest = USD 500

Note that in this calculation we expressed the time period as a fraction of a 360-day year because the interest rate is an annual rate.

The **maturity date** is the date on which a note becomes due and must be paid. Sometimes notes require monthly installments (or payments) but usually all of the principal and interest must be paid at the same time as in Exhibit 2. The wording in the note expresses the maturity date and determines when the note is to be paid. A note falling due on a Sunday or a holiday is due on the next business day. Examples of the maturity date wording are:

• On demand. "On demand, I promise to pay..." When the maturity date is on demand, it is at the option of the holder and cannot be computed. The holder is the payee, or another person who legally acquired the note from the payee.

• On a stated date. "On 2010 July 18, I promise to pay..." When the maturity date is designated, computing the maturity date is not necessary.

• At the end of a stated period.

(a)"One year after date, I promise to pay..." When the maturity is expressed in years, the note matures on the same day of the same month as the date of the note in the year of maturity.

(b)"Four months after date, I promise to pay..." When the maturity is expressed in months, the note matures on the same date in the month of maturity. For example, one month from 2010 July 18, is 2010 August 18, and two months from 2010 July 18, is 2010 September 18. If a note is issued on the last day of a month and the month of maturity has fewer days than the month of issuance, the note matures on the last day of the month of maturity. A one-month note dated 2010 January 31, matures on 2010 February 28.

(c)"Ninety days after date, I promise to pay..." When the maturity is expressed in days, the exact number of days must be counted. The first day (date of origin) is omitted, and the last day (maturity date) is included in the count. For example, a 90-day note dated 2010 October 19, matures on 2008 January 17, as shown here:

Life of note (days)		90 days
Days remaining in October not counting date of origin of note:		
Days to count in October (31 - 19)	12	
Total days in November	30	
Total Days in December	31	73
Maturity date in January		17 days

Sometimes a company receives a note when it sells high-priced merchandise; more often, a note results from the conversion of an overdue account receivable. When a customer does not pay an account receivable that is due, the company (creditor) may insist that the customer (debtor) gives a note in place of the account receivable. This action allows the customer more time to pay the balance due, and the company earns

interest on the balance until paid. Also, the company may be able to sell the note to a bank or other financial institution.

To illustrate the conversion of an account receivable to a note, assume that Price Company (maker) had purchased USD 18,000 of merchandise on August 1 from Cooper Company (payee) on account. The normal credit period has elapsed, and Price cannot pay the invoice. Cooper agrees to accept Price's USD 18,000, 15 percent, 90-day note dated September 1 to settle Price's open account. Assuming Price paid the note at maturity and both Cooper and Price have a December 31 year-end, the entries on the books of the payee and the maker are:

		Cooper Company, Payee	
Aug.	1	Accounts Receivable—Price Company (+A)	18,000
		Sales (+SE)	18,000
		To record sale of merchandise on account.	
Sept.	1	Notes Receivable (+A)	18,000
		Accounts Receivable—Price Company (-A)	18,000
		To record exchange of a note from Price Company for open account.	
Nov.	30	Cash (+A)	18,675
		Notes Receivable (-A)	18,000
		Interest Revenue ($\$18,000 \times 0.15 \times \frac{90}{360}$). (+SE)	675
		To record receipt of Price Company note principal and interest.	
		Price Company, Maker	
Aug.	1	Purchase (+A)	18,000
		Accounts Payable—Cooper Company (+L)	18,000
		To record purchase of merchandise on account.	
Sept.	1	Accounts Payable—Cooper Company (-L)	18,000
		Notes Payable (+L)	18,000
		To record exchange of a note to Cooper Company for open account.	
Nov.	30	Notes Payable (-L)	18,000
		Interest Expense ($\$18,000 \times 0.15 \times \frac{90}{360}$). (-SE)	675
		Cash (-A)	18,675
		To record payment of note principal and interest.	

The USD 18,675 paid by Price to Cooper is called the maturity value of the note. **Maturity value** is the amount that the maker must pay on a note on its maturity date; typically, it includes principal and accrued interest, if any.

Sometimes the maker of a note does not pay the note when it becomes due. The next section describes how to record a note not paid at maturity.

A **dishonored note** is a note that the maker failed to pay at maturity. Since the note has matured, the holder or payee removes the note from Notes Receivable and records the amount due in Accounts Receivable (or Dishonored Notes Receivable).

At the maturity date of a note, the maker should pay the principal plus interest. If the interest has not been accrued in the accounting records, the maker of a dishonored note should record interest expense for the life of the note by debiting Interest Expense and crediting Interest Payable. The payee should record the interest earned and remove the note from its Notes Receivable account. Thus, the payee of the note should debit Accounts Receivable for the maturity value of the note and credit Notes Receivable for the note's face value and Interest Revenue for the interest. After these entries have been posted, the full liability on the note—principal plus interest—is included in the records of both parties. Interest continues to accrue on the note until it is paid, replaced by a new note, or written off as uncollectible. To illustrate, assume that Price did not pay the note at maturity. The entries on each party's books are:

Cooper Company, Payee			
Nov.	30	Accounts Receivable—Price Company (+A)	18,675
		Notes Receivable (-A)	18,000
		Interest Revenue (+SE)	675
		To record dishonor of Price Company note.	
Price Company, Maker			
Nov.	30	Interest Expense (-SE)	675
		Interest Payable (+L)	675
		To record interest on note payable.	

When unable to pay a note at maturity, sometimes the maker pays the interest on the original note or includes the interest in the face value of a new note that replaces the old note. Both parties account for the new note in the same manner as the old note. However, if it later becomes clear that the maker of a dishonored note will never pay, the payee writes off the account with a debit to Uncollectible Accounts Expense (or to an account with a title such as Loss on Dishonored Notes) and a credit to Accounts Receivable. The debit should be to the Allowance for Uncollectible Accounts if the payee made an annual provision for uncollectible notes receivable.

Assume that Price Company pays the interest at the maturity date and issues a new 15 percent, 90-day note for USD 18,000. The entries on both sets of books would be:

Cooper Company, Payee

Cash (+A)	675	
Interest Revenue (+SE)		675
To record the receipt of interest on Price Company note.		
(Optional entry)	18,000	
Notes Receivable (+A)		18,000
Notes Receivable (-A)	18,000	
To replace old 15%, 90-day note from Price Company with new 15%, 90-day note.		

Price Company, Maker

Interest Expense (-SE)	675	
Cash (-A)		675
To record the payment of interest on note to Cooper Company.		
(Optional entry)	18,000	
Notes Payable (-L)		18,000
Notes Payable (+L)	18,000	
To replace old 15%, 90-day note to Cooper Company with new 15%, 90-day note.		

Although the second entry on each set of books has no effect on the existing account balances, it indicates that the old note was renewed (or replaced). Both parties substitute the new note, or a copy, for the old note in a file of notes.

Now assume that Price Company does not pay the interest at the maturity date but instead includes the interest in the face value of the new note. The entries on both sets of books would be:

Cooper Company, Payee

Notes Receivable (+A)	18,675	
Interest Revenue (+SE)	675	
Notes Receivable (-A)	18,000	
To record the replacement of the old Price Company \$18,000, 15%, 90-day note with a new \$18,675, 15%, 90-day note.		

Price Company, Maker

Interest Expense (-SE)	675	
Notes Payable (-L)	18,000	
Notes Payable (+L)		18,675
To record the replacement of the old \$18,000, 15%, 90-day note to Cooper Company with a new \$18,675, 15%, 90-day note.		

On an interest-bearing note, even though interest accrues, or accumulates, on a day-to-day basis, usually both parties record it only at the note's maturity date. If the note is outstanding at the end of an accounting period, however, the time period of the interest overlaps the end of the accounting period and requires an adjusting entry at the end of the accounting period. Both the payee and maker of the note must make an adjusting entry to record the accrued interest and report the proper assets and revenues for the payee and the proper liabilities and expenses for the maker. Failure to record accrued interest understates the payee's assets and revenues by the amount of the interest earned but not collected and understates the maker's expenses and liabilities by the interest expense incurred but not yet paid.

Payee's books To illustrate how to record accrued interest on the payee's books, assume that the payee, Cooper Company, has a fiscal year ending on October 31 instead of December 31. On October 31, Cooper would make the following adjusting entry relating to the Price Company note:

Oct.	31	Interest Receivable (+A)	450	
		Interest Revenue ($\$18,000 \times 0.15 \times 60/360$) (+SE)		450
		To record interest earned on Price Company note for the period September 1 through October 31.		

The **Interest Receivable account** shows the interest earned but not yet collected. Interest receivable is a current asset in the balance sheet because the interest will be collected in 30 days. The interest revenue appears in the income statement. When Price pays the note on November 30, Cooper makes the following entry to record the collection of the note's principal and interest:

Nov.	30	Cash (+A)	18,675	
		Notes Receivable (-A)		18,000
		Interest Receivable (-A)		450
		Interest Revenue (+SE)		225
		To record collection of Price Company note and interest.		

Note that the entry credits the Interest Receivable account for the USD 450 interest accrued from September 1 through October 31, which was debited to the account in the previous entry, and credits Interest Revenue for the USD 225 interest earned in November.

Maker's books Assume Price Company's accounting year also ends on October 31 instead of December 31. Price's accounting records would be incomplete unless the company makes an adjusting entry to record the liability owed for the accrued interest on the note it gave to Cooper Company. The required entry is:

Oct.	31	Interest Expense ($\$18,000 \times 0.15 \times 60/360$) (-SE)	450	
		Interest Payable (+L)		450
		To record accrued interest on note to Cooper Company for the period September 1 through October 31.		

The **Interest Payable account**, which shows the interest expense incurred but not yet paid, is a current liability in the balance sheet because the interest will be paid in 30 days. Interest expense appears in the income statement. When the note is paid, Price makes the following entry:

Nov.	30	Notes Payable (-L)	18,000	
		Interest Payable (-L)	450	
		Interest Expense (-SE)	225	
		Cash (-A)		18,675
		To record payment of principal and interest on note to Cooper Company.		

In this illustration, Cooper's financial position made it possible for the company to carry the Price note to the maturity date. Alternatively, Cooper could have sold, or discounted, the note to receive the proceeds before the maturity date. This topic is reserved for a more advanced text.

9.6 Short-term financing through notes payable

A company sometimes needs short-term financing. This situation may occur when (1) the company's cash receipts are delayed because of lenient credit terms granted customers, or (2) the company needs cash to finance the buildup of seasonal inventories, such as before Christmas. To secure short-term financing, companies issue interest-bearing or non interest-bearing notes.

Interest-bearing notes To receive short-term financing, a company may issue an interest-bearing note to a bank. An interest-bearing note specifies the interest rate charged on the principal borrowed. The company receives from the bank the principal borrowed; when the note matures, the company pays the bank the principal plus the interest.

Accounting for an interest-bearing note is simple. For example, assume the company's accounting year ends on December 31. Needham Company issued a USD 10,000, 90-day, 9 percent note on 2009 December 1. The following entries would record the loan, the accrual of interest on 2009 December 31 and its payment on 2010 March 1:

2009	1	Cash (+A)	10,000	
Dec.		Notes Payable (+L)		10,000
		To record 90-day bank loan.		
	31	Interest Expense (-SE)	75	
		Interest Payable (+L)		75
		To record accrued interest on a note payable at year-end ($\$10,000 \times 0.09 \times \frac{30}{360}$).		
2010	1	Notes Payable (-L)	10,000	
Mar.		Interest Expense ($\$10,000 \times 0.09 \times \frac{60}{360}$) (-SE)	150	
		Interest Payable (-L)	75	
		Cash (-A)		
		To record principal and interest paid on bank loan.		
				10,225

Non interest-bearing notes (discounting notes payable) A company may also issue a non interest-bearing note to receive short-term financing from a bank. A non interest-bearing note does not have a stated interest rate applied to the face value of the note. Instead, the note is drawn for a maturity amount less a bank discount; the borrower receives the proceeds. A **bank discount** is the difference between the maturity value of the note and the cash proceeds given to the borrower. The **cash proceeds** are equal to the maturity amount of a note less the bank discount. This entire process is called **discounting a note payable**. The purpose of this process is to introduce interest into what appears to be a non interest-bearing note. The meaning of discounting here is to deduct interest in advance.

Because interest is related to time, the bank discount is not interest on the date the loan is made; however, it becomes interest expense to the company and interest revenue to the bank as time passes. To illustrate, assume that on 2009 December 1, Needham Company presented its USD 10,000, 90-day, non interest-bearing note to the bank, which discounted the note at 9 percent. The discount is USD 225 ($USD\ 10,000 \times 0.09 \times 90/360$), and the proceeds to Needham are USD 9,775. The entry required on the date of the note's issue is:

2009				
Dec.	1	Cash (+A)	9,775	
		Discount on Notes Payable (-L)	225	
		Notes Payable (+L)		
		Issued a 90-day note to bank.		10,000

Needham credits Notes Payable for the face value of the note. **Discount on notes payable** is a contra account used to reduce Notes Payable from face value to the net amount of the debt. The balance in the Discount on Notes Payable account appears on the balance sheet as a deduction from the balance in the Notes Payable account.

Over time, the discount becomes interest expense. If Needham paid the note before the end of the fiscal year, it would charge the entire USD 225 discount to Interest Expense and credit Discount on Notes Payable. However, if Needham's fiscal year ended on December 31, an adjusting entry would be required as follows:

2009				
Dec.	31	Interest Expense (-SE)	75	
		Discount on Notes Payable (+L)		75
		To record accrued interest on note payable at year-end.		

This entry records the interest expense incurred by Needham for the 30 days the note has been outstanding. The expense can be calculated as USD 10,000 X 0.09 X 30/360, or 30/90 X USD 225. Notice that for entries involving discounted notes payable, no separate Interest Payable account is needed. The Notes Payable account already contains the total liability that will be paid at maturity, USD 10,000. From the date the proceeds are given to the borrower to the maturity date, the liability grows by reducing the balance in the Discount on Notes Payable contra account. Thus, the current liability section of the 2009 December 31, balance sheet would show:

Current Liabilities:	
Notes payable	\$ 10,000
Less: Discount on notes payable	150 \$ 9,850

When the note is paid at maturity, the entry is:

2010			
Mar.	1	Notes Payable (-L)	10,000
		Interest Expense (-SE)	150
		Cash (-A)	10,000
		Discount on Notes Payable (+L)	150
To record note payment and interest expense.			

The T-accounts for Discount on Notes Payable and for Interest Expense appear as follows:

Discount on Notes Payable				Interest Expense			
2009		2009		2009		2009	
Dec. 1	225	Dec. 31	75	Dec. 31	75	Dec. 31	To close 75
Dec. 31	Balance 150	2010		2010			
		Mar. 1	150	Mar. 1	150		

In Exhibit 3, we compare the journal entries for interest-bearing notes and non-interest-bearing notes used by Needham Company.

Interest-Bearing Notes				Non interest-Bearing Notes			
2009				2009			
Dec.	1	Cash (+A)	10,000	Dec.	1	Cash (+A)	9,775
		Notes Payable (+L)	10,000			Discount on Notes Payable (-L)	225
		To record 90-day bank loan,				Notes Payable (+L)	10,000
						To record 90-day bank loan.	
	31	Interest Expense (-SE)	75	31	Interest Expense (-SE)	75	
		Interest Payable (+L)	75			Discount on Notes Payable (+L)	75
		To record accrued interest on a note payable at year-end.				To record accrued interest on a note payable at year-end.	
2010				2010			
Mar.	1	Notes Payable (-L)	10,000	Mar.	1	Notes Payable (-L)	10,000
		Interest Expense (-SE)	150			Interest Expense (-SE)	150
		Interest Payable (-L)	75			Cash (-A)	10,000
		Cash (-A)	10,225			Discount on Notes Payable (+L)	150
		To record note principal and				To record note payment and	

Exhibit 3: Comparison between interest-bearing notes and noninterest-bearing notes

9.7 Analyzing and using the financial results—Accounts receivable turnover

Accounts receivable turnover is the number of times per year that the average amount of accounts receivable is collected. To calculate this ratio divide net credit sales, or net sales, by the average net accounts receivable (accounts receivable after deducting the allowance for uncollectible accounts):

$$\text{Accounts receivable turnover} = \frac{\text{Net credit sales (net sales)}}{\text{Average net accounts receivable}}$$

Ideally, average net accounts receivable should represent weekly or monthly averages; often, however, beginning and end-of-year averages are the only amounts available to users outside the company. Although analysts should use net credit sales, frequently net credit sales are not known to those outside the company. Instead, they use net sales in the numerator.

Generally, the faster firms collect accounts receivable, the better. A company with a high accounts receivable turnover ties up a smaller proportion of its funds in accounts receivable than a company with a low turnover. Both the company's credit terms and collection policies affect turnover. For instance, a company with credit terms of 2/10, n/30 would expect a higher turnover than a company with terms of n/60. Also, a company that aggressively pursues overdue accounts receivable has a higher turnover of accounts receivable than one that does not.

For example, we calculated these accounts receivable turnovers for the following hypothetical companies:

	Net Sales (millions)	Accounts Receivable Average	
	Net	Net	Turnover
Abercrombie & Fitch	\$ 1,238	\$ 14	88.43
The Limited, Inc.	10,105	1,012	10.00

We calculate the **number of days' sales in accounts receivable** (also called the average collection period for accounts receivable) as follows:

$$\text{Number of days' sales per accounts receivable} = \frac{\text{Number of days per a year (365)}}{\text{Accounts receivable turnover}}$$

This ratio measures the average liquidity of accounts receivable and gives an indication of their quality. The faster a firm collects receivables, the more liquid (the closer to being cash) they are and the higher their quality. The longer accounts receivable remain outstanding, the greater the probability they never will be collected. As the time period increases, so does the probability that customers will declare bankruptcy or go out of business.

Based on 365 days, we calculated the number of days' sales for each of these hypothetical companies:

Company	Accounts Receivable Turnover	Number of Day's Sales in
Abercrombie & Fitch	88.43	4.1
The Limited, Inc.	10.00	36.5

These companies have collection periods ranging from 4.1 to 36.5 days. Assuming credit terms of 2/10, n/30, one would expect the average collection period to be under 30 days. If customers do not pay within 10 days and take the discount offered, they incur an annual interest rate of 36.5 percent on these funds. (They lose a 2 percent discount and get to use the funds another 20 days, which is equivalent to an annual rate of 36.5 percent.)

Having studied receivables and payables in this chapter, you will study plant assets in the next chapter. These long-term assets include land and depreciable assets such as buildings, machinery, and equipment.

9.7.1 Understanding the learning objectives

- Companies use two methods to account for uncollectible accounts receivable: the allowance method, which provides in advance for uncollectible accounts; and the direct write-off method, which recognizes uncollectible accounts as an expense when judged uncollectible. The allowance method is the preferred method and is the only method discussed and illustrated in this text.
- The two basic methods for estimating uncollectible accounts under the allowance method are the percentage-of-sales method and the percentage-of-receivables method.

- The percentage-of-sales method focuses attention on the income statement and the relationship of uncollectible accounts to sales. The debit to Uncollectible Accounts Expense is a certain percent of credit sales or total net sales.

- The percentage-of-receivables method focuses attention on the balance sheet and the relationship of the allowance for uncollectible accounts to accounts receivable. The credit to the Allowance for Uncollectible Accounts is the amount necessary to bring that account up to a certain percentage of the Accounts Receivable balance. Either one overall percentage or an aging schedule may be used.

- Credit cards are charge cards used by customers to charge purchases of goods and services. These cards are of two types—nonbank credit cards (such as American Express) and bank credit cards (such as VISA).

- The sale is recorded at the gross amount of the sale, and the cash or receivable is recorded at the net amount the company will receive.

- Liabilities result from some past transaction and are obligations to pay cash, provide services, or deliver goods at some time in the future.

- Current liabilities are obligations that (1) are payable within one year or one operating cycle, whichever is longer, or (2) will be paid out of current assets or create other current liabilities.

- Long-term liabilities are obligations that do not qualify as current liabilities.

- Clearly determinable liabilities are those for which the existence of the liability and its amount are certain. An example is accounts payable.

- Estimated liabilities are those for which the existence of the liability is certain, but its amount can only be estimated. An example is estimated product warranty payable.

- Contingent liabilities are those for which the existence, and usually the amount, are uncertain because these liabilities depend (or are contingent) on some future event occurring or not occurring. An example is a liability arising from a lawsuit.

- A promissory note is an unconditional written promise by a borrower (maker) to pay the lender (payee) or someone else who legally acquired the note a certain sum of money on demand or at a definite time.

- Interest is the fee charged for the use of money through time.

Interest = Principal × Rate of interest × Time.

- Companies sometimes need short-term financing. Short-term financing may be secured by issuing interest-bearing notes or by issuing non interest-bearing notes.
- An interest-bearing note specifies the interest rate that will be charged on the principal borrowed.
- A non interest-bearing note does not have a stated interest rate applied to the face value of the note.
- Calculate accounts receivable turnover by dividing net credit sales, or net sales, by average net accounts receivable.
- Calculate the number of days' sales in accounts receivable (or average collection period) by dividing the number of days in the year by the accounts receivable turnover.
- Together, these ratios show the liquidity of accounts receivable and give some indication of their quality. Generally, the higher the accounts receivable turnover, the better; and the shorter the average collection period, the better.

9.7.2 Demonstration problem

Demonstration problem A a. Prepare the journal entries for the following transactions:

As of the end of 2010, Post Company estimates its uncollectible accounts expense to be 1 percent of sales. Sales in 2010 were USD 1,125,000.

On 2011 January 15, the company decided that the account for John Nunn in the amount of USD 750 was uncollectible.

On 2011 February 12, John Nunn's check for USD 750 arrived.

b. Prepare the journal entries in the records of Lyle Company for the following:

On 2010 June 15, Lyle Company received a USD 22,500, 90-day, 12 percent note dated 2010 June 15, from Stone Company in payment of its account.

Assume that Stone Company did not pay the note at maturity. Lyle Company decided that the note was uncollectible.

Demonstration problem B a. Prepare the entries on the books of Cromwell Company assuming the company borrowed USD 10,000 at 7 percent from First National Bank and signed a 60-day non interest-bearing note payable on 2009

December 1, accrued interest on 2009 December 31, and paid the debt on the maturity date.

b. Prepare the entries on the books of Cromwell Company assuming it purchased equipment from Jones Company for USD 5,000 and signed a 30-day, 9 percent interest-bearing note payable on 2010 February 24. Cromwell paid the note on its maturity date.

9.7.3 Solution to demonstration problem

Solution to demonstration problem A

a.

1.	2010 Dec.	31	Uncollectible Accounts Expense (-SE) Allowance for Uncollectible Accounts (-A) To record estimated Uncollectible accounts for the year.	11,250	
					11,250
2.	2011 Jan.	15	Allowance for Uncollectible Accounts (+A) Accounts Receivable—John Nunn (-A) To write off the account of John Nunn as Uncollectible.	750	
					750
3.	Feb.	12	Accounts Receivable—John Nunn (+A) Allowance for Uncollectible Accounts (-A) To correct the write-off of John Nunn's account on January 15.	750	
		12	Cash (+A) Accounts Receivable—John Nunn (-A) To record the collection of John Nunn's account receivable.	750	
					750

b.

1.	2010 June	15	Notes Receivable (+A) Accounts Receivable—Stone Company (-A) To record receipt of a note from Stone Company.	22,500	
					22,500
2.	Sept	13	Accounts Receivable—Stone Company (+A) Notes Receivable (-A) Interest Revenue(+SE) To record the default of the Stone Company note of \$22,500. Interest revenue was \$675.	23,175	
		13	Allowance for Uncollectible Accounts* (+A) Accounts Receivable—Stone Company (-A) To write off the Stone Company as uncollectible.	23,175	
					23,175

*This debt assumes that Notes Receivable were taken into consideration when an allowance was established. If not, the debit should be to Loss from Dishonored Notes Receivable.

Solution to demonstration problem B

a.

2009	1	Cash (+A)	9,883.33	
Dec.		Bank Discount ($\$10,000 \times 0.07 \times \frac{101}{36}$) (+A)	116.67	
		Notes Payable (+L)		10,000.00
	31	Interest Expense (-SE)	58.33	
		Bank Discount (-A)		58.33
		($\$10,000 \times 0.07 \times \frac{1}{36}$)		
2010	30	Notes Payable (-L)	10,000.00	
Jan.		Interest Expense (-SE)	58.33	
		Bank Discount (-A)		58.33
		Cash (-A)		10,000.00
b.				
2010	2	Equipment (+A)	5,000.00	
Feb	4	Notes Payable (+L)		5,000.00
Mar	2	Notes Payable (-L)	5,000.00	
	6	Interest Expense (-SE)	37.50	
		Cash (-A)		5,037.50
		($\$5,000 \times 0.09 \times \frac{30}{360}$) = \$37.50		675

9.8 Key terms

Accounts receivable turnover Net credit sales (or net sales) divided by average net accounts receivable.

Aging schedule A means of classifying accounts receivable according to their age; used to determine the necessary balance in an Allowance for Uncollectible Accounts. A different uncollectibility percentage rate is used for each age category.

Allowance for Uncollectible Accounts A contra-asset account to the Accounts Receivable account; it reduces accounts receivable to their net realizable value. Also called Allowance for Doubtful Accounts or Allowance for Bad Debts.

Bad debts expense See Uncollectible accounts expense.

Bank discount The difference between the maturity value of a note and the actual amount—the note's proceeds—given to the borrower.

Cash proceeds The maturity amount of a note less the bank discount.

Clearly determinable liabilities Liabilities whose existence and amount are certain. Examples include accounts payable, notes payable, interest payable, unearned delivery fees, wages payable, sales tax payable, federal excise tax payable, current portions of long-term debt, and various payroll liabilities.

Contingent liabilities Liabilities whose existence is uncertain. Their amount is also usually uncertain. Both their existence and amount depend on some future event that may or may not occur. Examples include liabilities arising from lawsuits, discounted notes receivable, income tax disputes, penalties that may be assessed because of some past action, and failure of another party to pay a debt that a company has guaranteed.

Credit Card Expense account Used to record credit card agency's service charges for services rendered in processing credit card sales.

Credit cards Nonbank charge cards (e.g. American Express) and bank charge cards (e.g. VISA and MasterCard) that customers use to charge their purchases of goods and services.

Current liabilities Obligations that (1) are payable within one year or one operating cycle, whichever is longer, or (2) will be paid out of current assets or result in the creation of other current liabilities.

Discount on Notes Payable A contra account used to reduce Notes Payable from face value to the net amount of the debt.

Discounting a note payable The act of borrowing on a non interest-bearing note drawn for a maturity amount, from which a bank discount is deducted, and the proceeds are given to the borrower.

Dishonored note A note that the maker failed to pay at maturity.

Estimated liabilities Liabilities whose existence is certain, but whose amount can only be estimated. An example is estimated product warranty payable.

Interest The fee charged for use of money over a period of time ($I = P \times R \times T$).

Interest Payable account An account showing the interest expense incurred but not yet paid; reported as a current liability in the balance sheet.

Interest Receivable account An account showing the interest earned but not yet collected; reported as a current asset in the balance sheet.

Liabilities Obligations that result from some past transaction and are obligations to pay cash, perform services, or deliver goods at some time in the future.

Long-term liabilities Obligations that do not qualify as current liabilities.

Maker (of a note) The party who prepares a note and is responsible for paying the note at maturity.

Maturity date The date on which a note becomes due and must be paid.

Maturity value The amount that the maker must pay on the note on its maturity date.

Net realizable value The amount the company expects to collect from accounts receivable.

Number of days' sales in accounts receivable The number of days in a year (365) divided by the accounts receivable turnover.

Operating cycle The time it takes to start with cash, buy necessary items to produce revenues (such as materials, supplies, labor, and/or finished goods), sell goods or services, and receive cash by collecting the resulting receivables.

Payable Any sum of money due to be paid by a company to any party for any reason.

Payee (of a note) The party who receives a note and will be paid cash at maturity.

Percentage-of-receivables method A method for determining the desired size of the Allowance for Uncollectible Accounts by basing the calculation on the Accounts Receivable balance at the end of the period.

Percentage-of-sales method A method of estimating the uncollectible accounts from the sales of a given period's total net credit sales or net sales.

Principal (of a note) The face value of a note.

Promissory note An unconditional written promise by a borrower (maker) to pay a definite sum of money to the lender (payee) on demand or at a specific date.

Rate (of a note) The stated interest rate on the note.

Receivable Any sum of money due to be paid to a company from any party for any reason.

Time (of a note) The amount of time the note is to run; can be expressed in days, months, or years.

Trade receivables Amounts customers owe a company for goods sold or services rendered on account. Also called accounts receivable or trade accounts receivable.

Uncollectible accounts expense An operating expense that a business incurs when it sells on credit; also called doubtful accounts expense or bad debts expense.

9.9 Self test

9.9.1 True-false

Indicate whether each of the following statements is true or false.

The percentage-of-sales method estimates the uncollectible accounts from the ending balance in Accounts Receivable.

Under the allowance method, uncollectible accounts expense is recognized when a specific customer's account is written off.

Bank credit card sales are treated as cash sales because the receipt of cash is certain.

Liabilities result from some future transaction.

Current liabilities are classified as clearly determinable, estimated, and contingent.

A dishonored note is removed from Notes Receivable, and the total amount due is recorded in Accounts Receivable.

When an interest-bearing note is given to a bank when taking out a loan, the difference between the cash proceeds and the maturity amount is debited to Discount on Notes Payable.

9.9.2 Multiple-choice

Select the best answer for each of the following questions.

Which of the following statements is false?

a. Any existing balance in the Allowance for Uncollectible Accounts is ignored in calculating the uncollectible accounts expense under the percentage-of-sales method except that the allowance account must have a credit balance after adjustment.

b. The percentage-of-receivables method may use either an overall rate or a different rate for each age category.

c. The Allowance for Uncollectible Accounts reduces accounts receivable to their net realizable value.

d. A write-off of an account reduces the net amount shown for accounts receivable on the balance sheet.

e. None of the above.

Hunt Company estimates uncollectible accounts using the percentage-of-receivables method and expects that 5 percent of outstanding receivables will be uncollectible for 2010. The balance in Accounts Receivable is USD 200,000, and the allowance account has a USD 3,000 credit balance before adjustment at year-end. The uncollectible accounts expense for 2010 will be:

a. USD 7,000.

b. USD 10,000.

c. USD 13,000.

d. USD 9,850.

e. None of the above.

Which type of company typically has the longest operating cycle?

a. Service company.

b. Merchandising company.

c. Manufacturing company.

d. All equal.

Maxwell Company records its sales taxes in the same account as sales revenues. The sales tax rate is 6 percent. At the end of the current period, the Sales account has a balance of USD 265,000. The amount of sales tax payable is:

a. USD 12,000.

b. USD 15,000.

c. USD 15,900.

d. USD 18,000.

Dawson Company sells fax machines. During 2010, the company sold 2,000 fax machines. The company estimates that 5 percent of the machines require repairs under warranty. To date, 30 machines have been repaired. The estimated average cost of warranty repairs per defective fax machine is USD 200. The required amount of the adjusting entry to record estimated product warranty payable is:

a. USD 400,000.

b. USD 6,000.

c. USD 14,000.

d. USD-0-.

To compute interest on a promissory note, all of the following elements must be known except:

a. The face value of the note.

b. The stated interest rate.

c. The name of the payee.

d. The life of the note.

e. None of the above.

Keats Company issued its own USD 10,000, 90-day, non interest-bearing note to a bank. If the note is discounted at 10 percent, the proceeds to Keats are:

a. USD 10,000.

b. USD 9,000.

c. USD 9,750.

d. USD 10,250.

e. None of the above.

Now turn to “Answers to self-test” at the back of the chapter to check your answers.

9.10 Questions

- In view of the difficulty in estimating future events, would you recommend that accountants wait until collections are made from customers before recording sales revenue? Should they wait until known accounts prove to be uncollectible before charging an expense account?

- The credit manager of a company has established a policy of seeking to completely eliminate all losses from uncollectible accounts. Is this policy a desirable objective for a company? Explain.
- What are the two major purposes of establishing an allowance for uncollectible accounts?
- In view of the fact that it is impossible to estimate the exact amount of uncollectible accounts receivable for any one year in advance, what exactly does the Allowance for Uncollectible Accounts account contain after a number of years?
- What must be considered before adjusting the allowance for uncollectible accounts under the percentage-of-receivables method?
- How might information in an aging schedule prove useful to management for purposes other than estimating the size of the required allowance for uncollectible accounts?
- For a company using the allowance method of accounting for uncollectible accounts, which of the following directly affects its reported net income: (1) the establishment of the allowance, (2) the writing off of a specific account, or (3) the recovery of an account previously written off as uncollectible?
- Why might a retailer agree to sell by credit card when such a substantial discount is taken by the credit card agency in paying the retailer?
- Define liabilities, current liabilities, and long-term liabilities.
- What is an operating cycle? Which type of company is likely to have the shortest operating cycle, and which is likely to have the longest operating cycle? Why?
- Describe the differences between clearly determinable, estimated, and contingent liabilities. Give one or more examples of each type.
- In what instances might a company acquire notes receivable?
- How is the maturity value of a note calculated?
- What is a dishonored note receivable and how is it reported in the balance sheet?

- Under what circumstances does the account Discount on Notes Payable arise? How is it reported in the financial statements? Explain why.
- **Real world question** Refer to "A Broader Perspective: GECS allowance for losses on financing receivables". What factors are taken into account by the General Electric Company in determining the adjusting entry to establish the desired balance in the Allowance for Losses?
- **Real world question** Refer to "A Broader Perspective: GECS allowance for losses on financing receivables". Explain how the General Electric Company writes off uncollectibles.

9.11 Exercises

Exercise A The accounts of Stackhouse Company as of 2010 December 31, show Accounts Receivable, USD 190,000; Allowance for Uncollectible Accounts, USD 950 (credit balance); Sales, USD 920,000; and Sales Returns and Allowances, USD 12,000. Prepare journal entries to adjust for possible uncollectible accounts under each of the following assumptions:

- a. Uncollectible accounts are estimated at 1 percent of net sales.
- b. The allowance is to be increased to 3 percent of accounts receivable.

Exercise B Compute the required balance of the Allowance for Uncollectible Accounts for the following receivables:

Accounts Receivable	Age (months)	Probability of Collection
\$180,000	Less than 1	95%
90,000	1-3	85
39,000	3-6	75
12,000	6-9	35
2,250	9-12	10

Exercise C On 2009 April 1, Kelley Company, which uses the allowance method of accounting for uncollectible accounts, wrote off Bob Dyer's USD 400 account. On 2009 December 14, the company received a check in that amount from Dyer marked "in full payment of account". Prepare the necessary entries.

Exercise D Jamestown Furniture Mart, Inc., sold USD 80,000 of furniture in May to customers who used their American Express credit cards. Such sales are subject to a 3 percent discount by American Express (a nonbank credit card),

a. Prepare journal entries to record the sales and the subsequent receipt of cash from the credit card company.

b. Do the same as requirement (a), but assume the credit cards used were VISA cards (a bank credit card).

Exercise E Dunwoody Discount Toys, Inc., sells merchandise in a state that has a 5 percent sales tax. Rather than record sales taxes collected in a separate account, the company records both the sales revenue and the sales taxes in the Sales account. At the end of the first quarter of operations, when it is time to remit the sales taxes to the state taxing agency, the company has USD 420,000 in the Sales account. Determine the correct amount of sales revenue and the amount of sales tax payable.

Exercise F Assume the following note appeared in the annual report of a company:

In 2009, two small retail customers filed separate suits against the company alleging misrepresentation, breach of contract, conspiracy to violate federal laws, and state antitrust violations arising out of their purchase of retail grocery stores through the company from a third party. Damages sought range up to USD 10 million in each suit for actual and treble damages and punitive damages of USD 2 million in one suit and USD 10 million in the other. The company is vigorously defending the actions and management believes there will be no adverse financial effect.

What kind of liability is being reported? Why is it classified this way? Do you think it is possible to calculate a dollar amount for this obligation? How much would the company have to pay if it lost the suit and had to pay the full amount?

Exercise G Determine the maturity date for each of the following notes:

Issue Date	Life	
2010 January 13	30	days
2010 January 31	90	days
2010 June 4	1	year
2010 December 2	1	month

Exercise H Crawford, Inc., gave a USD 20,000, 120-day, 12 percent note to Dunston, Inc., in exchange for merchandise. Crawford uses periodic inventory procedure. Prepare journal entries to record the issuance of the note and the entries needed at maturity for both parties, assuming payment is made.

Exercise I Based on the facts in the previous exercise, prepare the entries that Crawford, Inc., and Dunston, Inc., would make at the maturity date, assuming Crawford defaults.

Exercise J John Wood is negotiating a bank loan for his company, Wood, Inc., of USD 16,000 for 90 days. The bank's current interest rate is 10 percent. Prepare Wood's entries to record the loan under each of the following assumptions:

a. Wood signs a note for USD 16,000. Interest is deducted in calculating the proceeds turned over to him.

b. Wood signs a note for USD 16,000 and receives that amount. Interest is to be paid at maturity.

Exercise K Based on the previous exercise, prepare the entry or entries that would be made at the maturity date for each alternative, assuming the loan is paid before the end of the accounting period.

Exercise L Pistol Pete provides communication services and products, as well as network equipment and computer systems, to businesses, consumers, communications services providers, and government agencies. The following amounts were included in its 2010 annual report:

	(Millions)
Net sales	USD 79,609
Receivables, net, 2009 December 31	29,275
Receivables, net, 2008 December 31	28,623

Calculate the accounts receivable turnover and the number of days' sales in accounts receivable. Use net sales instead of net credit sales in the calculation. Comment on the results.

9.12 Problems

Problem A As of 2009 December 31, Fargo Company's accounts prior to adjustment show:

Allowance for uncollectible accounts (credit balance)

Accounts receivable	\$ 40,000
Allowance for uncollectible accounts (credit balance)	750
Sales	250,000

Fargo Company estimates uncollectible accounts at 1 percent of sales.

On 2010 February 23, the account of Dan Hall in the amount of USD 300 was considered uncollectible and written off. On 2010 August 12, Hall remitted USD 200 and indicated that he intends to pay the balance due as soon as possible. By 2010 December 31, no further remittance had been received from Hall and no further remittance was expected.

a. Prepare journal entries to record all of these transactions and adjusting entries.

b. Give the entry necessary as of 2009 December 31, if Fargo Company estimated its uncollectible accounts at 8 percent of outstanding receivables rather than at 1 percent of sales.

Problem B At the close of business, Jim's Restaurant had credit card sales of USD 12,000. Of this amount, USD 4,000 were VISA (bank credit card) sales invoices, which can be deposited in a bank for immediate credit, less a discount of 3 percent. The balance of USD 8,000 consisted of American Express (nonbank credit card) charges, subject to a 5 percent service charge. These invoices were mailed to American Express. Shortly thereafter, a check was received.

Prepare journal entries for all these transactions.

Problem C Ruiz Company sells merchandise in a state that has a 5 percent sales tax. On 2010 January 2, Ruiz sold goods with a sales price of USD 80,000 on credit. Sales taxes collected are recorded in a separate account. Assume that sales for the entire month were USD 900,000. On 2010 January 31, the company remitted the sales taxes collected to the state taxing agency.

a. Prepare the general journal entries to record the January 2 sales revenue. Also prepare the entry to show the remittance of the taxes on January 31.

b. Now assume that the merchandise sold on January 2 also is subject to federal excise taxes of 12 percent. The federal excise taxes collected are remitted to the proper agency on January 31. Show the entries on January 2 and January 31.

Problem D Honest Tim's Auto Company sells used cars and warrants all parts for one year. The average price per car is USD 10,000, and the company sold 900 in 2009. The company expects 30 percent of the cars to develop defective parts within one year of sale. The estimated average cost of warranty repairs per defective car is USD 600. By the end of the year, 80 cars sold that year had been returned and repaired under

warranty. On 2010 January 4, a customer returned a car purchased in 2009 for repairs under warranty. The repairs were made on January 8. The cost of the repairs included parts, USD 400, and labor, USD 210.

a. Calculate the amount of the estimated product warranty payable.

b. Prepare the entry to record the estimated product warranty payable on 2009 December 31.

c. Prepare the entry to record the repairs made on 2010 January 8.

Problem E Celoron Power Boat Company is in the power boat manufacturing business. As of 2010 September 1, the balance in its Notes Receivable account is USD 256,000. The balance in Dishonored Notes Receivable is USD 60,660 (includes the interest of USD 600 and the protest fee of USD 60). A schedule of the notes (including the dishonored note) is as follows:

Face Amount	Maker	Date of Note	Life	Interest Rate
\$ 100,000	C. Glass Co.	2009/6/01	120 days	12%
72,000	A. Lamp Co.	2009/6/15	90	8
84,000	C. Wall Co.	2009/7/01	90	10
60,000	N. Case Co.	2009/7/01	60	6
\$316,000				

Following are Celoron Power Boat Company's transactions for September:

Sept. 10 Received USD 36,660 from N. Case Company as full settlement of the amount due from it. The company does not charge losses on notes to the Allowance for Uncollectible Accounts account.

? The A. Lamp Company note was collected when due.

? The C. Glass Company note was not paid at maturity.

? C. Wall Company paid its note at maturity.

30 Received a new 60-day, 12 percent note from C. Glass Company for the total balance due on the dishonored note. The note was dated as of the maturity date of the dishonored note. Celoron Power Boat Company accepted the note in good faith.

Prepare dated journal entries for these transactions.

Problem F Premium Office Equipment, Inc., discounted its own USD 30,000, non interest-bearing, 180-day note on 2009 November 16, at Niagara County Bank at a discount rate of 12 percent.

Prepare dated journal entries for:

a. The original discounting on November 16.

- b. The adjustment required at the end of the company's calendar-year accounting period.
- c. Payment at maturity.

9.13 Alternate problems

Alternate problem A The following selected accounts are for Keystone, Inc., a name brand shoe wholesale store, as of 2009 December 31. Prior to closing the accounts and making allowance for uncollectible accounts entries, the USD 5,000 account of Morgan Company is to be written off (this was a credit sale of 2009 February 12).

Accounts receivable	\$ 360,000
Allowance for uncollectible accounts (credit)	6,000
Sales	1,680,000
 Sales returns and allowances	 30,000

- a. Prepare journal entries to record all of these transactions and the uncollectible accounts expense for the period. Assume the estimated expense is 2 percent of net sales.
- b. Give the entry to record the estimated expense for the period if the allowance account is to be adjusted to 5 percent of outstanding receivables instead of as in (a).

Alternate problem B The cash register at Frank's Restaurant at the close of business showed cash sales of USD 7,500 and credit card sales of USD 10,000 (USD 6,000 VISA and USD 4,000 American Express). The VISA (bank credit card) invoices were discounted 5 percent when they were deposited. The American Express (nonbank credit card) charges were mailed to the company and were subject to a 5 percent service charge. A few days later, Frank received a check for the net amount of the American Express credit card charges.

Prepare journal entries for all of these transactions.

Alternate problem C Beacham Hardware, Inc., sells merchandise in a state that has a 6 percent sales tax. On 2010 July 1, it sold goods with a sales price of USD 20,000 on credit. Sales taxes collected are recorded in a separate account. Assume that sales for the entire month were USD 400,000. On 2010 July 31, the company remitted the sales taxes collected to the state taxing agency.

a. Prepare the general journal entries to record the July 1 sales revenue and sales tax payable. Also prepare the entry to show the remittance of the taxes on July 31.

b. Now assume that the merchandise sold also is subject to federal excise taxes of 10 percent in addition to the 6 percent sales tax. The company remitted the federal excise taxes collected to the proper agency on July 31. Show the entries on July 1 and July 31.

Alternate problem D Quick Wheels, Inc., sells racing bicycles and warrants all parts for one year. The average price per bicycle is USD 560, and the company sold 4,000 in 2009. The company expects 20 percent of the bicycles to develop defective parts within one year of sale. The estimated average cost of warranty repairs per defective bicycle is USD 40. By the end of the year, 500 bicycles sold that year had been returned and repaired under warranty. On 2010 January 2, a customer returned a bicycle purchased in 2009 for repairs under warranty. The repairs were made on January 3. The cost of the repairs included parts, USD 25, and labor, USD 15.

a. Calculate the amount of the estimated product warranty payable.

b. Prepare the entry to record the estimated product warranty payable on 2009 December 31.

c. Prepare the entry to record the repairs made on 2010 January 3.

Alternate problem E Vance Commercial Properties, Inc., has an accounting period of one year, ending on July 31. On 2009 July 1, the balances of certain ledger accounts are Notes Receivable, USD 654,000; and Notes Payable, USD 900,000. A schedule of the notes receivable is as follows:

Face Amount	Maker	Date of Note	Life	Interest Rate
\$ 270,000	Parker Co.	2009/5/15	60 days	12%
120,000	Dot Co.	2009/5/31	60	12
264,000	Fixx Co.	2009/6/15	30	10
\$654,000				

The note payable is a 60-day bank loan dated 2009 May 20. Notes Payable—Discount was debited for the discount of USD 6,000. Following are the company's transactions during July:

July 1 Vance Commercial Properties, Inc., discounted its own USD 90,000, 60-day, non interest-bearing note at Key Bank. The discount rate is 10 percent, and the note was dated today.

3 Received a 20-day, 12 percent note, dated today, from Sox Company in settlement of an account receivable of USD 36,000.

6 Purchased merchandise from Link Company, USD 288,000, and issued a 60-day, 12 percent note, dated today, for the purchase.

8 Sold merchandise to Fan Company, USD 360,000. A 30-day, 12 percent note, dated today, is received to cover the sale.

14 Received payment on the Parker Company note dated 2009 June 15.

15 Fixx Company sent a USD 120,000, 30-day, 12 percent note, dated today, and a check to cover the part of the old note not covered by the new note, plus all interest expense incurred on the prior note.

19 The note payable dated 2009 May 20, was paid in full.

23 Sox Company dishonored its note of July 3 and sent a check for the interest on the dishonored note and a new 30-day, 12 percent note dated 2009 July 23.

30 The Dot Company note dated 2009 May 31, was paid with interest in full.

Prepare dated journal entries for these transactions and necessary July 31 adjusting entries.

Alternate problem F On 2010 November 1, Grand Strand Property Management, Inc., discounted its own USD 50,000, 180-day, non interest-bearing note at its bank at 18 percent. The note was paid on its maturity date. The company uses a calendar-year accounting period.

Prepare dated journal entries to record (a) the discounting of the note, (b) the year-end adjustment, and (c) the payment of the note.

9.14 Beyond the numbers—Critical thinking

Business decision case A Sally Stillwagon owns a hardware store; she sells items for cash and on account. During 2009, which seemed to be a typical year, some of her company's operating data and other data were as follows:

Sales:	
For cash	\$1,200,000
On credit	2,200,000
Cost of obtaining credit reports on customers	3,600
Cost incurred in paying a part-time bookkeeper to keep the accounts receivable subsidiary ledger up to date	12,000
Cost associated with preparing and mailing invoices to customers and other collection activities	18,000
Uncollectible accounts expense	45,000
Average outstanding accounts receivable balance (on which	

A national credit card agency has tried to convince Stillwagon that instead of carrying her own accounts receivable, she should accept only the agency's credit card for sales on credit. The agency would pay her two days after she submits sales charges, deducting 6 percent from the amount and paying her 94 percent.

a. Using the data given, prepare an analysis showing whether or not Stillwagon would benefit from switching to the credit card method of selling on credit.

b. What other factors should she take into consideration?

Business decision case B Jim Perry operates a large fruit and vegetable stand on the outskirts of a city. In a typical year he sells USD 600,000 of goods to regular customers. His sales are 40 percent for cash and 60 percent on credit. He carries all of the credit himself. Only after a customer has a USD 300 unpaid balance on which no payments have been made for two months does he refuse that customer credit for future purchases. His income before taxes is approximately USD 95,000. The total of uncollectible accounts for a given year is USD 48,000.

You are one of Perry's regular customers. He knows that you are taking a college course in accounting and has asked you to tell him your opinion of several alternatives recommended to him to reduce or eliminate the USD 48,000 per year uncollectible accounts expense. The alternatives are as follows:

- Do not sell on credit.
- Sell on credit by national credit card only.
- Allow customers to charge only until their account balances reach USD 50.
- Allow a bill collector to go after uncollectible accounts and keep half of the amount collected.

Write a report for Perry about the advisability of following any of these alternatives.

Annual report analysis C Visit the Internet site:

<http://www.cocacola.com>

Locate the most recent annual reports of The Coca-Cola Company. Calculate accounts receivable turnover and the number of days' sales in accounts receivable and prepare a written comment on the results.

Group project D In groups of two or three students, write a two-page, double-spaced paper on one of the following topics:

Which is better—the percentage-of-sales method or the percentage-of-receivables method?

Why not eliminate bad debts by selling only for cash?

Why allow customers to use credit cards when credit card expense is so high?

Should banks be required to use 365 days instead of 360 days in interest calculations?

Present your analysis in a convincing manner, without spelling or grammatical errors. Include a cover page with the title and authors' names.

Group project E "Lapping" of accounts receivable has been used to conceal the fact that payments received on accounts receivable have been "borrowed" and used by an employee for personal use. With one or two other students, research this topic in the library. Write a paper to your instructor describing how this technique works and the steps that can be taken to detect it once it occurs and to prevent it in the future.

Group project F In a group of two or three students, visit a fairly large company in your community to investigate the effectiveness of its management of accounts receivable. Inquire about its credit and sales discount policies, collection policies, and how it establishes the amount for the adjusting entry for uncollectible accounts at year-end. Also ask about how it decides to write off accounts as uncollectible. Calculate its accounts receivable turnover and average collection period for each of the last two years. In view of its credit policies, does its collection period seem reasonable?

9.15 Using the Internet—A view of the real world

Visit one of the following Internet sites:

<http://www.federatedinvestors.com>

<http://www.dreyfus.com>

<http://www.invesco.com>

Follow some of the other options available at the site. Write a report to your instructor on your experience, describing some of the things you learned at this site. You may want to pretend that you invested in one or more of these funds for the duration of the quarter or semester and see how your investment would have fared during that period. Many investors with a limited amount to invest can have a

diversified portfolio by investing in mutual funds. Thus, they spread their risk by investing in a mutual fund that, in turn, invests in many different companies.

Visit Procter & Gamble's site at:

<http://www.pg.com>

Procter & Gamble markets more than 250 brands to nearly five billion consumers in over 140 countries. Click on any items that deal with financial news, annual report summary, stock quote, and anything else that looks interesting. Write a memo to your instructor summarizing your findings. Include in your memo some of the financial highlights contained in the annual report summary.

9.16 Answers to self test

9.16.1 True-false

False. The percentage-of-sales method estimates the uncollectible accounts from the net credit sales or net sales of a given period.

False. Uncollectible accounts expense is recognized at the end of the accounting period in an adjusting entry.

True. The retailer deposits the credit card invoices directly in a special checking account.

False. Liabilities result from a past transaction.

True. Current liabilities are classified into those three categories.

True. The note has passed its maturity date and should be removed from the Notes Receivable account. The maturity value plus any protest fee should be debited to Accounts Receivable.

False. Discount on Notes Payable is recorded when a non interest-bearing note is issued.

9.16.2 Multiple-choice

d. A write-off of an account receivable results in a debit to Allowance for Uncollectible Accounts and a credit to Accounts Receivable for the same amount. The net amount (accounts receivable minus allowance for uncollectible accounts) does not change.

a. The uncollectible accounts expense for 2010 is computed as follows:

Allowance balance after adjustment	
(\$200,000 X 0.05)	\$ 10,000
Balance before adjustment	(3,000)
Uncollectible accounts expense	\$7,000

c. Manufacturing companies tend to have the longest operating cycle. They must invest cash in raw materials, convert these raw materials into work in process and then finished goods, sell the items on account, and then collect the accounts receivable.

b. $\frac{\text{USD } 265,000}{1.06} = \text{USD } 250,000;$

$\text{USD } 265,000 - \text{USD } 250,000 = \text{USD } 15,000.$

c. $2,000 \times 5 \text{ per cent} = 100$ machines is defective.

$100 - 30$ already returned = 70 more expected to be returned.

$70 \times \text{USD } 200 = \text{USD } 14,000$ estimated product warranty payable.

c. The name of the payee is not needed to compute interest expense on a promissory note.

c. The proceeds from a bank are computed as follows:

Discount amount = $\text{USD } 10,000 \times 0.10 \times \frac{90}{360} = \text{USD } 250$

Proceeds = $\text{USD } 10,000 - \text{USD } 250 = \text{USD } 9,750$

10 Property, plant, and equipment

10.1 Learning objectives

After studying this chapter, you should be able to:

- List the characteristics of plant assets and identify the costs of acquiring plant assets.
- List the four major factors affecting depreciation expense.
- Describe the various methods of calculating depreciation expense.
- Distinguish between capital and revenue expenditures for plant assets.
- Describe the subsidiary records used to control plant assets.
- Analyze and use the financial results—rate of return on operating assets.

10.2 A company accountant's role in managing plant assets

Property, plant, and equipment (fixed assets or operating assets) compose more than one-half of total assets in many corporations. These resources are necessary for the companies to operate and ultimately make a profit. It is the efficient use of these resources that in many cases determines the amount of profit corporations will earn.

Accountants employed by a company are deeply involved in nearly all decisions regarding the company's fixed assets, from pre-acquisition planning to the ultimate disposal or sale of those assets. Companies do not view an asset acquisition as merely a purchase, but as an investment. For example, should your company or client purchase an airplane to visit clients? Accountants will investigate all the benefits, both financial and intangible, and compare these benefits to the costs. By determining whether or not the airplane will be a good investment for the company, the accountant can assist the company in making sound strategic business decisions.

Since these assets are so closely related to profits, good management is required. In accounting terms, a good return on operating assets is crucial to the success of the corporation. Many corporations have a staff of accountants whose primary task is to manage operating assets. This task involves making decisions concerning the purchase, use, and disposal of said assets. Once an asset has been acquired, accountants are

responsible for determining the original value of the asset, the period over which it will extend benefits to the company, and its current market value while owned by the entity. The accountant must ultimately determine when and how to dispose of such an asset. The decision can range from trading the asset for a new asset to selling the asset to a salvage dealer.

Recently, The Williams Companies, Inc. had over USD 10 billion dollars in property, plant, and equipment. In addition, the company also had approximately USD 530 million in commitments for construction and acquisition of property, plant, and equipment. Managing a portfolio of assets of this magnitude takes both accounting knowledge and analytical skills. Successful management of these assets can be financially rewarding to both the company and the accountant.

On a classified balance sheet, the asset section contains: (1) current assets; (2) property, plant, and equipment; and (3) other categories such as intangible assets and long-term investments. Previous chapters discussed current assets. This chapter begins a discussion of property, plant, and equipment that is concluded in Chapter 11. Property, plant, and equipment are often called **plant and equipment** or simply plant assets. Plant assets are long-lived assets because they are expected to last for more than one year. Long-lived assets consist of tangible assets and intangible assets. **Tangible assets** have physical characteristics that we can see and touch; they include plant assets such as buildings and furniture, and natural resources such as gas and oil. **Intangible assets** have no physical characteristics that we can see and touch but represent exclusive privileges and rights to their owners.

10.3 Nature of plant assets

To be classified as a plant asset, an asset must: (1) be tangible, that is, capable of being seen and touched; (2) have a useful service life of more than one year; and (3) be used in business operations rather than held for resale. Common plant assets are buildings, machines, tools, and office equipment. On the balance sheet, these assets appear under the heading "Property, plant, and equipment".

Plant assets include all long-lived tangible assets used to generate the principal revenues of the business. Inventory is a tangible asset but not a plant asset because inventory is usually not long-lived and it is held for sale rather than for use. What

represents a plant asset to one company may be inventory to another. For example, a business such as a retail appliance store may classify a delivery truck as a plant asset because the truck is used to deliver merchandise. A business such as a truck dealership would classify the same delivery truck as inventory because the truck is held for sale. Also, land held for speculation or not yet put into service is a long-term investment rather than a plant asset because the land is not being used by the business. However, standby equipment used only in peak or emergency periods is a plant asset because it is used in the operations of the business.

Accountants view plant assets as a collection of service potentials that are consumed over a long time. For example, over several years, a delivery truck may provide 100,000 miles of delivery services to an appliance business. A new building may provide 40 years of shelter, while a machine may perform a particular operation on 400,000 parts. In each instance, purchase of the plant asset actually represents the advance payment or prepayment for expected services. Plant asset costs are a form of prepaid expense. As with short-term prepayments, the accountant must allocate the cost of these services to the accounting periods benefited.

Accounting for plant assets involves the following four steps:

- Record the acquisition cost of the asset.
- Record the allocation of the asset's original cost to periods of its useful life through depreciation.
- Record subsequent expenditures on the asset.
- Account for the disposal of the asset.

In Exhibit 4, note how the asset's life begins with its procurement and the recording of its acquisition cost, which is usually in the form of a dollar purchase. Then, as the asset provides services through time, accountants record the asset's depreciation and any subsequent expenditures related to the asset. Finally, accountants record the disposal of the asset. We discuss the first three steps in this chapter and the disposal of an asset in Chapter 11. The last section in this chapter explains how accountants use subsidiary ledgers to control assets.

Remember that in recording the life history of an asset, accountants match expenses related to the asset with the revenues generated by it. Because measuring the periodic

expense of plant assets affects net income, accounting for property, plant, and equipment is important to financial statement users.

10.4 Initial recording of plant assets

When a company acquires a plant asset, accountants record the asset at the cost of acquisition (historical cost). This cost is objective, verifiable, and the best measure of an asset's fair market value at the time of purchase. **Fair market value** is the price received for an item sold in the normal course of business (not at a forced liquidation sale). Even if the market value of the asset changes over time, accountants continue to report the acquisition cost in the asset account in subsequent periods.

The **acquisition cost** of a plant asset is the amount of cash or cash equivalents given up to acquire and place the asset in operating condition at its proper location. Thus, cost includes all normal, reasonable, and necessary expenditures to obtain the asset and get it ready for use. Acquisition cost also includes the repair and reconditioning costs for used or damaged assets. Unnecessary costs (such as traffic tickets or fines) that must be paid as a result of hauling machinery to a new plant are not part of the acquisition cost of the asset.

The next sections discuss which costs are capitalized (debited to an asset account) for: (1) land and land improvements; (2) buildings; (3) group purchases of assets; (4) machinery and other equipment; (5) self-constructed assets; (6) noncash acquisitions; and (7) gifts of plant assets.

The cost of land includes its purchase price and other costs such as option cost, real estate commissions, title search and title transfer fees, and title insurance premiums. Also included are an existing mortgage note or unpaid taxes (back taxes) assumed by the purchaser; costs of surveying, clearing, and grading; and local assessments for sidewalks, streets, sewers, and water mains. Sometimes land purchased as a building site contains an unusable building that must be removed. Then, the accountant debits the entire purchase price to Land, including the cost of removing the building less any cash received from the sale of salvaged items while the land is being readied for use.

Illustration 10.1 Recording the Life History of a Depreciable Asset

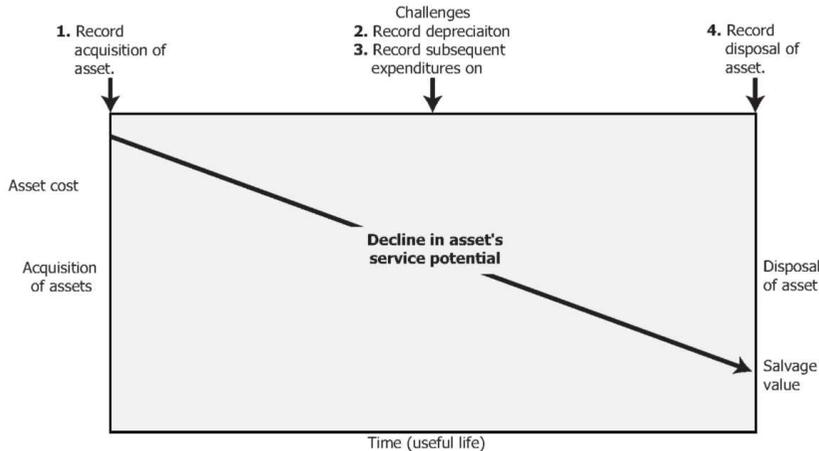


Exhibit 4: Recording the life history of a depreciable asset

To illustrate, assume that Spivey Company purchased an old farm on the outskirts of San Diego, California, USA, as a factory site. The company paid USD 225,000 for the property. In addition, the company agreed to pay unpaid property taxes from previous periods (called back taxes) of USD 12,000. Attorneys' fees and other legal costs relating to the purchase of the farm totaled USD 1,800. Spivey demolished (razed) the farm buildings at a cost of USD 18,000. The company salvaged some of the structural pieces of the building and sold them for USD 3,000. Because the firm was constructing a new building at the site, the city assessed Spivey Company USD 9,000 for water mains, sewers, and street paving. Spivey computed the cost of the land as follows:

	Land
Cost of factory site	\$225,000
Back taxes	12,000
Attorneys' fees and other legal costs	1,800
Demolition	18,000
Sale of salvaged parts	(3,000)
City assessment	9,000
	\$262,800

Accountants assigned all costs relating to the farm purchase and razing of the old buildings to the Land account because the old buildings purchased with the land were not usable. The real goal was to purchase the land, but the land was not available without the buildings.

Land is considered to have an unlimited life and is therefore not depreciable. However, **land improvements**, including driveways, temporary landscaping, parking lots, fences, lighting systems, and sprinkler systems, are attachments to the land. They have limited lives and therefore are depreciable. Owners record depreciable land improvements in a separate account called Land Improvements. They record the cost of permanent landscaping, including leveling and grading, in the Land account.

When a business buys a building, its cost includes the purchase price, repair and remodeling costs, unpaid taxes assumed by the purchaser, legal costs, and real estate commissions paid.

Determining the cost of constructing a new building is often more difficult. Usually this cost includes architect's fees; building permits; payments to contractors; and the cost of digging the foundation. Also included are labor and materials to build the building; salaries of officers supervising the construction; and insurance, taxes, and interest during the construction period. Any miscellaneous amounts earned from the building during construction reduce the cost of the building. For example, an owner who could rent out a small completed portion during construction of the remainder of the building, would credit the rental proceeds to the Buildings account rather than to a revenue account.

Sometimes a company buys land and other assets for a lump sum. When land and buildings purchased together are to be used, the firm divides the total cost and establishes separate ledger accounts for land and for buildings. This division of cost establishes the proper balances in the appropriate accounts. This is especially important later because the depreciation recorded on the buildings affects reported income, while no depreciation is taken on the land.

Returning to our example of Spivey Company, suppose one of the farm buildings was going to be remodeled for use by the company. Then, Spivey would determine what portion of the purchase price of the farm, back taxes, and legal fees (USD 225,000 + USD 12,000 + USD 1,800 = USD 238,800) it could assign to the buildings and what portion to the land. (The net cost of demolition would not be incurred, and the city assessment would be incurred at a later time.) Spivey would assign the USD 238,800 to the land and the buildings on the basis of their appraised values. For example, assume that the land was appraised at USD 162,000 and the buildings at

USD 108,000. Spivey would determine the cost assignable to each of these plant assets as follows:

Asset	Appraised Value	percent of Total Value	
Land	\$162,000	60% (162/270)	
Buildings	108,000	40 (108/270)	
	\$270,000	100% (270/270)	
	percent of Total Value	X Purchase Price =	Cost Assigned
Land	60%	X \$238,800* =	\$ 143,280
Buildings	40	X \$238,800 =	95,520
			\$ 238,800

*The purchase price is the sum of the cash price, back taxes, and legal fees.

The journal entry to record the purchase of the land and buildings would be:

Land (+A)	143,280	
Buildings (+A)	95,520	
Cash (-A)		238,800
To record the purchase of land and buildings.		

When the city eventually assessed the charges for the water mains, sewers, and street paving, the company would still debit these costs to the Land account as in the previous example.

Often companies purchase machinery or other equipment such as delivery or office equipment. Its cost includes the seller's net invoice price (whether the discount is taken or not), transportation charges incurred, insurance in transit, cost of installation, costs of accessories, and testing and break-in costs. Also included are other costs needed to put the machine or equipment in operating condition in its intended location. The cost of machinery does not include removing and disposing of a replaced, old machine that has been used in operations. Such costs are part of the gain or loss on disposal of the old machine, as discussed in Chapter 11.

To illustrate, assume that Clark Company purchased new equipment to replace equipment that it has used for five years. The company paid a net purchase price of USD 150,000, brokerage fees of USD 5,000, legal fees of USD 2,000, and freight and insurance in transit of USD 3,000. In addition, the company paid USD 1,500 to remove old equipment and USD 2,000 to install new equipment. Clark would compute the cost of new equipment as follows:

Net purchase price	\$150,000
Brokerage fees	5,000
Legal fees	2,000
Freight and insurance in transit	3,000

If a company builds a plant asset for its own use, the cost includes all materials and labor directly traceable to construction of the asset. Also included in the cost of the asset are interest costs related to the asset and amounts paid for utilities (such as heat, light, and power) and for supplies used during construction. To determine how much of these indirect costs to capitalize, the company compares utility and supply costs during the construction period with those costs in a period when no construction occurred. The firm records the increase as part of the asset's cost. For example, assume a company normally incurred a USD 600 utility bill for June. This year, the company constructed a machine during June, and the utility bill was USD 975. Thus, it records the USD 375 increase as part of the machine's cost.

To illustrate further, assume that Tanner Company needed a new die-casting machine and received a quote from Smith Company for USD 23,000, plus USD 1,000 freight costs. Tanner decided to build the machine rather than buy it. The company incurred the following costs to build the machine: materials, USD 4,000; labor, USD 13,000; and indirect services of heat, power, and supplies, USD 3,000. Tanner would record the machine at its cost of USD 20,000 (USD 4,000 + USD 13,000 + USD 3,000) rather than USD 24,000, the purchase price of the machine. The USD 20,000 is the cost of the resources given up to construct the machine. Also, recording the machine at USD 24,000 would require Tanner to recognize a gain on construction of the assets. Accountants do not subscribe to the idea that a business can earn revenue (or realize a gain), and therefore net income, by dealing with itself.

You can apply the general guidelines we have just discussed to other plant assets, such as furniture and fixtures. The accounting methods are the same.

When a plant asset is purchased for cash, its acquisition cost is simply the agreed on cash price. However, when a business acquires plant assets in exchange for other noncash assets (shares of stock, a customer's note, or a tract of land) or as gifts, it is more difficult to establish a cash price. This section discusses three possible asset valuation bases.

The general rule on noncash exchanges is to value the noncash asset received at its fair market value or the fair market value of what was given up, whichever is more clearly evident. The reason for not using the book value of the old asset to value the new asset is that the asset being given up is often carried in the accounting records at

historical cost or book value. Neither amount may adequately represent the actual fair market value of either asset. Therefore, if the fair market value of one asset is clearly evident, a firm should record this amount for the new asset at the time of the exchange.

Appraised value Sometimes, neither of the items exchanged has a clearly determinable fair market value. Then, accountants record exchanges of items at their appraised values as determined by a professional appraiser. An **appraised value** is an expert's opinion of an item's fair market price if the item were sold. Appraisals are used often to value works of art, rare books, and antiques.

Book value The **book value** of an asset is its recorded cost less accumulated depreciation. An old asset's book value is usually not a valid indication of the new asset's fair market value. If a better basis is not available, however, a firm could use the book value of the old asset.

Occasionally, a company receives an asset without giving up anything for it. For example, to attract industry to an area and provide jobs for local residents, a city may give a company a tract of land on which to build a factory. Although such a gift costs the recipient company nothing, it usually records the asset (Land) at its fair market value. Accountants record gifts of plant assets at fair market value to provide information on all assets owned by the company. Omitting some assets may make information provided misleading. They would credit assets received as gifts to a stockholders' equity account titled Paid-in Capital—Donations.

An accounting perspective:

Use of technology

How can CPA firms sell services on the Web other than by advertising their services? Ernst & Young has developed a website for nonaudit consulting clients in which they charge an annual fixed fee for nonaudit clients to obtain advice from the firm's consultants. The site is secure in that it can only be accessed by those who have paid the fee. The subscribers type in their questions on any business topic and get a response from an expert within two working days. Another firm, PricewaterhouseCoopers, has an on-line service for tax professionals to

seek advice. The other large accounting firms undoubtedly have developed or are developing secure websites for providing similar types of services.

10.5 Depreciation of plant assets

Companies record depreciation on all plant assets except land. Since the amount of depreciation may be relatively large, depreciation expense is often a significant factor in determining net income. For this reason, most financial statement users are interested in the amount of, and the methods used to compute, a company's depreciation expense.

Depreciation is the amount of plant asset cost allocated to each accounting period benefiting from the plant asset's use. Depreciation is a process of allocation, not valuation. Eventually, all assets except land wear out or become so inadequate or outmoded that they are sold or discarded; therefore, firms must record depreciation on every plant asset except land. They record depreciation even when the market value of a plant asset temporarily rises above its original cost because eventually the asset is no longer useful to its current owner.

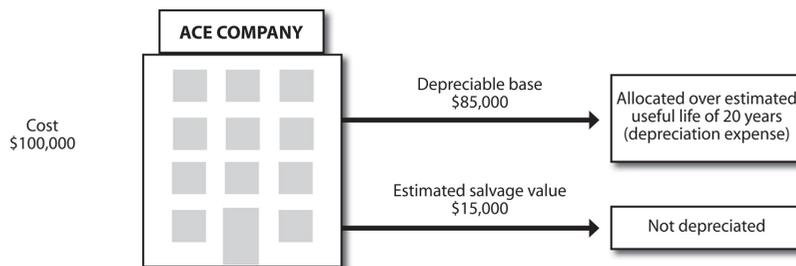


Exhibit 5: Factors affecting depreciation

Major causes of depreciation are (1) physical deterioration, (2) inadequacy for future needs, and (3) obsolescence. **Physical deterioration** results from the use of the asset—wear and tear—and the action of the elements. For example, an automobile may have to be replaced after a time because its body rusted out. The **inadequacy** of a plant asset is its inability to produce enough products or provide enough services to

meet current demands. For example, an airline cannot provide air service for 125 passengers using a plane that seats 90. The **obsolescence** of an asset is its decline in usefulness brought about by inventions and technological progress. For example, the development of the xerographic process of reproducing printed matter rendered almost all previous methods of duplication obsolete.

The use of a plant asset in business operations transforms a plant asset cost into an operating expense. Depreciation, then, is an operating expense resulting from the use of a depreciable plant asset. Because depreciation expense does not require a current cash outlay, it is often called a noncash expense. The purchaser gave up cash in the period when the asset was acquired, not during the periods when depreciation expense is recorded.

To compute depreciation expense, accountants consider four major factors:

- Cost of the asset.
- Estimated salvage value of the asset. **Salvage value** (or scrap value) is the amount of money the company expects to recover, less disposal costs, on the date a plant asset is scrapped, sold, or traded in.
- Estimated useful life of the asset. **Useful life** refers to the time the company owning the asset intends to use it; useful life is not necessarily the same as either economic life or physical life. The economic life of a car may be 7 years and its physical life may be 10 years, but if a company has a policy of trading cars every 3 years, the useful life for depreciation purposes is 3 years. Various firms express useful life in years, months, working hours, or units of production. Obsolescence also affects useful life. For example, a machine capable of producing units for 20 years, may be expected to be obsolete in 6 years. Thus, its estimated useful life is 6 years—not 20. Another example, on TV you may have seen a demolition crew setting off explosives in a huge building (e.g. The Dunes Hotel and Casino in Las Vegas, Nevada, USA) and wondering why the owners decided to destroy what looked like a perfectly good building. The building was destroyed because it had reached the end of its economic life. The land on which the building stood could be put to better use, possibly by constructing a new building.
- Depreciation method used in depreciating the asset. We describe the four common depreciation methods in the next section.

Method	Number of Companies			
	2003	2002	2001	2000
Straight-line	580	579	579	576
Declining Balance	22	22	22	22
Sum of year's digits	5	5	6	7
Accelerated method-not specified	41	44	49	53
Units of production	30	32	32	34
Other	4	7	9	10

Source: Based on American Institute of Certified Public Accountants, Accounting Trends & Techniques (New York: AICPA, 2004), p. 409.

Exhibit 6: Depreciation method used

In Exhibit 5, note the relationship among these factors. Assume Ace Company purchased an office building for USD 100,000. The building has an estimated salvage value of USD 15,000 and a useful life of 20 years. The depreciable cost of the building is USD 85,000 (cost less estimated salvage value). Ace would allocate this depreciable base over the useful life of the building using the proper depreciation method under the circumstances.

Today, companies can use many different methods to calculate depreciation on assets.³ This section discusses and illustrates the most common methods—straight-line, units-of-production, and accelerated depreciation method (double-declining-balance).

As is true for inventory methods, normally a company is free to adopt the most appropriate depreciation method for its business operations. According to accounting theory, companies should use a depreciation method that reflects most closely their underlying economic circumstances. Thus, companies should adopt the depreciation method that allocates plant asset cost to accounting periods according to the benefits received from the use of the asset. Exhibit 6 shows the frequency of use of these methods for 600 companies. You can see that most companies use the straight-line method for financial reporting purposes. Note that some companies use one method for certain assets and another method for other assets. In practice, measuring the benefits from the use of a plant asset is impractical and often not possible. As a result, a depreciation method must meet only one standard: the depreciation method must

³ Because depreciation expense is an estimate, calculations may be rounded to the nearest dollar.

allocate plant asset cost to accounting periods in a systematic and rational manner. The following four methods meet this requirement.

An accounting perspective:

Business insight

Regardless of the method or methods of depreciation chosen, companies must disclose their depreciation methods in the footnotes to their financial statements. They include this information in the first footnote, which summarizes significant accounting policies.

The disclosure is generally straightforward: Sears, Roebuck & Co. operates department stores, paint and hardware stores, auto supply stores, and eye wear stores. Its annual report states simply that "depreciation is provided principally by the straight-line method". Companies may use different depreciation methods for different assets. General Electric Company is a highly diversified multinational corporation that develops, manufactures, and markets aerospace products, major appliances, industrial products, and high-performance engineered plastics. It uses an accelerated method for most of its property, plant, and equipment; however, it depreciates some assets on a straight-line basis, while the company's mining properties are depreciated under the units-of-production method.

In the illustrations of the four depreciation methods that follow, we assume the following: On 2010 January 1, a company purchased a machine for USD 54,000 with an estimated useful life of 10 years, or 50,000 units of output, and an estimated salvage value of USD 4,000.

Straight-line method **Straight-line depreciation** has been the most widely used depreciation method in the United States for many years because, as you saw in Chapter 3, it is easily applied. To apply the straight-line method, a firm charges an equal amount of plant asset cost to each accounting period. The formula for calculating depreciation under the straight-line method is:

$$\text{Depreciation per period} = \frac{\text{Asset cost} - \text{Estimated salvage value}}{\text{Number of accounting periods for estimated useful life}}$$

Using our example of a machine purchased for USD 54,000, the depreciation is:

$$\frac{\$54,000 - \$4,000}{10 \text{ years}} = \$5,000 \text{ per year}$$

In Exhibit 7, we present a schedule of annual depreciation entries, cumulative balances in the accumulated depreciation account, and the book (or carrying) values of the USD 54,000 machine.

Using the straight-line method for assets is appropriate where (1) time rather than obsolescence is the major factor limiting the asset's life and (2) the asset produces relatively constant amounts of periodic services. Assets that possess these features include items such as pipelines, fencing, and storage tanks.

Units-of-production (output) method The **units-of-production depreciation** method assigns an equal amount of depreciation to each unit of product manufactured or service rendered by an asset. Since this method of depreciation is based on physical output, firms apply it in situations where usage rather than obsolescence leads to the demise of the asset. Under this method, you would compute the depreciation charge per unit of output. Then, multiply this figure by the number of units of goods or services produced during the accounting period to find the period's depreciation expense. The formula is:

$$\text{Depreciation per unit} = \frac{\text{Asset cost} - \text{Estimated salvage value}}{\text{Estimated total units of production (service) during useful life of asset}}$$

$$\text{Depreciation per period} = \text{Depreciation per unit} \times \text{Number of units of goods/services produced}$$

You would determine the depreciation charge for the USD 54,000 machine as:

$$\frac{\text{USD } 54,000 - \text{USD } 4,000}{50,000 \text{ units}} = \$1 \text{ per unit}$$

End of Year	Depreciation Expense Dr.; Accumulated Depreciation Cr.	Total Accumulated Depreciation	Book Value
			\$54,000
1	\$ 5,000	\$ 5,000	49,000
2	5,000	10,000	44,000
3	5,000	15,000	39,000
4	5,000	20,000	34,000
5	5,000	25,000	29,000
6	5,000	30,000	24,000
7	5,000	35,000	19,000
8	5,000	40,000	14,000
9	5,000	45,000	9,000
10	5,000	50,000	4,000*

Exhibit 7: Straight-line depreciation schedule

If the machine produced 1,000 units in 2010 and 2,500 units in 2011, depreciation expense for those years would be USD 1,000 and USD 2,500, respectively.

Accelerated depreciation methods record higher amounts of depreciation during the early years of an asset's life and lower amounts in the asset's later years. A business might choose an accelerated depreciation method for the following reasons:

- The value of the benefits received from the asset decline with age (for example, office buildings).
- The asset is a high-technology asset subject to rapid obsolescence (for example, computers).
- Repairs increase substantially in the asset's later years; under this method, the depreciation and repairs together remain fairly constant over the asset's life (for example, automobiles).

The most common accelerated method of depreciation is the double-declining-balance (DDB) method.

End of Year	Depreciation Expense Dr.; Accumulated Depreciation Cr.	Total Accumulated Depreciation	Book Value
1. (20% of \$54,000)	\$10,800	\$10,800	\$43,200
2. (20% of \$43,200)	8,640	19,440	34,560
3. (20% of \$34,560)	6,912	26,352	27,648
4. (20% of \$27,648)	5,530	31,882	22,118
5. (20% of \$22,118)	4,424	36,306	17,694
6. (20% of \$17,694)	3,539	39,845	14,155
7. (20% of \$14,155)	2,831	42,676	11,324
8. (20% of \$11,324)	2,265	44,941	9,059
9. (20% of \$9,059)	1,812	46,753	7,247
10. (20% of \$7,247)	1,449*	48,202	5,798

* This amount could be \$3,247 to reduce the book value to the estimated salvage value of \$4,000. Then, accumulated depreciation would be \$50,000.

Exhibit 8: Double-declining-balance (DDB) depreciation schedule

Double-declining-balance method To apply the **double-declining-balance (DDB)** method of computing periodic depreciation charges you begin by calculating the straight-line depreciation rate. To do this, divide 100 percent by the number of years of useful life of the asset. Then, multiply this rate by 2. Next, apply the resulting double-declining rate to the declining book value of the asset. Ignore salvage value in

making the calculations. At the point where book value is equal to the salvage value, no more depreciation is taken. The formula for DDB depreciation is:

$$\text{Depreciation per period} = 2 \times (\text{Straight-line rate}) \times (\text{Asset cost} - \text{Accumulated depreciation})$$

Method	Base	Calculation
Straight-line	Asset Estimated Cost - salvage value	Number of accounting periods in Base estimated useful life
Double-declining balance	Asset - Accumulated % Cost - Depreciation	Base X (2 X Straight-line rate)

Exhibit 9: Summary of depreciation methods

Look at the calculations for the USD 54,000 machine using the DDB method in Exhibit 8. The straight-line rate is 10 percent (100 percent/10 years), which, when doubled, yields a DDB rate of 20 percent. (Expressed as fractions, the straight-line rate is 1/10, and the DDB rate is 2/10.) Since at the beginning of year 1 no accumulated depreciation has been recorded, cost is the basis of the calculation. In each of the following years, book value is the basis of the calculation at the beginning of the year.

In the 10th year, you could increase depreciation to USD 3,247 if the asset is to be retired and its salvage value is still USD 4,000. This higher depreciation amount for the last year (USD 3,247) would reduce the book value of USD 7,247 down to the salvage value of USD 4,000. If an asset is continued in service, depreciation should only be recorded until the asset's book value equals its estimated salvage value.

For a summary of the three depreciation methods, see Exhibit 9.

In Exhibit 10, we compare two of the depreciation methods just discussed—straight line and double-declining balance—using the same example of a machine purchased on 2010 January 1, for USD 54,000. The machine has an estimated useful life of 10 years and an estimated salvage value of USD 4,000.

An accounting perspective:

Uses of technology

Corporations are subject to corporate income taxes. Also, CPA firms hire many tax professionals to address the tax matters of their clients. If you have an interest in taxes, you may want to visit the following website to learn more about taxes:

<http://webcast.ey.com/thoughtcenter/default.aspx>

This site was created by the CPA firm, Ernst & Young, and has many interesting features. For instance, you can see highlights of what is new in the world of tax, accounting and legal issues.

So far we have assumed that the assets were put into service at the beginning of an accounting period and ignored the fact that often assets are put into service during an accounting period. When assets are acquired during an accounting period, the first recording of depreciation is for a partial year. Normally, firms calculate the depreciation for the partial year to the nearest full month the asset was in service. For example, they treat an asset purchased on or before the 15th day of the month as if it were purchased on the 1st day of the month. And they treat an asset purchased after the 15th of the month as if it were acquired on the 1st day of the following month.

To compare the calculation of partial-year depreciation, we use a machine purchased for USD 7,600 on 2010 September 1, with an estimated salvage value of USD 400, an estimated useful life of five years, and an estimated total units of production of 25,000 units.

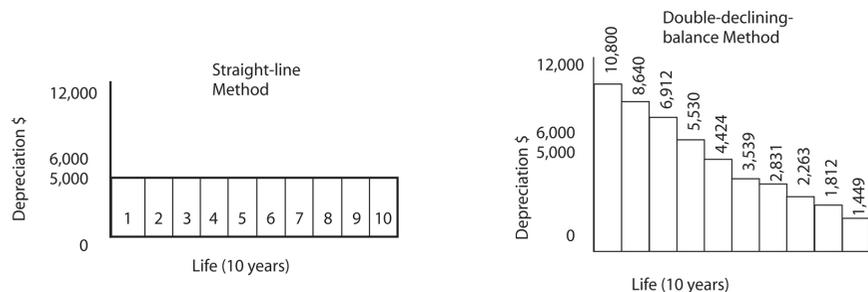


Exhibit 10: Comparison of straight-line and double-declining-balance depreciation methods

Straight-line method Partial-year depreciation calculations for the straight-line depreciation method are relatively easy. Begin by finding the 12-month charge by the normal computation explained earlier. Then, multiply this annual amount by the

fraction of the year for which the asset was in use. For example, for the USD 7,600 machine purchased 2010 September 1 (estimated salvage value, USD 400; and estimated useful life, five years), the annual straight-line depreciation is $[(\text{USD } 7,600 - \text{USD } 400)/5 \text{ years}] = \text{USD } 1,440$. The machine would operate for four months prior to the end of the accounting year, December 31, or one-third of a year. The 2010 depreciation is $(\text{USD } 1,440 \times 1/3) = \text{USD } 480$.

Units-of-production method The units-of-production method requires no unusual computations to record depreciation for a partial year. To compute the partial-year depreciation, multiply the depreciation charge per unit by the units produced. The charge for a partial year would be less than for a full year because fewer units of goods or services are produced.

Double-declining-balance method Under the double-declining-balance method, it is relatively easy to determine depreciation for a partial year and then for subsequent full years. For the partial year, simply multiply the fixed rate times the cost of the asset times the fraction of the partial year. For example, DDB depreciation on the USD 7,600 asset for 2010 is $(\text{USD } 7,600 \times 0.4 \times 1/3) = \text{USD } 1,013$. For subsequent years, compute the depreciation using the regular procedure of multiplying the book value at the beginning of the period by the fixed rate. The 2011 depreciation would be $[(\text{USD } 7,600 - \text{USD } 1,013) \times 0.4] = \text{USD } 2,635$.

An accounting perspective:

Uses of technology

Most companies report property, plant, and equipment as one amount in the balance sheet in their annual report; however, that account is made up of many items. Computers and accounting software have simplified record keeping for all of a company's depreciable assets. When depreciable plant assets are purchased, employees enter in the computer the cost, estimated useful life, and estimated salvage value of the assets. In addition, they enter the method of depreciation that the company decides to use on the assets. After processing this information, the computer calculates the company's depreciation expense and

accumulates depreciation for each type of asset and each individual asset (e.g. a machine).

After depreciating an asset down to its estimated salvage value, a firm records no more depreciation on the asset even if continuing to use it. At times, a firm finds the estimated useful life of an asset or its estimated salvage value is incorrect before the asset is depreciated down to its estimated salvage value; then, it computes revised depreciation charges for the remaining useful life. These revised charges do not correct past depreciation taken; they merely compensate for past incorrect charges through changed expense amounts in current and future periods. To compute the new depreciation charge per period, divide the book value less the newly estimated salvage value by the estimated periods of useful life remaining.

For example, assume that a machine cost USD 30,000, has an estimated salvage value of USD 3,000, and originally had an estimated useful life of eight years. At the end of the fourth year of the machine's life, the balance in its accumulated depreciation account (assuming use of the straight-line method) was $(\text{USD } 30,000 - \text{USD } 3,000) \times 4/8 = \text{USD } 13,500$. At the beginning of the fifth year, a manager estimates that the asset will last six more years. The newly estimated salvage value is USD 2,700. To determine the revised depreciation per period:

Original cost	\$ 30,000
Less: Accumulated depreciation at end of 4 th year	13,500
Book value at the beginning of 5 th year	16,500
Less: Revised salvage value	2,700
Remaining depreciable cost	\$13,800
Revised depreciation per period	\$ 13,800/6 = \$2,300

Had this company used the units-of-production method, its revision of the life estimate would have been in units. Thus, to determine depreciation expense, compute a new per-unit depreciation charge by dividing book value less revised salvage value by the estimated remaining units of production. Multiply this per unit charge by the periodic production to determine depreciation expense.

Using the double-declining-balance method, the book value at the beginning of year 5 would be USD 9,492.19 (cost of USD 30,000 less accumulated depreciation of USD 20,507.81). Depreciation expense for year 5 would be twice the new straight-line rate

times book value. The straight-line rate is 100 percent/6 = 16.67 percent. So twice the straight-line rate is 33.33 percent, or 1/3. Thus, 1/3 X USD 9,492.19 = USD 3,164.06.

APB Opinion No. 12 requires that companies separately disclose the methods of depreciation they use and the amount of depreciation expense for the period in the body of the income statement or in the notes to the financial statements. Major classes of plant assets and their related accumulated depreciation amounts are reported as shown in Exhibit 11.

Showing cost less accumulated depreciation in the balance sheet gives statement users a better understanding of the percentages of a company's plant assets that have been used up than reporting only the book value (remaining undepreciated cost) of the assets. For example, reporting buildings at USD 75,000 less USD 45,000 of accumulated depreciation, resulting in a net amount of USD 30,000, is quite different from merely reporting buildings at USD 30,000. In the first case, the statement user can see that the assets are about 60 percent used up. In the latter case, the statement user has no way of knowing whether the assets are new or old.

Reed Company		
Partial Balance Sheet		
2010 June 30		
Property, plant, and equipment		
Land		\$ 30,000
Buildings	\$ 75,000	
Less: Accumulated depreciation	45,000	30,000
Equipment	\$ 9,000	
Less: Accumulated depreciation	1,500	7,500
Total property, plant, and equipment		\$ 67,500

Exhibit 11: Partial balance sheet

An accounting perspective:

Business insight

In their financial statements, companies often provide one amount for property, plant, and equipment that is net of accumulated depreciation. Nonetheless, notes (footnotes) actually provide the additional information regarding the separate types of assets. The Limited, Inc. is a world leader in the design and distribution of numerous lines of

women's and men's clothing. For instance, its 2001 Feb 3, balance sheet showed property, plant, and equipment, net, equal to USD 1,394,619. In a note to the financial statements (slightly modified to clarify), management explained this amount as follows:

(Dollar amounts in thousands)

Property and Equipment, Net		
Property and Equipment, at cost	2000	1999
Land, buildings and improvements	\$ 362,997	\$ 390,121
Furniture, fixtures and equipment	2,079,567	2,020,651
Leaseholds and improvements	655,736	498,232
Construction in progress	46,748	35,823
Total	\$3,145,048	\$2,944,827
Less: accumulated depreciation and amortization	1,750,429	1,715,215
Property and equipment, net	\$1,394,619	\$1,229,612

A misconception Some mistaken financial statement users believe that accumulated depreciation represents cash available for replacing old plant assets with new assets. However, the accumulated depreciation account balance does not represent cash; accumulated depreciation simply shows how much of an asset's cost has been charged to expense. Companies use the plant asset and its contra account, accumulated depreciation, so that data on the total original acquisition cost and accumulated depreciation are readily available to meet reporting requirements.

Costs or market values in the balance sheet In the balance sheet, firms report plant assets at original cost less accumulated depreciation. One of the justifications for reporting the remaining undepreciated costs of the asset rather than market values is the going-concern concept. As you recall from Chapter 5, the going-concern concept assumes that the company will remain in business indefinitely, which implies the company will use its plant assets rather than sell them. Generally, analysts do not consider market values relevant for plant assets in primary financial statements, although they may be reported in supplemental statements.

A broader perspective:

Wolverine World Wide, Inc.

(Dollars in Thousands)	2002	2001
Total current assets	\$ 349,301	\$ 340,978
Property, Plant and Equipment		
Land	1,177	1,177
Buildings and improvements	64,848	63,006
Machinery and equipment	117,524	108,094
Software	29,217	22,097
	\$212,766	\$194,374
Less accumulated depreciation	96,483	83,239
Total plant assets	\$ 116,283	\$ 111,135
Other Assets		
Goodwill and other intangibles, less accumulated amortization (2002-\$3,565; 2001-\$2,447)	16,178	19,931
Cash value of life insurance	16,443	14,725
Prepaid pension costs	19,099	15,242
Assets held for exchange	7,706	7,942
Notes receivable	4,736	4,921
Other	4,649	6,604
Total other assets	\$ 68,811	\$ 69,365
Total Assets	\$534,395	\$521,478

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1 (In Part): Summary of Significant Accounting Policies

Property, Plant and Equipment

Property, plant and equipment are stated on the basis of cost and include expenditures for new facilities, major renewals, betterments and software. Normal repairs and maintenance are expensed as incurred.

Depreciation of plant, equipment and software is computed using the straight-line method. The depreciable lives for buildings and improvements range from five to forty years; from three to ten years for machinery and equipment; and from three to ten years for software.

As required, the Company adopted the American Institute of Certified Public Accountants Statement of Position (SoP) 98-1, Accounting for the Costs of Computer Software Developed and Obtained for Internal Use, in 1999. The SOP provides guidelines for determining whether costs should be expensed or capitalized for computer software developed or purchased for internal use. The Company's accounting

policies for such items were already in substantial compliance with SOP 98-1 and, therefore, the adoption did not have a material effect on its 1999 consolidated financial position or results of operations.

10.6 Subsequent expenditures (capital and revenue) on assets

Companies often spend additional funds on plant assets that have been in use for some time. They debit these expenditures to: (1) an asset account; (2) an accumulated depreciation account; or (3) an expense account.

Expenditures debited to an asset account or to an accumulated depreciation account are **capital expenditures**. Capital expenditures increase the book value of plant assets. **Revenue expenditures**, on the other hand, do not qualify as capital expenditures because they help to generate the current period's revenues rather than future periods' revenues. As a result, companies expense these revenue expenditures immediately and report them in the income statement as expenses.

Betterments or improvements to existing plant assets are capital expenditures because they increase the quality of services obtained from the asset. Because betterments or improvements add to the service-rendering ability of assets, firms charge them to the asset accounts. For example, installing an air conditioner in an automobile that did not previously have one is a betterment. The debit for such an expenditure is to the asset account, Automobiles.

Occasionally, expenditures made on plant assets extend the quantity of services beyond the original estimate but do not improve the quality of the services. Since these expenditures benefit an increased number of future periods, accountants capitalize rather than expense them. However, since there is no visible, tangible addition to, or improvement in, the quality of services, they charge the expenditures to the accumulated depreciation account, thus reducing the credit balance in that account. Such expenditures cancel a part of the existing accumulated depreciation; firms often call them **extraordinary repairs**.

To illustrate, assume that after operating a press for four years, a company spent USD 5,000 to recondition the press. The reconditioning increased the machine's life to

14 years instead of the original estimate of 10 years. The journal entry to record the extraordinary repair is:

Accumulated Depreciation-Machinery (+A)	5,000	
Cash (for Accounts Payable) (-A)		5,000
To record the cost of reconditioning a press.		

Originally, the press cost USD 40,000, had an estimated useful life of 10 years, and had no estimated salvage value. At the end of the fourth year, the balance in its accumulated depreciation account under the straight-line method is $[(USD\ 40,000/10) \times 4] = USD\ 16,000$. After debiting the USD 5,000 spent to recondition the press to the accumulated depreciation account, the balances in the asset account and its related accumulated depreciation account are as shown in the last column:

	Before Extraordinary Repair	After Extraordinary Repair
Press	\$40,000	\$40,000
Accumulated depreciation	16,000	11,000
Book value (end of four years)	\$24,000	\$29,000

In effect, the expenditure increases the carrying amount (book value) of the asset by reducing its contra account, accumulated depreciation. Under the straight-line method, we would divide the new book value of the press, USD 29,000, equally among the 10 remaining years in amounts of USD 2,900 per year (assuming that the estimated salvage value is still zero).

As a practical matter, expenditures for major repairs not extending the asset's life are sometimes charged to accumulated depreciation. This avoids distorting net income by expensing these expenditures in the year incurred. Then, firms calculate a revised depreciation expense, and spread the cost of major repairs over a number of years. This treatment is not theoretically correct.

To illustrate, assume the same facts as in the previous example except that the USD 5,000 expenditure did not extend the life of the asset. Because of the size of this expenditure, the company still charges it to accumulated depreciation. Now, it would spread the USD 29,000 remaining book value over the remaining six years of the life of the press. Under the straight-line method, annual depreciation would then be $(USD\ 29,000/6) = USD\ 4,833$.

Illustration 10.10 Expenditures on Plant Assets after Acquisition

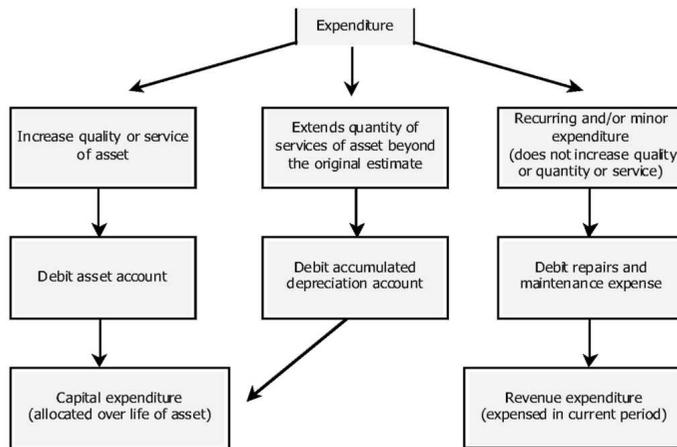


Exhibit 12: Expenditures on plant assets after acquisition

Accountants treat as expenses those recurring and/or minor expenditures that neither add to the asset's service-rendering quality nor extend its quantity of services beyond its original estimated useful life. Thus, firms immediately expense regular maintenance (lubricating a machine) and ordinary repairs (replacing a broken fan belt on an automobile) as revenue expenditures. For example, a company that spends USD 190 to repair a machine after using it for some time, debits Maintenance Expense or Repairs Expense.

Low-cost items Most businesses purchase **low-cost items** that provide years of service, such as paperweights, hammers, wrenches, and drills. Because of the small dollar amounts involved, it is impractical to use the ordinary depreciation methods for such assets, and it is often costly to maintain records of individual items. Also, the effect of low-cost items on the financial statements is not significant. Accordingly, it is more efficient to record the items as expenses when they are purchased. For instance, many companies charge any expenditure less than an arbitrary minimum, say, USD 100, to expense regardless of its impact on the asset's useful life. This practice of accounting for such low unit cost items as expenses is an example of the modifying convention of materiality that was discussed in Chapter 5. In Exhibit 12, we summarize expenditures on plant assets after acquisition.

In practice, it is difficult to decide whether to debit an expenditure to the asset account or to the accumulated depreciation account. For example, some expenditures seem to affect both the quality and quantity of services. Even if the wrong account were debited for the expenditure, the book value of the plant asset at that point would be the same amount it would have been if the correct account had been debited. However, both the asset and accumulated depreciation accounts would be misstated.

As an example of the effect of misstated asset and accumulated depreciation accounts, assume Watson Company had an asset that had originally cost USD 15,000 and had been depreciated to a book value of USD 6,000 at the beginning of 2010. At that time, Watson estimated the equipment had a remaining useful life of two years. The company spent USD 4,000 in early January 2010 to install a new motor in the equipment. This motor extended the useful life of the asset four years beyond the original estimate. Since the expenditure extended the life, the firm should capitalize it by a debit to the accumulated depreciation account. We show the calculations for depreciation expense if the entry was made correctly and if the expenditure had been improperly charged (debited) to the asset account in Exhibit 13.

	2010 Jan 1	After Expenditure Entry	
		Correct	Incorrect
Cost	\$15,000	\$15,000	\$19,000 ^T
Accumulated depreciation	9,000	5,000*	9,000
Book value	\$ 6,000	\$10,000	\$10,000
Remaining life	2 years	6 years	6 years
Depreciation expense per year	\$ 3,000	\$ 1,667	\$1,667
* (\$9,000 - \$4,000)			
^T (\$15,000 + \$4,000)			

Exhibit 13: Expenditure extending plant asset life

If an expenditure that should be expensed is capitalized, the effects are more significant. Assume now that USD 6,000 in repairs expense is incurred for a plant asset that originally cost USD 40,000 and had a useful life of four years and no estimated salvage value. This asset had been depreciated using the straight-line method for one year and had a book value of USD 30,000 (USD 40,000 cost—USD 10,000 first-year depreciation) at the beginning of 2010. The company capitalized the USD 6,000 that should have been charged to repairs expense in 2010. The charge for depreciation should have remained at USD 10,000 for each of the next three years. With the incorrect entry, however, depreciation increases.

Regardless of whether the repair was debited to the asset account or the accumulated depreciation account, the firm would change the depreciation expense amount to USD 12,000 for each of the next three years [(USD 30,000 book value + USD 6,000 repairs expense)/3 more years of useful life]. These errors would cause net income for the year 2010 to be overstated USD 4,000: (1) repairs expense is understated by USD 6,000, causing income to be overstated by USD 6,000; and (2) depreciation expense is overstated by USD 2,000, causing income to be understated by USD 2,000. In 2011, the overstatement of depreciation by USD 2,000 would cause 2011 income to be understated by USD 2,000.

Note that the USD 6,000 recording error affects more than just the expense accounts and net income. Plant asset and Retained Earnings accounts on the balance sheet also reflect the impact of this error. To see the effect of incorrectly capitalizing the USD 6,000 to the asset account rather than correctly expensing it, look at Exhibit 14.

10.7 Subsidiary records used to control plant assets

Most companies maintain formal records (ranging from handwritten documents to computer tapes) to ensure control over their plant assets. These records include an asset account and a related accumulated depreciation account in the general ledger for each major class of depreciable plant assets, such as buildings, factory machinery, office equipment, delivery equipment, and store equipment.

Because the general ledger account has no room for detailed information about each item in a major class of depreciable plant assets, many companies use plant asset subsidiary ledgers. Subsidiary ledgers for Accounts Receivable and Accounts Payable were explained briefly in **An accounting perspective** in Chapter 4. A company may also use subsidiary ledgers for plant assets. For instance, assume a company has a general ledger account for office furniture. The subsidiary ledger for office furniture might contain four separate accounts entitled: Desks, Chairs, File Cabinets and Bookshelves. Alternatively, a company could even have a separate subsidiary account for each piece of furniture. The total of all the subsidiary account balances must equal the total of the general ledger "control" account for Office Furniture at the end of the accounting period. Each general ledger account for each class of depreciable asset, such

as Buildings, Delivery Equipment, and so on, could have a subsidiary ledger backing it up and showing information such as the description, cost, and purchase date for each asset. These subsidiary ledgers and detailed records provide more information and allow the company to maintain better control over plant and equipment.

	2010	
	Correctly Expensing	Incorrectly Expensing
Depreciation expense	\$10,000	\$12,000
Repair Expense	6,000	-0-
Net in come overstated by \$4,000, which affects retained earnings	\$16,000	\$12,000
Asset cost	\$40,000	\$46,000
Accumulated depreciation	20,000	22,000
Book value	\$20,000	\$24,000
	2011	
	Correctly Expensing	Incorrectly Expensing
Depreciation expense	\$10,000	\$12,000
Repair Expense	-0-	-0-
Net in come understated by \$2,000, which affects retained earnings	\$10,000	\$12,000
Asset cost	\$40,000	\$46,000
Accumulated depreciation	30,000	34,000
Book value	\$10,000	\$12,000

Exhibit 14: Effect of revenue expenditure treated as capital expenditure

When they are kept for each major class of plant and equipment, a company may have subsidiary ledgers for factory machinery, office equipment, and other classes of depreciable plant assets. Then there may be an additional subsidiary ledger for each type of asset within each category. For example, the subsidiary office equipment ledger may contain accounts for microcomputers, printers, fax machines, copying machines, and so on. Companies also keep a detailed record for each item represented in a subsidiary ledger account. For example, there may be a separate detailed record for each microcomputer represented in the Microcomputer subsidiary ledger account. Each detailed record should include a description of the asset, identification or serial number, location of the asset, date of acquisition, cost, estimated salvage value, estimated useful life, annual depreciation, accumulated depreciation, insurance coverage, repairs, date of disposal, and gain or loss on final disposal of the asset. Note the detailed record for one particular microcomputer as of 2010 December 31, in Exhibit 15.

To enhance control over plant and equipment, companies stencil on or attach the identification or serial number to each asset. Periodically, firms must take a physical

inventory to determine whether all items in the accounting records actually exist, whether they are located where they should be, and whether they are still being used. A company that does not use detailed records and identification numbers or take physical inventories finds it difficult to determine whether assets have been discarded or stolen.

The general ledger control account balance for each major class of plant and equipment should equal the total of the amounts in the subsidiary ledger accounts for that class of plant assets. Also, the totals in the detailed records for a specific subsidiary ledger account (such as Microcomputers) should equal the balance of that account. Each time a plant asset is acquired, exchanged, or disposed of, the firm posts an entry to both a general ledger control account and the appropriate subsidiary ledger account. It also updates the detailed record for the items affected.

Item Dell Precision M40	Insurance coverage:
Id. No. Z-43806	United Ins. Co.
Location Rm. 403, Adm. bldg.	Pol. No. 0052-61481-24
Date acquired 2009 Jan. 1	Amt. \$3,000
Cost \$3,000	Repairs:
Estimated salvage value \$200	2010/6/13 \$140
Estimated useful life 4 yrs.	
Depreciation per year \$700	
Accumulated depreciation: '	Disposal date
2009/12/31 \$ 700	Gain or loss
2010/12/31 1,400	
2011/12/31	
2012/12/31	

Exhibit 15: Detailed record of a specific plant asset

DEMENT & PEERY, INC.
Consolidated Balance Sheets
2010 December 31 and 2009 (Dollars in millions)

	2010	2009
ASSETS		
Current Assets:		
Cash	\$ 121	\$ 192
Accounts receivable, net of allowance for doubtful accounts of \$15 in both 2010 and 2009	379	491
Inventories	247	175
Deposits, prepaid expenses and other	120	58
Total Current Assets	\$ 867	\$ 916
Investments		
Equity affiliates	170	277
Other assets	87	63
Property and Equipment - Net	4,153	3,919
Deferred Charges	164	154
Total Assets	\$5,441	\$5,329
Net Operating Earnings	\$ 560	\$ 433

Exhibit 16: Consolidated balance sheets

10.8 Analyzing and using the financial results—Rate of return on operating assets

Analyzing the ratios of income statement and balance sheet items from one year to the next can reveal important trends. Management uses these ratios to measure performance by establishing targets and evaluating results. As an example, look at Exhibit 16. Analysts use these figures to calculate the ratios and to explain the importance of this information to management and investors.

To determine the **rate of return on operating assets** for Dement & Peery for 2009 and 2010, use the following formula:

$$\text{Rate of return on operating assets} = \frac{\text{Net operating income}}{\text{Operating assets}}$$

2009: USD 433,000/USD 5,329,000 = 8.13 percent

2010: USD 560,000/USD 5,441,000 = 10.29 percent

Net operating income is also called net operating earnings or income before interest and taxes. In calculating Dement & Peery's ratio, we have assumed that all assets are operating assets used in producing operating revenues.

This ratio measures the profitability of the company in carrying out its primary business function. For Dement & Peery, these figures indicate a slight increase in the earning power of the company in 2010. Net operating income increased more than proportionately compared to the increase in operating assets. Perhaps this performance justifies the increase in operating assets.

In this chapter, you learned how to account for the acquisition of plant assets and depreciation. The next chapter discusses how to record the disposal of plant assets and how to account for natural resources and intangible assets.

10.8.1 Understanding the learning objectives

- To be classified as a plant asset, an asset must: (1) be tangible; (2) have a useful service life of more than one year; and (3) be used in business operations rather than held for resale.
- In accounting for plant assets, accountants must:
 - (a) Record the acquisition cost of the asset.

(b) Record the allocation of the asset's original cost to periods of its useful life through depreciation.

(c) Record subsequent expenditures on the asset.

(d) Account for the disposal of the asset.

• Accountants consider four major factors in computing depreciation: (1) cost of the asset; (2) estimated salvage value of the asset; (3) estimated useful life of the asset; and (4) depreciation method to use in depreciating the asset.

• **Straight-line method:** Assigns an equal amount of depreciation to each period. The formula for calculating straight-line depreciation is:

$$\text{Depreciation per period} = \frac{\text{Asset cost} - \text{Estimated salvage value}}{\text{Number of accounting periods} \in \text{estimated useful life}}$$

• **Units-of-production method:** Assigns an equal amount of depreciation to each unit of product manufactured by an asset. The units-of-production depreciation formulas are:

$$\text{Depreciation per period} = \frac{\text{Asset cost} - \text{Estimated salvage value}}{\text{Estimated total units of production (service) during useful life of asset}}$$

$$\text{Depreciation per period} = \text{Depreciation per unit} \times \text{Number of units of goods/services produced}$$

• **Double-declining-balance method:** DDB is an accelerated depreciation method. Salvage value is ignored in making annual calculations. The formula for DDB depreciation is:

$$\text{Depreciation per period} = (2 \times \text{straight-line rate}) \times (\text{Asset cost} - \text{Accumulated depreciation})$$

• Capital expenditures are debited to an asset account or an accumulated depreciation account and increase the book value of plant assets. Expenditures that increase the quality of services or extend the quantity of services beyond the original estimate are capital expenditures.

• Revenue expenditures are expensed immediately and reported in the income statement as expenses. Recurring and or minor expenditures that neither add to the asset's quality of service-rendering abilities nor extend its quantity of services beyond the asset's original estimated useful life are expenses.

• Plant asset subsidiary ledgers contain detailed information that cannot be maintained in the general ledger account about each item in a major class of depreciable plant assets.

- Control over plant and equipment is enhanced by plant asset subsidiary ledgers and other detailed records. Information in a detailed record may include a description of the asset, identification or serial number, location of the asset, date of acquisition, cost, estimated salvage value, estimated useful life, annual depreciation, accumulated depreciation, insurance coverage, repairs, date of disposal, and gain or loss on final disposal of the asset. A periodic physical inventory should be taken to determine whether items in accounting records actually exist and are still being used at the proper location.

- To calculate the rate of return on operating assets, divide net operating income by operating assets. This ratio helps management determine how effectively it used assets to produce a profit.

10.8.2 Demonstration problem

Demonstration problem A Cleveland Company purchased a 2-square-mile farm under the following terms: cash paid, USD 486,000; mortgage note assumed, USD 240,000; and accrued interest on mortgage note assumed, USD 6,000. The company paid USD 55,200 for brokerage and legal services to acquire the property and secure clear title. Cleveland planned to subdivide the property into residential lots and to construct homes on these lots. Clearing and leveling costs of USD 21,600 were paid. Crops on the land were sold for USD 14,400. A house on the land, to be moved by the buyer of the house, was sold for USD 5,040. The other buildings were torn down at a cost of USD 9,600, and salvaged material was sold for USD 10,080.

Approximately 6 acres of the land were deeded to the township for roads, and another 10 acres was deeded to the local school district as the site for a future school. After the subdivision was completed, this land would have an approximate value of USD 7,680 per acre. The company secured a total of 1,200 salable lots from the remaining land.

Present a schedule showing in detail the composition of the cost of the 1,200 salable lots.

Demonstration problem B Calvin Company acquired and put into use a machine on 2010 January 1, at a total cost of USD 45,000. The machine was estimated to have a useful life of 10 years and a salvage value of USD 5,000. It was also estimated

that the machine would produce one million units of product during its life. The machine produced 90,000 units in 2010 and 125,000 units in 2011.

Compute the amounts of depreciation to be recorded in 2010 and 2011 under each of the following:

- a. Straight-line method.
- b. Units-of-production method.
- c. Double-declining-balance method.
- d. Assume 30,000 units were produced in the first quarter of 2010. Compute depreciation for this quarter under each of the three methods.

10.8.3 Solution to demonstration problem

Solution to demonstration problem A

CLEVELAND COMPANY			
Schedule of Cost of 1,200 Residential Lots			
Costs incurred:			
Cash paid	\$486,000		
Mortgage note assumed	240,000		
Interest accrued on mortgage note assumed	6,000		
Broker and legal services	55,200		
Clearing and leveling costs incurred	21,600		
Tearing down costs	9,600	\$818,400	
Less proceeds from sale of:			
Crops	\$ 14,400		
House	5,040		
Salvaged materials	10,080	29,520	
Net cost of land to be subdivided into 1,200 lots			\$788,880

Solution to demonstration problem B

a. Straight-line method:

$$2010: \frac{(\text{USD } 45,000 - \text{USD } 5,000)}{10} = \text{USD } 4,000$$

$$2011: \frac{(\text{USD } 45,000 - \text{USD } 5,000)}{10} = \text{USD } 4,000$$

b. Units-of-production method:

$$2010: \frac{(\text{USD } 45,000 - \text{USD } 5,000)}{1,000,000} \times 90,000 = \text{USD } 3,600$$

$$2011: \frac{(\text{USD } 45,000 - \text{USD } 5,000)}{1,000,000} \times 125,000 = \text{USD } 5,000$$

c. Double-declining-balance method:

2010: $\text{USD}45,000 \times 20 \text{ per cent} = \text{USD}9,000$

2011: $(\text{USD}45,000 - \text{USD}9,000) \times 20 \text{ per cent} = \text{USD}7,200$

d. Straight-line: $\frac{(\text{USD}45,000 - \text{USD}5,000)}{10} \times \frac{1}{4} = \text{USD}1,000$

Units-of-production: $(\text{USD}30,000 - \text{USD}0.04) = \text{USD}1,200$

Double-declining-balance: $(\text{USD}45,000 - \text{USD}9,000 - \text{USD}7,000) \times 0.2 \times \frac{1}{4} = \text{USD}1,440$

10.9 Key terms

Accelerated depreciation methods Record higher amounts of depreciation during the early years of an asset's life and lower amounts in later years.

Acquisition cost Amount of cash and/or cash equivalents given up to acquire a plant asset and place it in operating condition at its proper location.

Appraised value An expert's opinion as to what an item's market price would be if the item were sold.

Betterments (improvements) Capital expenditures that are properly charged to asset accounts because they add to the service-rendering ability of the assets; they increase the quality of services obtained from an asset.

Book value An asset's recorded cost less its accumulated depreciation.

Capital expenditures Expenditures debited to an asset account or to an accumulated depreciation account.

Depreciation The amount of plant asset cost allocated to each accounting period benefiting from the plant asset's use. The **straight-line depreciation** method charges an equal amount of plant asset cost to each period. The **units-of-production depreciation** method assigns an equal amount of depreciation for each unit of product manufactured or service rendered by an asset. The **double-declining-balance (DDB)** method assigns decreasing amounts of depreciation to successive periods of time.

Double-declining-balance (DDB) depreciation See depreciation.

Extraordinary repairs Expenditures that cancel a part of the existing accumulated depreciation because they increase the quantity of services expected from an asset.

Fair market value The price that would be received for an item being sold in the normal course of business (not at a forced liquidation sale).

Inadequacy The inability of a plant asset to produce enough products or provide enough services to meet current demands.

Land improvements Attachments to land, such as driveways, landscaping, parking lots, fences, lighting systems, and sprinkler systems, that have limited lives and therefore are depreciable.

Low-cost items Items that provide years of service at a relatively low unit cost, such as hammers, paperweights, and drills.

Obsolescence Decline in usefulness of an asset brought about by inventions and technological progress.

Physical deterioration Results from use of the asset—wear and tear—and the action of the elements.

Plant and equipment A shorter title for property, plant, and equipment; also called plant assets. Included are land and manufactured or constructed assets such as buildings, machinery, vehicles, and furniture.

Rate of return on operating assets Net operating income/Operating assets. This ratio helps management determine how effectively it used assets to produce a profit.

Revenue expenditures Expenditures (on a plant asset) that are immediately expensed.

Salvage value The amount of money the company expects to recover, less disposal costs, on the date a plant asset is scrapped, sold, or traded in. Also called scrap value or residual value.

Straight-line depreciation See depreciation.

Tangible assets Assets that we can see and touch such as land, buildings, and equipment.

Units-of-production depreciation See depreciation.

Useful life Refers to the length of time the company owning the asset intends to use it.

10.10 Self-test

10.10.1 True-false

Indicate whether each of the following statements is true or false.

The cost of land includes its purchase price and other related costs, including the cost of removing an old unusable building that is on the land.

Depreciation is the process of valuation of an asset to arrive at its market value.

The purpose of depreciation accounting is to provide the cash required to replace plant assets.

Expenditures made on plant assets that increase the quality of services are debited to the accumulated depreciation account.

Plant asset subsidiary ledgers are used to increase control over plant assets.

10.10.2 Multiple-choice

Select the best answer for each of the following questions.

On 2010 January 1, Jackson Company purchased equipment for USD 400,000, and installation and testing costs totaled USD 40,000. The equipment has an estimated useful life of 10 years and an estimated salvage value of USD 40,000. If Jackson uses the straight-line depreciation method, the depreciation expense for 2010 is:

- a. USD 36,000.
- b. USD 40,000.
- c. USD 44,000.
- d. USD 80,000.
- e. USD 88,000.

In Question 1, if the equipment were purchased on 2010 July 1, and Jackson used the double-declining-balance method, the depreciation expense for 2010 would be:

- a. USD 88,000.
- b. USD 72,000.
- c. USD 36,000.
- d. USD 44,000.
- e. USD 40,000.

Hatfield Company purchased a computer on 2008 January 2, for USD 10,000. The computer had an estimated salvage value of USD 3,000 and an estimated useful life of five years. At the beginning of 2010, the estimated salvage value changed to USD 1,000, and the computer is expected to have a remaining useful life of two years. Using the straight-line method, the depreciation expense for 2010 is:

- a. USD 1,400.
- b. USD 1,750.
- c. USD 2,250.
- d. USD 1,800.
- e. USD 3,100.

The result of recording a capital expenditure as a revenue expenditure is an:

- a. Overstatement of current year's expense.
- b. Understatement of current year's expense.
- c. Understatement of subsequent year's net income.
- d. Overstatement of current year's net income.
- e. None of the above.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

Questions

- What is the main distinction between inventory and a plant asset?
- Which of the following items are properly classifiable as plant assets on the balance sheet?
 - Advertising that will appear in the future to inform the public about new energy-saving programs at a manufacturing plant.
 - A truck acquired by a manufacturing company to be used to deliver the company's products to wholesalers.
 - An automobile acquired by an insurance company to be used by one of its salespersons.
 - Adding machines acquired by an office supply company to be sold to customers.
 - The cost of constructing and paving a driveway that has an estimated useful life of 10 years.
- In general terms, what does the cost of a plant asset include?
- In what way does the purchase of a plant asset resemble the prepayment of an expense?
- Brown Company purchased an old farm with a vacant building as a factory site for USD 1,040,000. Brown decided to use the building in its operations. How should Brown allocate the purchase price between the land and the building? How should this purchase be handled if the building is to be torn down?
- Describe how a company may determine the cost of a self-constructed asset.
- In any exchange of noncash assets, the accountant's task is to find the most appropriate valuation for the asset received. What is the general rule for determining the most appropriate valuation in such a situation?
- Why should periodic depreciation be recorded on all plant assets except land?
- Define the terms inadequacy and obsolescence as used in accounting for depreciable plant assets.

- What four factors must be known to compute depreciation on a plant asset? How objective is the calculation of depreciation?
- A friend, Mindy Jacobs, tells you her car depreciated USD 5,000 last year. Explain whether her concept of depreciation is the same as the accountant's concept.
- What does the term accelerated depreciation mean? Give an example showing how depreciation is accelerated.
- Provide a theoretical reason to support using an accelerated depreciation method.
- Nancy Company purchased a machine that originally had an estimated eight years of useful life. At the end of the third year, Nancy determined that the machine would last only three more years. Does this revision affect past depreciation taken?
- What does the balance in the accumulated depreciation account represent? Does this balance represent cash that can be used to replace the related plant asset when it is completely depreciated?
- What is the justification for reporting plant assets on the balance sheet at undepreciated cost (book value) rather than market value?
- Distinguish between capital expenditures and revenue expenditures.
- For each of the following, state whether the expenditure made should be charged to an expense, an asset, or an accumulated depreciation account:
 - Cost of installing air-conditioning equipment in a building that was not air-conditioned.
 - Painting of an owned factory building every other year.
 - Cost of replacing the roof on a 10-year-old building that was purchased new and has an estimated total life of 40 years. The expenditure did not extend the life of the asset beyond the original estimate.
 - Cost of repairing an electric motor. The expenditure extended the estimated useful life beyond the original estimate.
- Indicate which type of account (asset, accumulated depreciation, or expense) would be debited for each of the following expenditures:

- Painting an office building at a cost of USD 1,000. The building is painted every year.
- Adding on a new plant wing at a cost of USD 24,000,000.
- Expanding a paved parking lot at a cost of USD 144,000.
- Replacing a stairway with an escalator at a cost of USD 20,000.
- Replacing the transmission in an automobile at a cost of USD 1,600, thus extending its useful life two years beyond the original estimate.
- Replacing a broken fan belt at a cost of USD 600.
- How do subsidiary records provide control over a company's plant assets?
- What advantages can accrue to a company that maintains plant asset subsidiary records?
- **Real world question** Based on the financial statements and the notes to those statements of The Limited, Inc., (see volume 1 appendix) contained in the Annual report appendix, what was the 2000 ending net property and equipment balance? Did the company acquire any of these assets in 2000? What depreciation method did the company use?

10.11 Exercises

Exercise A Stephon Company paid USD 640,000 cash for a tract of land on which it plans to erect a new warehouse, and paid USD 8,000 in legal fees related to the purchase. Stephon also agreed to assume responsibility for USD 25,600 of unpaid taxes on the property. The company incurred a cost of USD 28,800 to remove an old apartment building from the land. Prepare a schedule showing the cost of the land acquired.

Exercise B Laural Company paid USD 840,000 cash for real property consisting of a tract of land and a building. The company intended to remodel and use the old building. To allocate the cost of the property acquired, Laural had the property appraised. The appraised values were as follows: land, USD 576,000, and office building, USD 384,000. The cost of clearing the land was USD 18,000. The building was remodeled at a cost of USD 76,800. The cost of a new identical office building was estimated to be USD 432,000. Prepare a schedule showing the cost of the assets acquired.

Exercise C Fine Company purchased a heavy machine to be used in its factory for USD 720,000, less a 2 percent cash discount. The company paid a fine of USD 3,600 because an employee hauled the machine over city streets without securing the required permits. The machine was installed at a cost of USD 21,600, and testing costs of USD 7,200 were incurred to place the machine in operation. Prepare a schedule showing the recorded cost of the machine.

Exercise D A machine is acquired in exchange for 50 shares of Marley Corporation capital stock. The stock recently traded at USD 400 per share. The machine cost USD 30,000 three years ago. At what amount should the machine be recorded?

Exercise E Keely Company purchased some office furniture for USD 29,760 cash on 2009 March 1. It also paid USD 480 cash for freight costs incurred. The furniture is being depreciated over four years under the straight-line method, assuming a salvage value of USD 1,440. The company employs a calendar-year accounting period. On 2010 July 1, it spent USD 192 to refinish the furniture. Prepare journal entries for the Keely Company to record all of the data, including the annual depreciation adjustments through 2010.

Exercise F On 2009 January 2, a new machine was acquired for USD 900,000. The machine has an estimated salvage value of USD 100,000 and an estimated useful life of 10 years. The machine is expected to produce a total of 500,000 units of product throughout its useful life. Compute depreciation for 2009 and 2010 using each of the following methods:

- a. Straight line.
- b. Units of production (assume 30,000 and 60,000 units were produced in 2009 and 2010, respectively).
- c. Double-declining balance.

Exercise G Terrill Company finds its records are incomplete concerning a piece of machinery used in its plant. According to the company records, the machinery has an estimated useful life of 10 years and an estimated salvage value of USD 24,000. It has recorded USD 12,000 in depreciation each year using the straight-line method. If the accumulated depreciation account shows a balance of USD 72,000, what is the original cost of the machinery and how many years remain to be depreciated?

Exercise H Katherine Company purchased a machine on 2009 April 1, for USD 72,000. The machine has an estimated useful life of five years with no expected salvage value. The company's accounting year ends on December 31.

Compute the depreciation expense for 2009 and 2010 under the double-declining-balance method.

Exercise I Australia Company purchased a machine for USD 3,200 and incurred installation costs of USD 800. The estimated salvage value of the machine is USD 200. The machine has an estimated useful life of four years. Compute the annual depreciation charges for this machine under the double-declining-balance method.

Exercise J Regal Company acquired a delivery truck on 2009 January 2, for USD 107,200. The truck had an estimated salvage value of USD 4,800 and an estimated useful life of eight years. At the beginning of 2009, a revised estimate shows that the truck has a remaining useful life of six years. The estimated salvage value changed to USD 1,600.

Compute the depreciation charge for 2009 and the revised depreciation charge for 2009 using the straight-line method.

Exercise K Assume that the truck described in the previous exercise was used 40 percent of the time in 2010 to haul materials used in the construction of a building by Regal Company for its own use. (Remember that 2010 is before the revision was made on estimated life.) During the remaining time, Regal used the truck to deliver merchandise to its customers.

Prepare the journal entry to record straight-line depreciation on the truck for 2010.

Exercise L Vineland Company purchased a computer for USD 60,000 and placed it in operation on 2008 January 2. Depreciation was recorded for 2008 and 2009 using the straight-line method, a six-year life, and an expected salvage value of USD 2,400. The introduction of a new model of this computer in 2010 caused the company to revise its estimate of useful life to a total of four years and to reduce the estimated salvage value to zero.

Compute the depreciation expense on the computer for 2010.

Exercise M On 2009 January 2, a company purchased and placed in operation a new machine at a total cost of USD 60,000. Depreciation was recorded on the machine for 2009 and 2010 under the straight-line method using an estimated useful life of five

years and no expected salvage value. Early in 2011, the machine was overhauled at a cost of USD 20,000. The estimated useful life of the machine was revised upward to a total of seven years.

Compute the depreciation expense on the machine for 2011.

Exercise N Lasky Company purchased a machine on 2009 January 3, at a cost of USD 50,000. It debited freight and installation charges of USD 10,000 to Repairs Expense. It recorded straight-line depreciation on the machine in 2009 and 2010 using an estimated life of 10 years and no expected salvage value.

Compute the amount of the error in net income for 2009 and 2010, and state whether net income is understated or overstated.

Exercise O Bragg Company owns a plant asset that originally cost USD 240,000 in 2006. The asset has been depreciated for three years assuming an eight-year useful life and no salvage value. During 2009, Bragg incorrectly capitalized USD 120,000 in repairs on the plant asset rather than expensing them. Describe the impact of this error on the asset's cost and Bragg's net income over the next five years.

10.12 Problems

Problem A Bolt Company purchased a machine for use in its operations that had an invoice price of USD 80,000 excluding sales tax. A 4 percent sales tax was levied on the sale. Terms were net 30. The company estimated the total cost of hauling the machine from the dealer's warehouse to the company's plant at USD 5,600, which did not include a fine of USD 1,600 for failure to secure the necessary permits to use city streets in transporting the machine. In delivering the machine to its plant, a Bolt employee damaged the truck used; repairs cost USD 3,600. The machine was also slightly damaged with repair costs amounting to USD 1,600.

Bolt incurred installation costs of USD 32,000 that included the USD 4,000 cost of shoring up the floor under the machine. Testing costs amounted to USD 2,400. Safety guards were installed on the machine at a cost of USD 640, and the machine was placed in operation.

Prepare a schedule showing the amount at which the machine should be recorded in Bolt's accounts.

Problem B Pressler Company planned to erect a new factory building and a new office building in Atlanta, Georgia, USA. A report on a suitable site showed an appraised value of USD 180,000 for land and orchard and USD 120,000 for a building.

After considerable negotiation, the company and the owner reached the following agreement: Pressler Company was to pay USD 216,000 in cash, assume a USD 90,000 mortgage note on the property, assume the interest of USD 1,920 accrued on the mortgage note, and assume unpaid property taxes of USD 13,200. Pressler Company paid USD 18,000 cash for brokerage and legal services in acquiring the property.

Shortly after acquisition of the property, Pressler Company sold the fruit on the trees for USD 2,640, remodeled the building into an office building at a cost of USD 38,400, and removed the trees from the land at a cost of USD 9,000. Construction of the factory building was to begin in a week.

Prepare schedules showing the proper valuation of the assets acquired by Pressler Company.

Problem C Timothy Company acquired and placed into use a heavy factory machine on 2009 October 1. The machine had an invoice price of USD 360,000, but the company received a 3 percent cash discount by paying the bill on the date of acquisition. An employee of Timothy Company hauled the machine down a city street without a permit. As a result, the company had to pay a USD 1,500 fine. Installation and testing costs totaled USD 35,800. The machine is estimated to have a USD 35,000 salvage value and a seven-year useful life. (A fraction should be used for the DDB calculation rather than a percentage.)

- a. Prepare the journal entry to record the acquisition of the machine.
- b. Prepare the journal entry to record depreciation for 2009 under the double-declining balance method.
- c. Assume Timothy Company used the straight-line depreciation method. At the beginning of 2009, it estimated the machine will last another six years. Prepare the journal entry to record depreciation for 2009. The estimated salvage value would not change.

Problem D Peach Company has the following entries in its Building account:

Debits		
2009		
May 5	Cost of land and building purchased	\$200,000
5	Broker fees incident to purchase of land and building	12,000
2010		
Jan. 3	Contract price of new wing added to south end	84,000
15	Cost of new machinery, estimated life 10 years	160,000
June 10	Real estate taxes for six months ended 2010/6/30	3,600
Aug. 10	Cost of building parking lot for employees in back of building	4,960
Sept. 6	Replacement of windows broken in August	160
Oct. 10	Repairs due to regular usage	2,240
Credits		
2009		
May 24	Transfer to Land account, per allocation of purchase cost authorized in minutes of board of directors	32,000
2010		
Jan. 5	Proceeds from leases of second floor for six months ended 12/31/09	8,000

Peach acquired the original property on 2009 May 5. Orange immediately engaged a contractor to construct a new wing on the south end of the building. While the new wing was being constructed, the company leased the second floor as temporary warehouse space to Kellett Company. During this period (July 1 to 2009 December 31), the company installed new machinery costing USD 160,000 on the first floor of the building. Regular operations began on 2010 January 2.

a. Compute the correct balance for the Buildings account as of 2010 December 31. The company employs a calendar-year accounting period.

b. Prepare the necessary journal entries to correct the records of Peach Company at 2010 December 31. No depreciation entries are required.

Problem E Cardine Company acquired and placed into use equipment on 2009 January 2, at a cash cost of USD 935,000. Transportation charges amounted to USD 7,500, and installation and testing costs totaled USD 55,000.

The equipment was estimated to have a useful life of nine years and a salvage value of USD 37,500 at the end of its life. It was further estimated that the

equipment would be used in the production of 1,920,000 units of product during its life. During 2009, 426,000 units of product were produced.

Compute the depreciation to the nearest dollar for the year ended December 31, using:

- a. Straight-line method.
- b. Units-of-production method.
- c. Double-declining-balance method (use a fraction rather than a percentage).

Problem F Goodrich Company purchased a machine on 2009 October 1 for USD 100,000. The machine has an estimated salvage value of USD 30,000 and an estimated useful life of eight years.

Compute to the nearest dollar the amount of depreciation Goodrich should record on the machine for the years ending 2009 December 31, and 2010, under each of the following methods:

- a. Straight-line.
- b. Double-declining-balance.

10.13 Alternate problems

Alternate problem A Brite Company purchased a machine that had an invoice price of USD 400,000 excluding sales tax. Terms were net 30. A 4 percent sales tax was levied on the sale. The company incurred and paid freight costs of USD 10,000. Special electrical connections were run to the machine at a cost of USD 14,000 and a special reinforced base for the machine was built at a cost of USD 18,000. The machine was dropped and damaged while being mounted on this base. Repairs cost USD 4,000. Raw materials with a cost of USD 1,000 were consumed in testing the machine. Safety guards were installed on the machine at a cost of USD 1,400, and the machine was placed in operation. In addition, USD 500 of costs were incurred in removing an old machine.

Prepare a schedule showing the amount at which the machine should be recorded in Brite Company's account.

Alternate problem B Maxwell Company purchased 2 square miles of farmland under the following terms: USD 968,000 cash; and liability assumed on mortgage note of USD 320,000 and interest accrued on mortgage note assumed, USD 12,800.

The company paid USD 67,200 of legal and brokerage fees and also paid USD 3,200 for a title search on the property.

The company planned to use the land as a site for a new office building and a new factory. Maxwell paid clearing and leveling costs of USD 28,800. It sold crops on the land for USD 7,360 and sold one of the houses on the property for USD 19,200. The other buildings were torn down at a cost of USD 14,400; sale of salvaged materials yielded cash proceeds of USD 13,600. Approximately 1 percent of the land acquired was deeded to the county for roads. The cost of excavating a basement for the office building amounted to USD 9,120.

Prepare a schedule showing the amount at which the land should be carried on Maxwell Company's books.

Alternate problem C Dawson Towing Company purchased a used panel truck for USD 28,800 cash. The next day the company's name and business were painted on the truck at a total cost of USD 1,488. The truck was then given a minor overhaul at a cost of USD 192, and new "super" tires were mounted on the truck at a cost of USD 1,920, less a trade-in allowance of USD 240 for the old tires. The truck was placed in service on 2009 April 1, at which time it had an estimated useful life of five years and a salvage value of USD 3,360.

- a. Prepare a schedule showing the cost to be recorded for the truck.
- b. Prepare the journal entry to record depreciation at the end of the calendar-year accounting period, 2009 December 31. Use the double-declining-balance method.
- c. Assume that the straight-line depreciation method has been used. At the beginning of 2009 it is estimated the truck will last another four years. The estimated salvage value changed to USD 1,920. Prepare the entry to record depreciation for 2012.

Alternate problem D You are the new controller for Jayson Company, which began operations on 2009 October 1, after a start-up period that ran from the middle of 2008. While reviewing the accounts, you find an account entitled "Fixed Assets", which contains the following items:

Cash paid to previous owner of land and old buildings	\$ 192,000
Cash given to construction company as partial payment for the new building	72,000
Legal and title search fees	2,400
Real estate commission	14,400
Cost of demolishing old building	16,800

Cost of leveling and grading	9,600
Architect's fee (90% of building and 10% improvements)	6,000
Cost of excavating (digging) basement for new building	21,600
Cash paid to construction company for new building	288,000
Repair damage done by vandals	7,200
Sprinkler system for lawn	31,200
Lighting system for parking lot	40,800
Paving of parking lot	60,000
Net invoice price of machinery	1,152,000
Freight cost incurred on machinery	50,400
Installation and testing of machinery	19,200
Medical bill paid for employee injured in installing machinery	3,600
Landscaping (permanent)	38,400
Repair damage to building in installation of machinery	4,800
Special assessment paid to city for water mains and sewer line	45,600
Account balance	\$2,106,000

In addition, you discover that cash receipts of USD 1,200 from selling materials salvaged from the old building were credited to Miscellaneous Revenues in 2009. Digging deeper, you find that the plant manager spent all of his time for the first nine months of 2009 supervising installation of land improvements (10 percent), building construction (40 percent), and installation of machinery (50 percent). The plant manager's nine-month salary of USD 108,000 was debited to Officers' Salaries Expense.

a. List all items on a form containing columns for Land, Land Improvements, Building, and Machinery. Sort the items into the appropriate columns, omitting those items not properly included as an element of asset cost. Show negative amounts in parentheses. Total your columns.

b. Prepare one compound journal entry to reclassify and adjust the accounts and to eliminate the Fixed Assets account. Do not attempt to record depreciation for the partial year.

Alternate problem E Land Company acquired and put into use a machine on 2009 January 1, at a cash cost of USD 120,000 and immediately spent USD 5,000 to install it. The machine had an estimated useful life of eight years and an estimated salvage value of USD 15,000 at the end of this time. It was further estimated that the machine would produce 500,000 units of product during its life. In the first year, the machine produced 100,000 units.

Prepare journal entries to record depreciation to the nearest dollar for 2009, using:

a. Straight-line method.

- b. Units-of-production method.
- c. Double-declining-balance method.

Alternate problem F Crawford Company paid USD 60,000 for a machine on 2009 April 1, and placed it in use on that same date. The machine has an estimated life of 10 years and an estimated salvage value of USD 10,000.

Compute the amount of depreciation to the nearest dollar the company should record on this asset for the years ending 2009 December 31, and 2010, under each of the following methods:

- a. Straight-line.
- b. Double-declining-balance.

10.14 Beyond the numbers—Critical thinking

Business decision case A You are a new staff auditor assigned to audit Cray Company's Buildings account. You determine that Cray Company made the following entries in its Buildings account in 2009:

		Debits	
2009			
Jan.	2	Cost of land and old buildings purchased	\$ 720,000
	2	Legal fees incident to purchase	9,600
	2	Fee for title search	1,200
	12	Cost of demolishing old buildings on land	19,200
June	16	Cost of insurance during construction of new building	4,800
July	30	Payment to contractor on completion of new building	1,080,000
Aug.	5	Architect's fees for design of new building	48,000
Sept.	15	City assessment for sewers and sidewalks (considered permanent)	16,800
Oct.	6	Cost of landscaping (considered permanent)	9,600
Nov.	1	Cost of driveways and parking lots	60,000
		Credits	
Jan.	15	Proceeds received upon sale of salvaged materials from old buildings	4800

In addition to the entries in the account, you obtained the following information in your interview with the accountant in charge of the Buildings account:

The company began using the new building on 2009 September 1. The building is estimated to have a 40-year useful life and no salvage value.

The company began using the driveways and parking lots on 2009 November 1. The driveways and parking lots have an estimated 10-year useful life and no salvage value.

The company uses the straight-line depreciation method to depreciate all of its plant assets.

Using all of this information, do the following:

a. Prepare a schedule that shows the separate cost of land, buildings, and land improvements.

b. Compute the amount of depreciation expense for 2009.

c. Complete the journal entries required to correct the accounts at 2009 December 31. Assume that closing entries have not been made.

d. Write a brief statement describing to management why depreciation must be recorded and how recording depreciation affects net income.

Business decision case B On 2010 October 1, Besler Company acquired and placed into use new equipment costing USD 504,000. The equipment has an estimated useful life of five years and an estimated salvage value of USD 24,000. Besler estimates that the equipment will produce 2 million units of product during its life. In the last quarter of 2010, the equipment produced 120,000 units of product. As the company's accountant, management has asked you to do the following:

a. Compute the depreciation for the last quarter of 2010, using each of the following methods:

Straight-line.

Units-of-production.

Double-declining-balance.

b. Prepare a written report describing the conditions in which each of these four methods would be most appropriate.

Business decision case C The notes to the financial statements of Wolverine World Wide, Inc., in "A Broader Perspective", stated that substantially all fixed assets are depreciated using the straight-line method. Explain why the straight-line method of depreciation may be appropriate for this company.

Business decision case D Discuss the meaning of rate of return on operating assets, its elements, and what it means to investors and management.

Calculate the rate of return on operating assets for The Limited in the Annual report appendix for the two most recent years. Assume all assets are operating assets. Comment on the results.

Annual report analysis E The following footnote excerpted from a recent annual report of Kerr-McGee Corporation describes the company's accounting policies for property, plant, and equipment:

Property, plant, and equipment is depreciated over its estimated life by the unit-of-production or the straight-line-method.

a. How many different depreciation methods are used by Kerr-McGee Corporation? Does this practice conform with generally accepted accounting principles?

b. Discuss why management might select each of these methods to depreciate plant assets.

Group project F In a group of two or three students, visit a large company in your community and inquire about the subsidiary records it maintains to establish accounting control over its plant assets. Also inquire about physical controls used to protect its equipment that is movable, such as computers, copy machines, and so on. Write a report to your instructor summarizing your findings and be prepared to give a short report to your class.

Group project G With a team of two or three students, visit two companies in your community to inquire about why they use certain depreciation methods. Try to locate companies that use several depreciation methods in accounting for various depreciable fixed assets. Interview those who made the decision as to methods to use to find out the reasons for their choices. Write a report to your instructor summarizing your findings.

Group project H In a small group of students, visit a large company in your community to determine how it decides to account for expenditures on fixed assets made after the assets have been in use for some time. In other words, how does it decide whether to debit the asset account, the accumulated depreciation account, or an expense account? What role does materiality play in the decision? Evaluate the reasonableness of the decision model used. Write a report to your instructor summarizing your findings and be prepared to make a short presentation to your class.

10.15 Using the Internet—A view of the real world

Visit the CPA Review site at:

<http://www.beckerconviser.com>

Investigate this site. Identify the major types of employers. Make note of any interesting information at this site. Write a report to your instructor summarizing your findings. Be prepared to make a short presentation to the class.

Visit the Best Software website at: <http://www.bestsoftware.com>

What types of software does the company sell? Why might a company buy a software package from Best Software? Study any other aspect of the information that looks interesting. Write a report to your instructor summarizing your findings.

10.16 Answers to self-test

10.16.1 True-false

True. The cost of land includes all normal, reasonable, and necessary expenditures to obtain the land and get it ready for use.

False. Depreciation is a process of allocation, not valuation, and the book value of an asset has little to do with its market value.

False. Depreciation accounting does not provide funds required to replace plant assets. Instead, accumulated depreciation simply shows how much of an asset's cost has been charged to expense since the asset was acquired.

False. Expenditures that improve the quality of services are charged to the asset account.

True. Plant asset subsidiary ledgers provide detailed information that the general ledger account cannot provide and thus give better control over plant assets.

10.16.2 Multiple-choice

b. The depreciation expense for 2010 using the straight-line method is computed as follows:

$$\frac{(\text{USD } 440,000 - \text{USD } 40,000)}{10} = \text{USD } 40,000$$

d. Double-declining balance rate = $2 \times \left(\frac{100 \text{ per cent}}{10} \right) = 20 \text{ per cent}$

Depreciation expense for 2010 = $(2 \text{ per cent} \times \text{USD } 440,000) \times \frac{6}{12} = \text{USD } 44,000$

e. At the beginning of 2010, the balance of accumulated depreciation is USD 2,800 (annual depreciation of USD 1,400 X 2) and book value is USD 7,200, or (USD 10,000 - USD 2,800). The revised annual depreciation expense is USD 3,100, or $\left[\frac{(\text{USD } 7,200 - \text{USD } 1,000)}{2} \right]$.

a. The error in recording a capital expenditure as a revenue expenditure results in an overstatement of current year's expense, as well as an understatement of current year's net income.

11 Plant asset disposals, natural resources, and intangible assets

11.1 Learning objectives

After studying this chapter, you should be able to:

- Calculate and prepare entries for the sale, retirement, and destruction of plant assets.
- Describe and record exchanges of nonmonetary assets.
- Determine the periodic depletion cost of a natural resource and calculate depreciation of plant assets located on extractive industry property.
- Prepare entries for the acquisition and amortization of intangible assets.
- Analyze and use the financial results-total assets turnover.

11.2 A company accountant's role in measuring intangibles

Many assets have no physical substance. These assets are referred to as intangible. Even though these assets have no substance, the accountant still must spend time measuring the value of these assets to corporation and how these assets contribute to the cash flow of the entity.

The accountant must first place a value on something that cannot be seen by the naked eye. Then the accountant must determine if the asset is making a contribution toward cash flow of the entity (if so and how long) and finally, the accountant must determine if and when this benefit has indeed expired.

As we move ever more toward an information based economy, the percent of intangible assets to total assets also increases. In many cases, intangible assets compose a significant majority of total assets. Thus, the earning power of such companies is primarily based on the valuation of assets that cannot be seen or touched. Some intangible assets, such as human assets and internally generated

intangibles, are not even recorded on the company's books. This makes it even more difficult to value the assets and determine their contribution to earnings.

Investors and analysts often compare book value per share with the market price per share for a corporation. This ratio is referred to as the price to book ratio (PB). It measures the market's beliefs about the value of net assets as compared to the recorded amount of net assets. In 1998 Tootsie Roll had a PB ratio of approximately 5.2. The recorded net assets were approximately USD 400 million, yet the market perceived Tootsie Roll to have net assets worth over USD 2,000 million. What is the nature of those unrecorded (intangible) assets? In 1998, Microsoft had a PB ratio of approximately 12.4. The real value of Microsoft's net assets exceeded those reported in the accounting records by a factor of 12.4. It is reasonable to assume that a large portion of the unrecorded assets of Microsoft must be intangible. How does the accountant value something that has no physical substance and in many cases has not been recorded? It is similar to walking around in a dark closet wearing a blindfold.

This function is closely related to the work of the plant asset accountant. Many of the same questions must be addressed when accounting for intangible assets. The question still remains, how can you measure something you cannot see?

Your study of long-term assets—plant assets, natural resources, and intangible assets—began in Chapter 10, which focused on determining plant asset cost, computing depreciation, and distinguishing between capital and revenue expenditures. This chapter begins by discussing the disposal of plant assets. The next topic is accounting for natural resources such as ores, minerals, oil and gas, and timber. The final topic is accounting for intangible assets such as patents, copyrights, franchises, trademarks and trade names, leases, and goodwill.

Note that accounting for all the long-term assets discussed in these chapters is basically the same. A company that purchases a long-term asset records it at cost. As the company receives benefits from the asset and its future service potential decreases, the accountant transfers the cost from an asset account to an expense account. Finally, the asset is sold, retired, or traded in on a new asset. Because the lives of long-term assets can extend for many years, the methods accountants use in

reporting such assets can have a dramatic effect on the financial statements of many accounting periods.

11.3 Disposal of plant assets

All plant assets except land eventually wear out or become inadequate or obsolete and must be sold, retired, or traded for new assets. When disposing of a plant asset, a company must remove both the asset's cost and accumulated depreciation from the accounts. Overall, then, all plant asset disposals have the following steps in common:

- Bring the asset's depreciation up to date.
- Record the disposal by:
 - (a) Writing off the asset's cost.
 - (b) Writing off the accumulated depreciation.
 - (c) Recording any consideration (usually cash) received or paid or to be received or paid.
 - (d) Recording the gain or loss, if any.

As you study this section, remember these common procedures accountants use to record the disposal of plant assets. In the paragraphs that follow, we discuss accounting for the (1) sale of plant assets, (2) retirement of plant assets without sale, (3) destruction of plant assets, (4) exchange of plant assets, and (5) cost of dismantling and removing plant assets.

11.4 Sale of plant assets

Companies frequently dispose of plant assets by selling them. By comparing an asset's book value (cost less accumulated depreciation) with its selling price (or net amount realized if there are selling expenses), the company may show either a gain or loss. If the sales price is greater than the asset's book value, the company shows a gain. If the sales price is less than the asset's book value, the company shows a loss. Of course, when the sales price equals the asset's book value, no gain or loss occurs.

To illustrate accounting for the sale of a plant asset, assume that a company sells equipment costing USD 45,000 with accumulated depreciation of USD 14,000 for USD 35,000. The firm realizes a gain of USD 4,000:

Equipment cost	\$ 45,000
Accumulated depreciation	14,000
Book value	\$ 31,000
Sales price	35,000
Gain realized	\$ 4,000

The journal entry to record the sale is:

Cash (+A)	35,000	
Accumulated Depreciation—Equipment (+A)	14,000	
Equipment (-A)		45,000
Gain on Disposal of Plant Assets (+SE)		4,000
To record sale of equipment at a price greater than book value.		

If on the other hand, the company sells the equipment for USD 28,000, it realizes a loss of USD 3,000 (USD 31,000 book value—USD 28,000 sales price). The journal entry to record the sale is:

Cash (+A)	28,000	
Accumulated Depreciation—Equipment (+A)	14,000	
Loss from Disposal of Plant Asset (-SE)	3,000	
Equipment (-A)		45,000
To record the sale of equipment at a price less than book value.		

If a firm sells the equipment for USD 31,000, no gain or loss occurs. The journal entry to record the sale is:

Cash (+A)	31,000	
Accumulated Depreciation—Equipment (+A)	14,000	
Equipment (-A)		45,000
To record sale of equipment at a price equal to book value.		

Accounting for depreciation to date of disposal When selling or otherwise disposing of a plant asset, a firm must record the depreciation up to the date of sale or disposal. For example, if it sold an asset on April 1 and last recorded depreciation on December 31, the company should record depreciation for three months (January 1-April 1). When depreciation is not recorded for the three months, operating expenses for that period are understated, and the gain on the sale of the asset is understated or the loss overstated.

To illustrate, assume that on 2011 August 1, Ray Company sold a machine for USD 1,500. When purchased on 2003 January 2, the machine cost USD 12,000; Ray was depreciating it at the straight-line rate of 10 percent per year. As of 2010 December 31, after closing entries were made, the machine's accumulated depreciation account had a balance of USD 9,600. Before determining a gain or loss and before making an entry to record the sale, the firm must make the following entry to record depreciation for the seven months ended 2011 July 31:

+J uly	31	Depreciation Expense—Machinery (-SE)	700
		Accumulated Depreciation—Machinery (-A)	700
		To record depreciation for seven months	
		[\$12,000 X 0.10 X (7/12)]	

An accountant would compute the USD 200 loss on the sale as follows:

Machine cost	\$	12,000
Accumulated depreciation (\$9,600 + \$700)		10,300
Book value	\$	1,700
Sales price		1,500
Loss realized	\$	200

The journal entry to record the sale is:

<i>Cash (+A)</i>		<i>1,500</i>
<i>Accumulated Depreciation—Machinery (+A)</i>		<i>10,300</i>
<i>Loss from Disposal of Plant Assets (-SE)</i>		<i>200</i>
<i>Machinery(-A)</i>		<i>12,000</i>
<i>To record the sale of machinery at a price less than book value.</i>		

When retiring a plant asset from service, a company removes the asset's cost and accumulated depreciation from its plant asset accounts. For example, Hayes Company would make the following journal entry when it retired a fully depreciated machine that cost USD 15,000 and had no salvage value:

Accumulated Depreciation—Machinery (+A)		15,000
Machinery (-A)		15,000
To record the retirement of a fully depreciated machine.		

Occasionally, a company continues to use a plant asset after it has been fully depreciated. In such a case, the firm should not remove the asset's cost and

accumulated depreciation from the accounts until the asset is sold, traded, or retired from service. Of course, the company cannot record more depreciation on a fully depreciated asset because total depreciation expense taken on an asset may not exceed its cost.

Sometimes a business retires or discards a plant asset before fully depreciating it. When selling the asset as scrap (even if not immediately), the firm removes its cost and accumulated depreciation from the asset and accumulated depreciation accounts. In addition, the accountant records its estimated salvage value in a Salvaged Materials account and recognizes a gain or loss on disposal. To illustrate, assume that a firm retires a machine with a USD 10,000 original cost and USD 7,500 of accumulated depreciation. If the machine's estimated salvage value is USD 500, the following entry is required:

Salvaged materials (+A)	500	
Accumulated Depreciation—Machinery (+A)	7,500	
Loss from Disposal of Plant Assets (-SE)	2,000	
Machinery (-A)		10,000
To record the retirement of machinery, which will be sold for scrap at a later time.		

An accounting perspective:

Uses of technology

The main advantages that companies give for having a home page on the Internet are (1) increased efficiency in the work environment, (2) increased revenue, and (3) faster customer access. A home page can be developed for a small company for a few hundred dollars and can be maintained for a fairly low monthly fee. The Small Business Administration has a website at <http://www.sba.gov> that provides helpful information to small businesses. One concern that companies have regarding Internet use by their employees is that they might visit interesting nonbusiness related sites on company time.

Sometimes accidents, fires, floods, and storms wreck or destroy plant assets, causing companies to incur losses. For example, assume that fire completely destroyed an uninsured building costing USD 40,000 with up-to-date accumulated depreciation of USD 12,000. The journal entry is:

Fire Loss (-SE)	28,000	
Accumulated Depreciation—Buildings (+A)	12,000	
Buildings (-A)		40,000
To record fire loss.		

If the building was insured, the company would debit only the amount of the fire loss exceeding the amount to be recovered from the insurance company to the Fire Loss account. To illustrate, assume the company partially insured the building and will recover USD 22,000 from the insurance company. The journal entry is:

Receivable from Insurance Company (+A)	22,000	
Fire Loss (-SE)	6,000	
Accumulated Depreciation—Buildings (+A)	12,000	
Buildings (-A)		40,000
To record fire loss and amount recoverable from insurance company.		

Exchanges of nonmonetary assets Until late 2004, the rules according to *APB Opinion No. 29* for recording exchanges of nonmonetary assets depended on whether they were exchanges of dissimilar assets such as a truck for a machine or were similar assets such as a truck for a truck⁴. If the exchange classified as an exchange of dissimilar assets, the acquired asset would be recorded at its fair value and any gain or loss would be recognized. In late 2004, the FASB issued a new standard, *Statement of Financial Accounting Standards No. 153*, "Exchanges of Nonoperating Assets: an amendment of APB Opinion No. 29"⁵. This new standard was issued to bring about greater agreement between US Generally Accepted

4 APB, *APB Opinion No. 29*, "Accounting for Nonmonetary Transactions" (New York: AICPA, May 1973).

5 FASB, *FASB Statement No. 153*, "Exchanges of Nonmonetary Assets: an amendment of APB Opinion No. 29" (Norwalk, CT: FASB Board, December 2004).

Accounting Principles and International Financial Reporting Standards and is effective for exchanges occurring during fiscal periods beginning after 2005 June 15.

This change allows the financial statements of US companies to be more comparable to the financial statements of companies utilizing International Financial Reporting Standards.

The new FASB standard no longer distinguishes between dissimilar and similar asset exchanges. Instead it differentiates between exchanges that have commercial substance and those that do not have commercial substance. An exchange has **commercial substance** if, as a result of the exchange, future cash flows are expected to change significantly. For instance, if a company exchanges a building for land (a dissimilar exchange), the timing and the future cash flows are likely to be different than if the exchange had not occurred. Most exchanges qualify as having commercial substance. However, if the exchange is not expected to create a significant change in future cash flows, the exchange does not result in commercial substance. For example, if a company exchanges one truck for another truck (a similar exchange) that will perform the same function as the old truck and for the same time period so that the future cash flows are not significantly different, then the exchange does not result in commercial substance. However, if the future cash flows are likely to be significantly different, then the exchange of similar assets has commercial substance.

Exchanges of nonmonetary assets having commercial substance For exchanges of nonmonetary assets that have commercial substance, accountants record the new asset at the fair market value of the asset received or the asset(s) given up, whichever is more clearly evident. When the cash price of the new asset is stated, they use the cash price to record the new asset. If the cash price is not stated, they assume that the fair market value of the old asset plus any cash paid would equate to the cash price of the new asset and use that value to record the new asset. Thus, accountants would normally record the asset received at either (1) the stated cash price of the new asset or (2) a known fair market value of the asset given up plus any cash paid.

Debiting accumulated depreciation and crediting the old asset removes the book value of the old asset from the accounts. The firm credits the Cash account for any

amount paid. If the amount at which the new asset is recorded exceeds the book value of the old asset plus any cash paid, a company records a gain to balance the journal entry. If the situation is reversed, it records a loss to balance the journal entry. To illustrate such an exchange having commercial substance, assume a company exchanges an old machine for a new delivery truck. The future cash flows from the exchange are expected to be significantly different and, therefore, the exchange has commercial substance. The machine cost USD 45,000 and had an up-to-date accumulated depreciation balance of USD 38,000. The truck had a USD 55,000 cash price and was acquired by trading in the machine with a fair value of USD 3,000 and paying USD 52,000 cash. The journal entry to record the exchange is:

Trucks (+A)	55,000
Accumulated Depreciation—Machinery (+A)	38,000
Loss from Disposal of Plant Assets (-SE)	4,000
Machinery (-A)	45,000
Cash (-A)	52,000
To record loss on exchange of dissimilar plant assets.	

Another way to compute the USD 4,000 loss on the exchange is to use the book value of the old asset less the fair market value of the old asset. The calculation is as follows:

Machine cost	\$ 45,000
Accumulated depreciation	38,000
Book value	\$ 7,000
Fair market value of old asset	
(trade-in allowance)	3,000
Loss realized	\$ 4,000

To illustrate the recognition of a gain from such an exchange having commercial substance, assume that the fair market value of the machine was USD 9,000 instead of USD 3,000, and that only USD 46,000 was paid in cash. The journal entry to record the exchange would be:

Trucks (+A)	55,000
Accumulated Depreciation—Machinery (+A)	38,000
Machinery (-A)	45,000

Cash (-A)	46,000
Gain on Disposal of Plant Assets(+SE)	2,000
To record gain on exchange of dissimilar assets.	

Another way to compute the gain of USD 2,000 on the exchange is to use the fair market value of the old asset less the book value of the old asset. The calculation is as follows:

Machine cost	\$ 45,000
Accumulated depreciation	38,000
Book value	\$ 7,000
Fair market value of old asset	
(trade-in allowance)	9,000
Gain realized	\$ 2,000

Remember, when the book value and the market value of the old asset are different, companies always recognize a gain or a loss on an exchange of nonmonetary assets having commercial substance. As discussed earlier, they do not recognize a gain or loss on an exchange of nonmonetary assets not having commercial substance.

Exchanges of nonmonetary assets not having commercial substance

Often firms exchange plant assets such as automobiles, trucks, and office equipment by trading the old asset for a similar new one. Once in a while, such an exchange does not result in an expected change in future cash flows and therefore lacks commercial substance. When such an exchange occurs, the company receives a trade-in allowance for the old asset, and pays the balance in cash.⁶ Usually, the cash price of the new asset is stated. If not, accountants assume the cash price of the new asset is the fair market value of the old asset plus the cash paid.

When such assets are exchanged, we must modify the general rule that new assets are recorded at the fair market value of what is given up or received, whichever is clearer. Thus, companies record the new asset at the book value of the old asset plus the cash paid. When applying this rule to exchanges of assets where no commercial substance results, firms recognize no losses or gains.

⁶ Trade-in allowance is sometimes expressed as the difference between list price and cash paid, but we choose to define it as the difference between cash price and cash paid because this latter definition seems to agree with current practice for exchange transactions.

To illustrate the accounting for exchanges of nonmonetary assets that do not have commercial substance, assume that a delivery service exchanged USD 50,000 cash and truck No. 1—which cost USD 45,000, had USD 38,000 of up-to-date accumulated depreciation, and had a USD 5,000 fair market value—for truck No. 2. The new truck has a cash price (fair market value) of USD 55,000. The delivery service realized a loss of USD 2,000 on the exchange which cannot be recorded. The loss is calculated as follows:

The journal entry to record the exchange is:

Cost of trunk No. 1	\$ 45,000
Accumulated depreciation	38,000
Book value	\$ 7,000
Fair market value of old asset	
(trade-in allowance)	5,000
Loss indicated (but not recorded)	\$ 2,000

However, if a loss is indicated and is added to the recorded value of the new asset, the asset may later be written down because of rules of impairment (as required by *FASB Standard No. 144*), a topic left to Intermediate Accounting texts.

Truck (cost of No. 2) (+A)	57000	
Accumulated Depreciation—Trucks (+A)	38,000	
Trucks (cost of No. 1) (-A)		45,000
Cash (-A)		50,000

To record the exchange of non-monetary assets with no commercial substance (no loss recorded).

Accounting for any gain resulting from exchanges of nonmonetary assets having no commercial substance is similar to the case where a loss is present but unrecorded. To illustrate, assume that in the preceding example, the delivery service gave truck No. 1 (now with a fair market value of USD 9,000) and USD 46,000 cash in exchange for truck No. 2. The gain on the exchange is USD 2,000, but would be unrecorded.

Book value of old truck (No. 1)	\$ 7,000	1
Cash paid	46,000	
Cost of new truck (No. 2)	\$ 53,000	
Fair market value of new truck (No. 2)	\$ 55,000	1
Less: Gain indicated	2,000	(equal)
Cost of new truck (No. 2)	\$ 53,000	1

The company would record the new asset at the book value of the old asset (USD 7,000) plus cash paid (USD 46,000). The company deducts the gain from the cost of the new asset (USD 55,000). Thus, the cost basis of the new delivery truck is equal to USD 55,000 less than the USD 2,000 gain, or USD 53,000. The delivery service uses this USD 53,000 cost basis in recording depreciation on the truck and determining any gain or loss on its disposal.

The journal entry to record the exchange is:

Cost of trunk No. 1	\$ 45,000
Accumulated depreciation	38,000
Book value	\$ 7,000
Fair market value of old asset (trade-in allowance)	5000
Loss indicated (but not recorded)	\$ 2,000

Firms would realize the gain on an exchange of nonmonetary assets not having commercial substance in future accounting periods as increased net income resulting from smaller depreciation charges on the newly acquired asset. In the preceding

example, annual depreciation expense is less if it is based on the truck's USD 53,000 cost basis than if it is based on the truck's USD 55,000 cash price. Thus, future net income per year will be larger.

Trucks (cost of No. 2) (+A)	53000	
Accumulated Depreciation—Trucks (+A)	38,000	
Trucks (cost of No. 1) (-A)		45,000
Cash (-A)		46000
To record exchange of nonmonetary assets with no commercial substance (no gain recorded).		

In Exhibit 17, we summarize the rules for recording nonmonetary asset exchanges.

An accounting perspective:

Uses of technology

Although sophisticated computer systems automatically compute the gain or loss on the disposal of assets, such programs depend on human input. If an error was made in inputting the type of disposal or exchange, or if the life of the asset was estimated inaccurately, the calculated gain or loss would be incorrect.

	Exchanges Having Commercial Substance	Exchanges NOT Having Commercial Substance
Recognize Gains?	Yes	No
Recognize Losses?	Yes	No
Record New Asset At:	Fair market value of asset received (new asset) or fair market value of asset given up (old asset), whichever is more clearly evident	Book value of old asset plus cash paid

Exhibit 17: Summary of rules for recording exchanges of plant assets

Companies incur removal costs when dismantling and removing old plant assets. They deduct these costs from salvage proceeds to determine the asset's net salvage value. (The removal costs could be greater than the salvage proceeds.) Accountants associate removal costs with the old asset, not the new asset acquired as a replacement.

The next section discusses natural resources. Note the underlying accounting principle of matching the expenses with the revenues earned in that same accounting period.

11.5 Natural resources

Resources supplied by nature, such as ore deposits, mineral deposits, oil reserves, gas deposits, and timber stands, are **natural resources** or **wasting assets**. Natural resources represent inventories of raw materials that can be consumed (exhausted) through extraction or removal from their natural setting (e.g. removing oil from the ground).

On the balance sheet, we classify natural resources as a separate group among noncurrent assets under headings such as "Timber stands" and "Oil reserves". Typically, we record natural resources at their cost of acquisition plus exploration and development costs; on the balance sheet, we report them at total cost less accumulated depletion. (Accumulated depletion is similar to the accumulated depreciation used for plant assets.) When analyzing the financial condition of companies owning natural resources, exercise caution because the historical costs reported for the natural resources may be only a small fraction of their current value.

An accounting perspective:

Business insight

Kerr-McGee Corporation is a global energy and chemical company engaged in oil and gas exploration and production, and the production and marketing of titanium dioxide pigment. In notes to its financial statements, Kerr-McGee states that the company's geologists and engineers in accordance with the Securities and Exchange Commission definitions have prepared estimates of proved reserves. These estimates include reserves that may be obtained in the future by improved recovery methods now in operation or for which successful testing has been exhibited.

Depletion is the exhaustion that results from the physical removal of a part of a natural resource. In each accounting period, the depletion recognized is an estimate of the cost of the natural resource that was removed from its natural setting during the period. To record depletion, debit a Depletion account and credit an Accumulated Depletion account, which is a contra account to the natural resource asset account.

By crediting the Accumulated Depletion account instead of the asset account, we continue to report the original cost of the entire natural resource on the financial statements. Thus, statement users can see the percentage of the resource that has been removed. To determine the total cost of the resource available, we combine this depletion cost with other extraction, mining, or removal costs. We can assign this total cost to either the cost of natural resources sold or the inventory of the natural resource still on hand. Thus, we could expense all, some, or none of the depletion and removal costs recognized in an accounting period, depending on the portion sold. If all of the resource is sold, we expense all of the depletion and removal costs. The cost of any portion not yet sold is part of the cost of inventory.

Computing periodic depletion cost To compute depletion charges, companies usually use the units-of-production method. They divide total cost by the estimated number of units—tons, barrels, or board feet—that can be economically extracted from the property. This calculation provides a per-unit depletion cost. For example, assume that in 2010 a company paid USD 650,000 for a tract of land containing ore deposits. The company spent USD 100,000 in exploration costs. The results indicated that approximately 900,000 tons of ore can be removed economically from the land, after which the land will be worth USD 50,000. The company incurred costs of USD 200,000 to develop the site, including the cost of running power lines and building roads. Total cost subject to depletion is the net cost assignable to the natural resource plus the exploration and development costs. When the property is purchased, a journal entry assigns the purchase price to the two assets purchased—the natural resource and the land. The entry would be:

Land (+A)	50,000	
Ore Deposits (+A)	600,000	
Cash (-A)		650,000

To record purchase of land and mine.

After the purchase, an entry debits all costs to develop the site (including exploration) to the natural resource account. The entry would be:

Ore Deposits (\$100,000 + \$200,000) (+A)	300,000	
Cash (-A)		300,000
To record costs of exploration and development.		

The formula for finding depletion cost per unit is:

$$\text{Depletion cost per unit} = \frac{\text{Cost of site} - \text{Residual value of land (if owned)} + \text{Costs develop site}}{\text{Estimated number of units that can be economically extracted}}$$

In some instances, companies buy only the right to extract the natural resource from someone else's land. When the land is not purchased, its residual value is irrelevant and should be ignored. If there is an obligation to restore the land to a usable condition, the firm adds these estimated restoration costs to the costs to develop the site.

In the example where the land was purchased, the total costs of the mineral deposits equal the cost of the site (USD 650,000) minus the residual value of land (USD 50,000) plus costs to develop the site (USD 300,000), or a total of USD 900,000. The unit (per ton) depletion charge is USD 1 (or USD 900,000/900,000 tons). The formula to compute the depletion cost of a period is:

$$\text{Depletion cost of a period} = \text{Depletion cost per unit} \times \text{Number of units extracted during period}$$

In this example, if 100,000 tons are mined in 2010, this entry records the depletion cost of USD 100,000 (USD 1 X 100,000) for the period:

Depletion (-SE)	100,000	
Accumulated Depletion—Ore Deposits⁴ (-A)		100,000
To record depletion for 2010.⁷		

The Depletion account contains the "in the ground" cost of the ore or natural resource mined. Combined with other extractive costs, this cost determines the total cost of the ore mined. To illustrate, assume that in addition to the USD 100,000

⁷ Instead of crediting the accumulated depletion account, the Ore Deposits account could have been credited directly. But for reasons indicated earlier, the credit is usually to an accumulated depletion account.

depletion cost, mining labor costs totaled USD 320,000, and other mining costs, such as depreciation, property taxes, power, and supplies, totaled USD 60,000. If 80,000 tons were sold and 20,000 remained on hand at the end of the period, the firm would allocate the total cost of USD 480,000 as follows:

Depletion cost	USD 100,000
Mining labor costs	320,000
Other mining costs	60,000
Total cost of 100,000 tons mined (USD 4.80 per ton)	USD 480,000
Less: One inventory (20,000 tons at USD 4.80)	96,000
Cost of ore sold (80,000 tons at USD 4.80)	USD 384,000

Note that the average cost per ton to mine 100,000 tons was USD 4.80 (or USD 480,000/100,000). The income statement would show cost of ore sold of USD 384,000. The mining company does not report depletion separately as an expense because depletion is included in cost of ore sold. The balance sheet would show inventory of ore on hand (a current asset) at USD 96,000 (or USD 4.80 X 20,000). Also, it would report the cost less accumulated depletion of the natural resource as follows:

One deposits	\$900,000	
Less: Accumulated depletion	100,000	\$ 800,000

Another method of calculating depletion cost is the percentage of revenue method. Because firms use this method only for income tax purposes and not for financial statements, we do not discuss it in this text.

Companies depreciate plant assets erected on extractive industry property the same as other depreciable assets. If such assets will be abandoned when the natural resource is exhausted, they depreciate these assets over the shorter of the (a) physical life of the asset or (b) life of the natural resource. In many cases, firms compute periodic depreciation charges using the units-of-production method. Using this method matches the life of the plant asset with the life of the natural resource. This method is recommended where the physical life of the plant asset equals or exceeds the resource's life but its useful life is limited to the life of the natural resource.

Assume a mining company acquires mining property with a building it plans to use only in the mining operations. Also assume that the firm uses the units-of-production method for computing building depreciation. Relevant facts are:

Building cost	\$310,000	
Estimated physical life of building	20	years
Estimated salvage value of building (after mine is exhausted)	\$ 10,000	
Capacity of mine	1,000,00	tons
	0	
Expected life of mine	10	years

Because the life of the mine (10 years or 1,000,000 tons) is shorter than the life of the building (20 years), the building should be depreciated over the life of the mine. The basis of the depreciation charge is tons of ore rather than years because the mine's life could be longer or shorter than 10 years, depending on how rapidly the ore is removed.

Suppose that during the first year of operations, workers extracted 150,000 tons of ore. Building depreciation for the first year is USD 45,000, computed as follows:

$$\text{Depreciation per unit} = \frac{\text{Asset cost} - \text{Estimated salvage value}}{\text{Total tons of ore in mine that can be economically extracted}}$$

$$= \frac{\$310,000 - \$10,000}{1,000,000} \text{ tons} = \$0.30 \text{ per ton}$$

$$\text{Depreciation for year} = \text{Depreciation per unit} \times \text{Units extracted}$$

$$\text{USD}0.30 \text{ per ton} \times 150,000 \text{ tons} = \text{USD}45,000$$

On the income statement, depreciation on the building appears as part of the cost of ore sold and is carried as part of inventory cost for ore not sold during the period. On the balance sheet, accumulated depreciation on the building appears with the related asset account.

Plant assets and natural resources are tangible assets used by a company to produce revenues. A company also may acquire intangible assets to assist in producing revenues.

11.6 Intangible assets

Although they have no physical characteristics, **intangible assets** have value because of the advantages or exclusive privileges and rights they provide to a business. Intangible assets generally arise from two sources: (1) exclusive privileges granted by governmental authority or by legal contract, such as patents, copyrights, franchises, trademarks and trade names, and leases; and (2) superior entrepreneurial capacity or management know-how and customer loyalty, which is called goodwill.

All intangible assets are nonphysical, but not all nonphysical assets are intangibles. For example, accounts receivable and prepaid expenses are nonphysical, yet classified as current assets rather than intangible assets. Intangible assets are generally both nonphysical and noncurrent; they appear in a separate long-term section of the balance sheet entitled "Intangible assets".

Initially, firms record intangible assets at cost like most other assets. However, computing an intangible asset's acquisition cost differs from computing a plant asset's acquisition cost. Firms may include only outright purchase costs in the acquisition cost of an intangible asset; the acquisition cost does not include cost of internal development or self-creation of the asset. If an intangible asset is internally generated in its entirety, none of its costs are capitalized. Therefore, some companies have extremely valuable assets that may not even be recorded in their asset accounts. To explain the reasons for this practice, we discuss the history of accounting for research and development costs next.

Research and development (R&D) costs are costs incurred in a planned search for new knowledge and in translating such knowledge into new products or processes. Prior to 1975, businesses often capitalized research and development costs as intangible assets when future benefits were expected from their incurrence. Due to the difficulty of determining the costs applicable to future benefits, many companies expensed all such costs as incurred. Other companies capitalized those costs that related to proven products and expensed the rest as incurred.

As a result of these varied accounting practices, in 1974 the Financial Accounting Standards Board in *Statement No. 2* ruled that firms must expense all research and

development costs when incurred, unless they were directly reimbursable by government agencies and others. Immediate expensing is justified on the grounds that (1) the amount of costs applicable to the future cannot be measured with any high degree of precision; (2) doubt exists as to whether any future benefits will be received; and (3) even if benefits are expected, they cannot be measured. Thus, research and development costs no longer appear as intangible assets on the balance sheet. The Board applies the same line of reasoning to other costs associated with internally generated intangible assets, such as the internal costs of developing a patent.

Amortization is the systematic write-off of the cost of an intangible asset to expense. A portion of an intangible asset's cost is allocated to each accounting period in the economic (useful) life of the asset. All intangible assets are not subject to amortization. Only recognized intangible assets with finite useful lives are amortized. The **finite useful life** of such an asset is considered to be the length of time it is expected to contribute to the cash flows of the reporting entity. (Pertinent factors that should be considered in estimating useful life include legal, regulatory, or contractual provisions that may limit the useful life). The method of amortization should be based upon the pattern in which the economic benefits are used up or consumed. If no pattern is apparent, the straight-line method of amortization should be used by the reporting entity.

Recognized intangible assets deemed to have indefinite useful lives are not to be amortized. Amortization will however begin when it is determined that the useful life is no longer indefinite. The method of amortization would follow the same rules as intangible assets with finite useful lives.⁸

Straight-line amortization is calculated the same was as straight-line depreciation for plant assets. Generally, we record amortization by debiting Amortization Expense and crediting the intangible asset account. An accumulated amortization account could be used to record amortization. However, the information gained from such accounting would not be significant because normally intangibles do not account for as many total asset dollars as do plant assets.

8 FASB, *SFAS No. 142*. " Goodwill and Other Intangible Assets" (CT: FASB, June 2001), par. 11.

A **patent** is a right granted by the federal government. This exclusive right enables the owner to manufacture, sell, lease, or otherwise benefit from an invention for a limited period. The value of a patent lies in its ability to produce revenue. Patents have a legal life of 17 years. Protection for the patent owner begins at the time of patent application and lasts for 17 years from the date the patent is granted.

When purchasing a patent, a company records it in the Patents account at cost. The firm also debits the Patents account for the cost of the first successful defense of the patent in lawsuits (assuming an outside law firm was hired rather than using internal legal staff). Such a lawsuit establishes the validity of the patent and thereby increases its service potential. In addition, the firm debits the cost of any competing patents purchased to ensure the revenue-generating capability of its own patent to the Patents account.

The firm would amortize the cost of a purchased patent over its finite life which reasonably would not exceed its legal life. If a patent cost USD 40,000 and has a useful life of 10 years, the journal entries to record the patent and periodic amortization are:

Patents (+A)	40,000	
Cash (-A)		40,000
To record purchases of patent.		
Patient Amortization Expense (-SE)	4,000	
Patents (-A)		4,000
To record annual patent amortization.		

For a patent that becomes worthless before it is fully amortized, the company expenses the unamortized balance in the Patents account.

As noted earlier, all R&D costs incurred in the internal development of a product, process, or idea that is later patented must be expensed, rather than capitalized. In the previous example, the company amortized the cost of the purchased patent over its useful life of 10 years. If the patent had been the result of an internally generated product or process, the firm would have expensed its cost of USD 40,000 as incurred, in accordance with *Statement No. 2* of the Financial Accounting Standards Board.

A **copyright** is an exclusive right granted by the federal government giving protection against the illegal reproduction by others of the creator's written works, designs, and literary productions. The finite useful life for a copyright extends to the life of the creator plus 50 years.⁹ Most publications have a limited (finite) life; a creator may amortize the cost of the copyright to expense on a straight-line basis or based upon the pattern in which the economic benefits are used up or consumed.

A **franchise** is a contract between two parties granting the franchisee (the purchaser of the franchise) certain rights and privileges ranging from name identification to complete monopoly of service. In many instances, both parties are private businesses. For example, an individual who wishes to open a hamburger restaurant may purchase a McDonald's franchise; the two parties involved are the individual business owner and McDonald's Corporation. This franchise would allow the business owner to use the McDonald's name and golden arch, and would provide the owner with advertising and many other benefits. The legal life of a franchise may be limited by contract.

The parties involved in a franchise arrangement are not always private businesses. A government agency may grant a franchise to a private company. A city may give a franchise to a utility company, giving the utility company the exclusive right to provide service to a particular area.

In addition to providing benefits, a franchise usually places certain restrictions on the franchisee. These restrictions generally are related to rates or prices charged; also they may be in regard to product quality or to the particular supplier from whom supplies and inventory items must be purchased.

If periodic payments to the grantor of the franchise are required, the franchisee debits them to a Franchise Expense account. If a lump-sum payment is made to obtain the franchise, the franchisee records the cost in an asset account entitled Franchise and amortizes it over the finite useful life of the asset. The legal life (if limited by contract) and the economic life of the franchise may limit the finite useful life.

9 In 1998 Congress changed the period from 50 to 70 years. At this writing, the Supreme Court was reviewing the constitutionality of this change.

A **trademark** is a symbol, design, or logo used in conjunction with a particular product or company. A **trade name** is a brand name under which a product is sold or a company does business. Often trademarks and trade names are extremely valuable to a company, but if they have been internally developed, they have no recorded asset cost. However, when a business purchases such items from an external source, it records them at cost and amortizes them over their finite useful life.

A **lease** is a contract to rent property. The property owner is the grantor of the lease and is the lessor. The person or company obtaining rights to possess and use the property is the lessee. The rights granted under the lease are a **leasehold**. The accounting for a lease depends on whether it is a capital lease or an operating lease.

Capital leases A **capital lease** transfers to the lessee virtually all rewards and risks that accompany ownership of property. A lease is a capital lease if, among other provisions, it (1) transfers ownership of the leased property to the lessee at the end of the lease term or (2) contains a bargain purchase option that permits the lessee to buy the property at a price significantly below fair market value at the end of the lease term.

A capital lease is a means of financing property acquisitions; it has the same economic impact as a purchase made on an installment plan. Thus, the lessee in a capital lease must record the leased property as an asset and the lease obligation as a liability. Because a capital lease is an asset, the lessee depreciates the leased property over its useful life. The lessee records part of each lease payment as interest expense and the balance as a payment on the lease liability.

The proper accounting for capital leases for both lessees and lessors has been an extremely difficult problem. We leave further discussion of capital leases for an intermediate accounting text.

Operating leases A lease that does not qualify as a capital lease is an **operating lease**. A one-year lease on an apartment and a week's rental of an automobile are examples of operating leases. Such leases make no attempt to transfer any of the rewards and risks of ownership to the lessee. As a result, there may be no recordable transaction when a lease is signed.

In some situations, the lease may call for an immediate cash payment that must be recorded. Assume that a business signed a lease requiring the immediate payment of the annual rent of USD 15,000 for each of the first and fifth years of a five-year lease. The lessee would record the payment as follows:

Prepaid Rent (+A)	15,000
Leasehold (+A)	15,000
Cash (-A)	30,000
To record first and fifth years' rent on a five-year lease.	

Since the Leasehold account is actually a long-term prepaid rent account for the fifth year's annual rent, it is an intangible asset until the beginning of the fifth year. Then the Leasehold account becomes a current asset and may be transferred into a Prepaid Rent account. Accounting for the balance in the Leasehold account depends on the terms of the lease. In the previous example, the firm would charge the USD 15,000 in the Leasehold account to expense over the fifth year only. It would charge the balance in Prepaid Rent to expense in the first year. Thus, assuming the lease year and fiscal year coincide, the entry for the first year is:

Rent Expense (-SE)	15,000
Prepaid Rent (-A)	15,000
To record rent expense.	

The entry in the fifth year is:

Rent Expense (-SE)	15,000
Leasehold (-A)	15,000
To record rent expense.	

The accounting for the second, third, and fourth years would be the same as for the first year. The lessee records the rent in Prepaid Rent when paid in advance for the year and then expenses it. As stated above, the lessee may transfer the amount in the Leasehold account to Prepaid Rent at the beginning of the fifth year by debiting Prepaid Rent and crediting Leasehold. If this entry was made, the previous entry would have credited Prepaid Rent.

In some cases, when a lease is signed, the lump-sum payment does not cover a specific year's rent. The lessee debits this payment to the Leasehold account and

amortizes it over the life of the lease. The straight-line method is required unless another method can be shown to be superior. Assume the USD 15,000 rent for the fifth year in the example was, instead, a lump-sum payment on the lease in addition to the annual rent payments. An annual adjusting entry to amortize the USD 15,000 over five years would read:

Rent Expense (-SE)	3,000
Leasehold (-A)	3,000
To amortize leasehold.	

In this example, the annual rental expense is USD 18,000: USD 15,000 annual cash rent plus USD 3,000 amortization of leasehold (USD 15,000/5).

The lessee may base periodic rent on current-year sales or usage rather than being a constant amount. For example, if a lease called for rent equal to 5 percent of current-year sales and sales were USD 400,000 in 2010, the rent for 2010 would be USD 20,000. The rent would either be paid or an adjusting entry would be made at the end of the year.

A **leasehold improvement** is any physical alteration made by the lessee to the leased property in which benefits are expected beyond the current accounting period. Leasehold improvements made by a lessee usually become the property of the lessor after the lease has expired. However, since leasehold improvements are an asset of the lessee during the lease period, the lessee debits them to a Leasehold Improvements account. The lessee then amortizes the leasehold improvements to expense over the period benefited by the improvements. The amortization period for leasehold improvements should be the shorter of the life of the improvements or the life of the lease. If the lease can (and probably will) be renewed at the option of the lessee, the life of the lease should include the option period.

As an illustration, assume that on 2010 January 2, Wolf Company leases a building for 20 years under a nonrenewable lease at an annual rental of USD 20,000, payable on each December 31. Wolf immediately incurs a cost of USD 80,000 for improvements to the building, such as interior walls for office separation, ceiling fans, and recessed lighting. The improvements have an estimated life of 30 years. The company should amortize the USD 80,000 over the 20-year lease period, since that period is shorter than the life of the improvements, and Wolf cannot use the

improvements beyond the life of the lease. If only annual financial statements are prepared, the following journal entry properly records the rental expense for the year ended 2010 December 31:

Rent Expense (or Leasehold Improvement Expense) (-SE)	4,000	
Leasehold Improvements (-A)		4,000
To record amortization of leasehold improvement.		
Rent Expense (-SE)	20,000	
Cash (-A)		20,000
To record annual rent.		

Thus, the total cost to rent the building each year equals the USD 20,000 cash rent plus the amortization of the leasehold improvements.

Although leaseholds are intangible assets, leaseholds and leasehold improvements sometimes appear in the property, plant, and equipment section of the balance sheet.

In accounting, **goodwill** is an intangible value attached to a company resulting mainly from the company's management skill or know-how and a favorable reputation with customers. A company's value may be greater than the total of the fair market value of its tangible and identifiable intangible assets. This greater value means that the company generates an above-average income on each dollar invested in the business. Thus, proof of a company's goodwill is its ability to generate superior earnings or income.

A goodwill account appears in the accounting records only if goodwill has been purchased. A company cannot purchase goodwill by itself; it must buy an entire business or a part of a business to obtain the accompanying intangible asset, goodwill.

To illustrate, assume that Lenox Company purchased all of Martin Company's assets for USD 700,000. Lenox also agreed to assume responsibility for a USD 350,000 mortgage note payable owed by Martin. Goodwill is the difference between the amount paid for the business including the debt assumed (USD 700,000 + USD 350,000 = USD 1,050,000) and the fair market value of the assets purchased. Notice that Lenox would use the fair market value of the assets rather than book value to determine the amount of goodwill. The following computation is for the goodwill purchased by Lenox:

Cash paid		\$	
		700,000	
Mortgage note payable		350,000	
Total price paid		\$1,050,000	
Less fair market values of individually identifiable assets:			
Accounts receivable	\$ 95,000		
Merchandise inventory	100,000		
Land	240,000		
Buildings	275,000		
Equipment	200,000		
Patents	65,000	975,000	
Goodwill		\$ 75,000	

The USD 75,000 is the goodwill Lenox records as an intangible asset; it records all of the other assets at their fair market values, and the liability at the amount due.

ANY COMPANY

Partial Balance Sheet

2010 June 30

Property, plant, and equipment

Land		\$ 30,000	
Buildings	\$ 75,000		
Less: Accumulated depreciation	45,000	30,000	
Equipment	\$ 9,000		
Less: Accumulated depreciation	1,500	7,500	
Total property, plant, and equipment			\$ 67,500
Natural resources:			
Mineral deposits		\$300,000	
Less: Accumulated depreciation		100,000	
Total natural resources			\$200,000
Intangible assets:			
Patents		\$ 10,000	
Goodwill		20,000	\$ 30,000
Total intangible assets			

Exhibit 18: Partial balance sheet

Specific reasons for a company's goodwill include a good reputation, customer loyalty, superior product design, unrecorded intangible assets (because they were developed internally), and superior human resources. Since these positive factors are

not individually quantifiable, when grouped together they constitute goodwill. The journal entry to record the purchase is:

Accounts Receivable (+A)	95,000	
Merchandise Inventory (+A)	100,000	
Land (+A)	240,000	
Buildings (+A)	275,000	
Equipment(+A)	200,000	
Patents (+A)	65,000	
Goodwill(+A)	75,000	
Cash (-A)		700,000
Mortgage Note Payable (+L)		350,000
To record the purchase of Martin Company's assets and assumption of mortgage note payable.		

The intangible asset goodwill is not amortized. Goodwill is to be tested periodically for impairment. The amount of any goodwill impairment loss is to be recognized in the income statement as a separate line before the subtotal income from continuing operations (or similar caption).¹⁰ The goodwill account would be reduced by the same amount.¹¹

Look at Exhibit 18, a partial balance sheet for ANY company. Unlike plant assets or natural resources, intangible assets usually are a net amount in the balance sheet.

11.7 Analyzing and using the financial results—Total assets turnover

In determining the productivity of assets, management may compare one year's assets turnover ratio to a previous year's. **Total assets turnover** shows the relationship between the dollar volume of sales and the average total assets used in the business. To calculate this ratio:

$$\text{Total assets turnover} = \frac{\text{Net sales}}{\text{Average total assets}}$$

¹⁰ Discussion of testing for impairment is beyond the scope of this text. For more information on such testing see *SFAS No. 142*.

¹¹ *SFAS No. 142*, par. 18.

This ratio indicates the efficiency with which a company uses its assets to generate sales. When the ratio is low relative to industry standards or the company's ratio in previous years, it could indicate an over-investment in assets, a slow year in sales, or both. Thus, if the ratio is relatively low and there was no significant decrease in sales during the current year, management should identify and dispose of any inefficient equipment.

The total assets turnover in a recent year for several actual companies was as follows:

Company	Net Sales (\$ thousands)	Total Assets (\$ thousands)		Average	Turnover
		Beginning of Year	End of Year		
Procter & Gamble	\$ 39,244,000	\$ 34,366,000	\$ 37,374,300	\$ 35,870,150	109.41%
Tyco International	28,931,900	32,344,300	40,404,300	36,374,300	79.54%
Kimball International	1,261,171	723,651	678,984	701,318	179.83%

These three companies compete in very different industries. However, they are all manufacturers. To see if each of these companies is performing above standard, management should compare its company's percentage to the industry's standard. In addition, calculating this ratio over approximately five years would help management see any trends indicating problems or confirm successful asset management.

This chapter concludes your study of accounting for long-term assets. In Chapter 12, you learn about classes of capital stock.

11.7.1 Understanding the learning objectives

- By comparing an asset's book value (cost less up-to-date accumulated depreciation) with its sales price, the company may show either a gain or a loss. If sales price is greater than book value, the company shows a gain. If sales price is less than book value, the company shows a loss. If sales price equals book value, no gain or loss results.

- When a plant asset is retired from service, the asset's cost and accumulated depreciation must be removed from the plant asset accounts.
- Plant assets are sometimes wrecked in accidents or destroyed by fire, flood, storm, and other causes. If the asset was not insured, the loss is equal to the book value. If the asset was insured, only the amount of the loss exceeding the amount to be recovered from the insurance company would be debited to a loss account.
- In exchanges of nonmonetary assets having commercial substance, the firm records the asset received at either (1) the stated cash price of the new asset or (if the cash price is not stated) (2) the known fair market value of the asset given up plus any cash paid.
- In exchanges of nonmonetary assets not having commercial substance, the firm records the new asset at the book value of the old asset plus the cash paid.

**An ethical perspective:
ABC corporation**

In 2010, prior to the tax law change permitting the amortization of goodwill for tax purposes, ABC Corporation acquired XYZ Company for USD 10,000,000 cash. ABC acquired the following assets:

Accounts receivable	\$80,000
Old Book	Fair Market
Value	Value
Merchandise inventory	\$ 200,000 \$ 300,000
Buildings	3,000,000 4,000,000
Land	1,000,000 3,000,000
Equipment	500,000 700,000

An experienced appraiser with an excellent reputation established the fair market value of the assets. ABC also assumed the liability for paying XYZ's USD 50,000 of accounts payable.

John Gilbert, ABC's accountant, prepared the following journal entry to record the purchase: In explaining the entry to ABC's president,

Gilbert said that the assets had to be recorded at their fair market values. He also stated that the goodwill could not be amortized for accounting purposes or tax purposes.

Accounts Receivable (+A)	80,000	
Merchandise Inventory (+A)	300,000	
Buildings (+A)	4,000,000	
Land (+A)	3,000,000	
Equipment (+A)	700,000	
Goodwill (+A)	1,970,000	
Accounts Payable (+L)		50,000
Cash (-A)		10,000,000
To record the purchase of XYZ Company.		

The president reacted with, "It is not fair that we are prohibited from amortizing goodwill when it is a part of the cost of the purchase. Besides, appraisals are very inexact, and maybe some of our other assets are worth more than the one appraiser indicated. I want you to reduce goodwill down to USD 470,000 and assign the other USD 1,500,000 to the buildings and equipment. Then, we can benefit from the depreciation on these assets. If I need to find an appraiser who will support the new allocations, I will."

When Gilbert protested, the president stated, "If you are going to have a future with us, you need to be a team player. We just cannot afford to lose those tax deductions." Gilbert feared that if he did not go along, he would soon be unemployed.

- Depletion charges usually are computed by the units-of-production method. Total cost is divided by the estimated number of units that are economically extractable from the property. This calculation provides a per unit depletion cost that is multiplied by the units extracted each year to obtain the depletion cost for that year.

- Depreciable assets located on extractive industry property should be depreciated over the shorter of the (1) physical life of the asset or (2) life of the natural resource. The periodic depreciation charges usually are computed using the units-of-production method. Using this method matches the life of the plant asset with the life of the natural resource.

- Only outright purchase costs are included in the acquisition cost of an intangible asset. If an intangible asset is internally generated, its cost is immediately expensed.

- Intangibles should be amortized over their finite useful lives. The method of amortization should be based upon the pattern in which the economic benefits are used up. If no pattern is apparent, straight-line amortization should be used.

- $$\text{Total assets turnover} = \frac{\text{Net sales}}{\text{Average total assets}}$$

- This ratio indicates the efficiency with which a company uses its assets to generate sales.

11.7.2 Demonstration problem

Demonstration problem A On 2007 January 2, Darton Company purchased a machine for USD 36,000 cash. The machine has an estimated useful life of six years and an estimated salvage value of USD 1,800. Darton uses the straight-line method of depreciation.

a. Compute the book value of the machine as of 2010 July 1.

b. Assume the machine was disposed of on 2010 July 1. Prepare the journal entries to record the disposal of the machine under each of the following unrelated assumptions:

- The machine was sold for USD 12,000 cash.
- The machine was sold for USD 18,000 cash.
- The machine and USD 24,000 cash were exchanged for a new machine that had a cash price of USD 39,000. The exchange has commercial substance.
- The machine was completely destroyed by fire. Darton expects to recover cash of USD 10,800 from the insurance company.

Demonstration problem B Howard Company acquired on 2010 January 1, a tract of property containing timber at a cost of USD 8,000,000. After the timber is removed, the land will be worth about USD 3,200,000 and will be sold to another party. Costs of developing the site were USD 800,000. A building was erected at a cost of USD 160,000. The building had an estimated physical life of 20 years and will have an estimated salvage value of USD 80,000 when the timber is gone. It was expected that 50,000,000 board feet of timber can be economically cut. During the first year, 16,000,000 board feet were cut. Howard uses the units-of-production basis to depreciate the building.

Prepare the entries to record:

- a. The acquisition of the property.
- b. The development costs.
- c. Depletion cost for the first year.
- d. Depreciation on the building for the first year.

Demonstration problem C On 2010 January 2, Bedford Company purchased a 10-year sublease on a warehouse for USD 30,000. Bedford will also pay annual rent of USD 6,000. Bedford immediately incurred costs of USD 20,000 for improvements to the warehouse, such as lighting fixtures, replacement of a ceiling, heating system, and loading dock. The improvements have an estimated life of 12 years and no residual value.

Prepare the entries to record:

- a. The payment for the sublease on a warehouse.
- b. The rent payment for the first year.
- c. The payment for the improvements.
- d. Amortization of the leasehold for the first year.
- e. Amortization of the leasehold improvements for the first year.

11.7.3 Solution to demonstration problem

Solution to demonstration problem A

DARTON COMPANY			
a. Schedule to Compute Book Value			
2010 July 1			
	Cost	\$ 36,000	
	Less accumulated depreciation:		
	(\$35,000 - \$1,800)/6 years= \$5,700 per year	19,950	
	\$5,700 X 31 1/2 years = \$19,950	\$ 16,050	
	Book value		
b. (1)	Cash (+A)	12,000	
	Accumulated Depreciation—Machinery (+A)	19,950	
		4,050	36,000
	Loss from Disposal of Plant Assets (-SE) Machinery (-A)		
	To record the sale of machinery at loss.		
(2)	Cash (+A)	18,000	
	Accumulated Depreciation—Machinery (+A)	19,950	36,000
			1,950
	Machinery (-A)		
	Gain on Disposal of Plant Assets (+SE)		
	To record sale of machinery at a gain.		

	Machinery (new) (+A)	39,000	
	Accumulated Depreciation—Machinery (+A)	19,950	
	Loss from Disposal of Plant Asset (-SE)	1,050	
	Machinery (old) (-A)		36,000
	Cash (-A)		24,000
	To record exchange of machines.		

The exchange has commercial substance.

	Receivable from Insurance Company (+A)	10,800	
	Accumulated Depreciation—Machinery (+A)	19,950	
	Fire Loss (-SE)	5,250	
	Machinery (-A)		36,000
	To record loss of machinery.		

Solution to demonstration problem B

a.	Land (+A)	3,200,000	
	Timber Stands (+A)	4,800,000	
	Cash (-A)		8,000,00
	To record purchase of land and timber.		

		0
b. Timber Stands (+A)	800,000	
Cash (-A)		800,000
To record costs of development of the site.		
c. Depletion (-SE)	1,792,000	
Accumulated Depletion—Timber Stands (-A)		1,792,000
To record depletion for 2007.		0
(\$4,800,000 + \$800,000/50,000,000 = \$0.112 per board foot.		
\$0.112 X 16,000,000 = \$1,792,000.)		
d. Depreciation Expense—Buildings (-SE)	25,600	
Accumulated Depreciation—Buildings (-A)		25,600
To record depreciation expense:		
(\$160,000 - \$80,000)/50,000,000 board feet = \$0.0016 per board foot.		
\$0.0016 X 16,000,000 = \$25,600.		

Solution to demonstration problem C

a. Leasehold (+A)	30,000	
Cash (-A)		30,000
To record purchase of sublease on warehouse.		
b. Rent Expense (-SE)	6,000	
Cash (-A)		6,000
To record annual rent payment.		
c. Leasehold Improvements (+A)	20,000	
Cash (-A)		20,000
To record payment for leasehold improvements.		
d. Rent Expense(-SE)	3,000	
Leasehold (-A)		3,000
To record leasehold amortization for 2007:		
Annual amortization = \$30,000/10 years = \$3,000		
e. Rent Expense (-SE)	2,000	
Leasehold Improvements (+A)		2,000
To amortize leasehold improvements:		
Annual amortization = \$20,000/10years = \$2,000		

11.8 Key terms

Amortization The term used to describe the systematic write-off of the cost of an intangible asset to expense.

Capital lease A lease that transfers to the lessee virtually all of the rewards and risks that accompany ownership of property.

Commercial substance The result if an exchange of nonmonetary assets causes future cash flows to differ significantly.

Copyright An exclusive right granted by the federal government giving protection against the illegal reproduction by others of the creator's written works, designs, and literary productions.

Depletion The exhaustion of a natural resource; an estimate of the cost of the resource that was removed from its natural setting during the period.

Finite Useful Life Length of time an intangible asset is expected to contribute to the cash flows of the entity.

Franchise A contract between two parties granting the franchisee (the purchaser of the franchise) certain rights and privileges ranging from name identification to complete monopoly of service.

Goodwill An intangible value attached to a company resulting mainly from the company's management skill or know-how and a favorable reputation with customers. Evidenced by the ability to generate an above-average rate of income on each dollar invested in the business.

Intangible assets Items that have no physical characteristics but are of value because of the advantages or exclusive privileges and rights they provide to a business.

Lease A contract to rent property. Grantor of the lease is the lessor; the party obtaining the rights to possess and use property is the lessee.

Leasehold The rights granted under a lease.

Leasehold improvement Any physical alteration made by the lessee to the leased property in which benefits are expected beyond the current accounting period.

Natural resources Resources supplied by nature, such as ore deposits, mineral deposits, oil reserves, gas deposits, and timber stands supplied by nature.

Operating lease A lease that does not qualify as a capital lease.

Patent A right granted by the federal government giving the owner the exclusive right to manufacture, sell, lease, or otherwise benefit from an invention for a limited period.

Research and development (R&D) costs Costs incurred in a planned search for new knowledge and in translating such knowledge into a new product or process.

Total assets turnover Equal to Net sales/Average total assets. This ratio indicates the efficiency with which a company uses its assets to generate sales.

Trademark A symbol, design, or logo used in conjunction with a particular product or company.

Trade name A brand name under which a product is sold or a company does business.

Wasting assets See Natural resources.

11.9 Self-test

11.9.1 True-false

Indicate whether each of the following statements is true or false.

When a plant asset is still being used after it has been fully depreciated, depreciation can be taken in excess of its cost.

In an exchange of nonmonetary assets having commercial substance, the new asset is recorded at the fair market value of the asset received or the fair market value of the asset given up plus cash paid, whichever is more clearly evident.

In calculating depletion, the residual value of acquired land containing an ore deposit is included in total costs subject to depletion.

All recorded intangible assets are subject to amortization.

Multiple-choice

Select the best answer for each of the following questions.

When a fully depreciated asset is still in use:

- a. Prior years' depreciation should be adjusted.
- b. The cost should be adjusted to market value.
- c. Part of the depreciation should be reversed.
- d. The cost and accumulated depreciation should remain in the ledger and no more depreciation should be taken.
- e. It should be written off the books.

A truck costing USD 45,000 and having an estimated salvage value of USD 4,500 and an original life of five years is exchanged for a new truck. The cash price of the new truck is USD 57,000, and a trade-in allowance of USD 22,500 is received. The old truck has been depreciated for three years using the straight-line method. The new truck would be recorded at:

- a. USD 55,200.
- b. USD 57,000.
- c. USD 34,500.
- d. USD 43,200.
- e. None of the above.

Land containing a mine having an estimated 1,000,000 tons of economically extractable ore is purchased for USD 375,000. After the ore deposit is removed, the land will be worth USD 75,000. If 100,000 tons of ore are mined and sold during the first year, the depletion cost charged to expense for the year is:

- a. USD 300,000.
- b. USD 37,500.
- c. USD 30,000.
- d. USD 375,000.
- e. None of the above.

Bren Company purchased a patent for USD 36,000. The patent is expected to have a finite life of 10 years even though its legal life is 17 years. The amortization for the first year is:

- a. USD 36,000.
- b. USD 3,600.
- c. USD 2,118.
- d. USD 3,240.
- e. None of the above.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

Questions

- When depreciable plant assets are sold for cash, how is the gain or loss measured?
- A plant asset that cost USD 27,000 and has a related accumulated depreciation account balance of USD 27,000 is still being used in business operations. Would it be appropriate to continue recording depreciation on this asset? Explain. When should the asset's cost and accumulated depreciation be removed from the accounting records?

- A machine and USD 22,500 cash were exchanged for a delivery truck. The exchange has commercial substance. How should the cost basis of the delivery truck be measured?
- A plant asset was exchanged for a new asset of a similar type. How is the cost of the new asset determined?
- When nonmonetary assets not having commercial substance are exchanged, a resulting gain is not recognized. Discuss why this is so.
- What is the proper accounting treatment for the costs of removing or dismantling a company's old plant assets?
 - Distinguish between depreciation, depletion, and amortization. Name two assets that are subject to depreciation, to depletion, and to amortization.
 - Distinguish between tangible and intangible assets, and classify the assets named in part (a) accordingly.
- A building with an estimated physical life of 40 years was constructed at the site of a coal mine. The coal mine is expected to be completely exhausted within 20 years. Over what length of time should the building be depreciated, assuming the building will be abandoned after all the coal has been extracted?
- What are the characteristics of intangible assets? Give an example of an asset that has no physical existence but is not classified as an intangible asset.
- What reasons justify the immediate expensing of most research and development costs?
- Over what length of time should intangible assets be amortized?
- Should costs incurred on internally generated intangible assets be capitalized in asset accounts?
- Describe the typical accounting for a patent.
- During 2010, Hardy Company incurred USD 123,000 of research and development costs in its laboratory to develop a patent that was granted on 2010 December 29. Legal fees (outside counsel) and other costs

associated with registration of the patent totaled USD 22,800. What amount should be recorded as a patent on 2010 December 29?

- What is a capital lease? What features may characterize a capital lease?
- What is the difference between a leasehold (under an operating lease contract) and a leasehold improvement? Is there any difference in the accounting procedures applicable to each?
- Walt Company leased a tract of land for 40 years at an agreed annual rental fee of USD 18,000. The effective date of the lease was 2009 July 1. During the last six months of 2009, Walt constructed a building on the land at a cost of USD 450,000. The building was placed in operation on 2010 January 2, at which time it was estimated to have a physical life of 50 years. Over what period should the building be depreciated? Why?
- You note that a certain store seems to have a steady stream of regular customers, a favorable location, courteous employees, high-quality merchandise, and a reputation for fairness in dealing with customers, employees, and suppliers. Does it follow automatically that this business should have goodwill recorded as an asset? Explain.

11.9.2 Exercises

Exercise A Plant equipment originally costing USD 32,400, on which USD 21,600 of up-to-date depreciation has been accumulated, was sold for USD 8,100.

- a. Prepare the journal entry to record the sale.
- b. Prepare the entry to record the sale of the equipment if USD 90 of removal costs were incurred to allow the equipment to be moved.

Exercise B On 2009 August 31, Hutch Company sold a truck for USD 6,900 cash. The truck was acquired on 2006 January 1, at a cost of USD 17,400. Depreciation of USD 10,800 on the truck has been recorded through 2008 December 31, using the straight-line method, four-year expected useful life, and an expected salvage value of USD 3,000.

Prepare the journal entries to update the depreciation on the truck on 2009 August 31, and to record the sale of the truck.

Exercise C A machine costing USD 120,000, on which USD 90,000 of up-to-date depreciation has been accumulated, was completely destroyed by fire. What journal entry should record the machine's destruction and the resulting fire loss under each of the following unrelated assumptions?

- a. The machine was not insured.
- b. The machine was insured, and it is estimated that USD 22,500 will be recovered from the insurance company.

Exercise D Kale Company owned an automobile acquired on 2007 January 1, at a cash cost of USD 35,100; at that time, the automobile was estimated to have a useful life of four years and a USD 2,700 salvage value. Depreciation has been recorded through 2009 December 31, on a straight-line basis. On 2010 January 1, the automobile was traded for a new automobile. The old automobile had a fair market value (trade-in allowance) of USD 6,750. Cash of USD 31,050 was paid. The exchange has commercial substance.

Prepare the journal entry to record the trade-in under generally accepted accounting principles.

Exercise E Equipment costing USD 330,000, on which USD 225,000 of up-to-date accumulated depreciation has been recorded, was disposed of on 2009 January 2. What journal entries are required to record the equipment's disposal under each of the following unrelated assumptions?

- a. The equipment was sold for USD 120,000 cash.
- b. The equipment was sold for USD 87,000 cash.
- c. The equipment was retired from service and hauled to the junkyard. No material was salvaged.
- d. The equipment was exchanged for similar equipment having a cash price of USD 450,000. A trade-in allowance of USD 150,000 from the cash price was received, and the balance was paid in cash. The exchange has no commercial substance.
- e. The equipment was exchanged for similar equipment having a cash price of USD 450,000. A trade-in allowance of USD 75,000 was received, and the balance was paid in cash. The exchange has commercial substance.

Exercise F Nola Mining Company purchased a tract of land containing ore for USD 630,000. After spending USD 90,000 in exploration costs, the company determined that 600,000 tons of ore existed on the tract but only 500,000 tons could be economically removed. No other costs were incurred. When the company finishes with the tract, it estimates the land will be worth USD 180,000. Determine the depletion cost per ton.

Exercise G Boyd Company paid USD 7,200,000 for the right to extract all of the mineral-bearing ore, estimated at 10 million tons, that can be economically extracted from a certain tract of land. During the first year, Boyd Company extracted 1,000,000 tons of the ore and sold 800,000 tons. What part of the USD 7,200,000 should be charged to expense during the first year?

Exercise H The Slate Mining Company acquired a tract of land for mining purposes and erected a building on-site at a cost of USD 675,000 and having no salvage value. Though the building has a useful life of 10 years, the mining operations are expected to last only 6 years. The company has determined that 800,000 tons of ore exist on the tract but only 600,000 tons can be economically removed. If 100,000 tons of ore are extracted in the first year of operations, what is the appropriate depreciation charge using the units-of-production method?

Exercise I Talse Company purchased a patent on 1995 January 1, at a total cost of USD 61,200. In 2006 January, the company hired an outside law firm and successfully defended the patent in a lawsuit. The legal fees amounted to USD 13,500. What will be the amount of patent cost amortized in 2009? (The finite useful life of the patent is the same as its legal life—17 years.)

Exercise J Don Jackson paid Hungry Hannah's Hamburgers USD 54,000 for the right to operate a fast-food restaurant in Thomasville under the Hungry Hannah's name. Jackson also agreed to pay an operating fee of 0.5 percent of sales for advertising and other services rendered by Hungry Hannah's. Jackson began operations on 2009 January 2. Sales for 2009 amounted to USD 540,000. The finite useful life of the franchise is 40 years.

Give the entries to record the payment of the USD 54,000 and to record expenses incurred relating to the right to use the Hungry Hannah's name.

Exercise K Lem Company leased the first three floors in a building under an operating lease contract for a 10-year period beginning 2009 January 1. The company paid USD 240,000 in cash (not representing a specific period's rent) and agreed to make annual payments equal to 1 percent of the first USD 1,500,000 of sales and 0.5 percent of all sales over USD 1,500,000. Sales for 2009 amounted to USD 4,500,000. Payment of the annual amount will be made in January 2010.

Prepare journal entries to record the cash payment of 2009 January 1, and the proper expense to be recognized for the use of the space in the leased building for 2009.

Exercise L Rye Company purchased all of the assets of Shef Company for USD 900,000. Rye Company also agreed to assume responsibility for Shef Company's liabilities of USD 90,000. The fair market value of the assets acquired was USD 810,000. How much goodwill should be recorded in this transaction? Give the journal entry to record this transaction.

11.10 Problems

Problem A Orr Company traded in an automobile that cost USD 18,000 and on which USD 15,000 of up-to-date depreciation has been recorded for a new automobile with a cash price of USD 34,500. The company received a trade-in allowance (its fair value) for the old automobile of USD 2,100 and paid the balance in cash. The exchange has commercial substance.

Record the exchange of automobiles.

Problem B On 2007 January 2, Blake Company purchased a delivery truck for USD 78,750 cash. The truck has an estimated useful life of six years and an estimated salvage value of USD 6,750. The straight-line method of depreciation is being used.

a. Prepare a schedule showing the computation of the book value of the truck on 2009 December 31.

b. Assume the truck is to be disposed of on 2010 July 1. Prepare the journal entry to record depreciation for the six months ended 2010 June 30.

c. Prepare the journal entries to record the disposal of the truck on 2010 July 1, under each of the following unrelated assumptions:

i. The truck was sold for USD 26,250 cash.

- ii. The truck was sold for USD 48,000 cash.
- iii. The truck was retired from service, and it is expected that USD 20,625 will be received from the sale of salvaged materials.
- iv. The truck and USD 60,000 cash were exchanged for office equipment that had a cash price of USD 105,000. The exchange has commercial substance.
- v. The truck and USD 67,500 cash were exchanged for a new delivery truck that had a cash price of USD 112,500. The exchange has no commercial substance.
- vi. The truck was completely destroyed in an accident. Cash of USD 25,500 is expected to be recovered from the insurance company.

Problem C Eagle Moving Company purchased a new moving van on 2009 October 1. The cash price of the new van was USD 33,750, and the company received a trade-in allowance of USD 5,600 for a 2007 model. The balance was paid in cash. The 2007 model had been acquired on 2007 January 1, at a cost of USD 22,500. Depreciation has been recorded through 2008 December 31, on a straight-line basis, with three years of expected useful life and no expected salvage value. The exchange has no commercial substance.

Prepare journal entries to update the depreciation and to record the exchange of the moving vans.

Problem D On 2009 January 1, Moyer Company had the following balances in some of its accounts:

	Asset	Accumulated Depreciation
Land	\$ 624,000	
Leasehold	780,000	
Buildings	3,425,760	\$ 286,650
Equipment	2,995,200	1,389,960
Trucks	449,280	158,790

- The leasehold covers a plot of ground leased on 2005 January 1, for a period of 20 years.
- Building No. 1 is on the owned land and was completed on 2008 July 1, at a cost of USD 1,965,600; its life is set at 40 years with no salvage value. Building

No. 2 is on the leased land and was completed on 2005 July 1, at a cost of USD 1,460,160; its life is also set at 40 years with no expected salvage value.

- The equipment had an expected useful life of eight years with no estimated salvage value.

- Truck A, purchased on 2007 January 1, at a cost of USD 149,760, had an expected useful life of 2 1/2 years and a salvage value of USD 9,360. Truck B, purchased on 2007 July 1, at a cost of USD 131,040, had an expected life of two years and an estimated salvage value of USD 21,840. Truck C, purchased on 2008 July 1, at a cost of USD 168,480, had an expected life of three years and an estimated salvage value of USD 21,060.

The following transactions occurred in 2009:

Jan. 2 Rent for 2009 on leased land was paid, USD 87,360.

April 1 Truck B was traded in for truck D. The cash price of the new truck was USD 149,760. A trade-in allowance of USD 28,080 was granted from the cash price. The balance was paid in cash. Truck D has an expected life of 20 years and an estimated salvage value of USD 9,360. The exchange has commercial substance.

1 Truck A was sold for USD 28,080 cash.

Prepare journal entries to record the 2009 transactions and the necessary 2009 December 31, adjusting entries, assuming a calendar-year accounting period. Use the straight-line depreciation method.

Problem D On 2009 January 2, York Mining Company acquired land with ore deposits at a cash cost of USD 1,800,000. Exploration and development costs amounted to USD 192,000. The residual value of the land is expected to be USD 360,000. The ore deposits contain an estimated 6 million tons. Present technology will allow the economical extraction of only 85 percent of the total deposit. Machinery, equipment, and temporary sheds were installed at a cost of USD 255,000. The assets will have no further value to the company when the ore body is exhausted; they have a physical life of 12 years. In 2007, 200,000 tons of ore were extracted. The company expects the mine to be exhausted in 10 years, with sharp variations in annual production.

a. Compute the depletion charge for 2009. Round to the nearest cent.

b. Compute the depreciation charge for 2009 under the units-of-production method.

c. If all other mining costs, except depletion, amounted to USD 1,260,000, what was the average cost per ton mined in 2009? (The depreciation calculated in b is included in the USD 1,260,000.)

Problem E East Company spent USD 249,900 to purchase a patent on 2009 January 2. Management assumes that the patent's finite useful life is 17 years. In January 2010, the company hired an outside law firm and successfully defended the patent in a lawsuit at a cost of USD 48,000. Also, in January 2010, the company paid USD 72,000 to obtain patents that could, if used by competitors, make the earlier East patent useless. The purchased patents will never be used.

Give the entries for 2009 and 2010 to record the information relating to the patents.

Problem F Following are selected transactions and other data relating to Long Company for the year ended 2009 December 31.

a. The company rented the second floor of a building for five years on 2009 January 2, and paid the annual rent of USD 18,000 for the first and fifth years in advance.

b. In 2008, the company incurred legal fees of USD 54,000 paid to an outside law firm in applying for a patent and paid a fee of USD 18,000 to a former employee who conceived a device that substantially reduced the cost of manufacturing one of the company's products. The patent on the device has a market value of USD 540,000 and is expected to be useful for 10 years.

c. In 2008, the company entered into a 10-year operating lease on several floors of a building, paying USD 36,000 in cash immediately and agreeing to pay USD 18,000 at the end of each of the 10 years of life in the lease. The company then incurred costs of USD 72,000 to install partitions, shelving, and fixtures. These items would normally last 25 years.

d. The company spent USD 21,600 promoting a trademark in a manner that it believed enhanced the value of the trademark considerably. The trademark has an indefinite life.

e. The company incurred costs amounting to USD 180,000 in 2008 and USD 234,000 in 2009 for research and development of new products that are expected to enhance the company's revenues for at least five years.

f. The company paid USD 180,000 to the author of a book that the company published on 2009 July 2. Sales of the book are expected to be made over a two-year period from that date.

For each of the situations just described, prepare only the journal entries to record the expense applicable to 2009.

11.11 Alternate problems

Alternate problem A Ray, Inc., purchased a new 2010 model automobile on 2010 December 31. The cash price of the new automobile was USD 28,080, from which Ray received a trade-in allowance of USD 4,320 for a 2008 model traded in. The 2008 model had been acquired on 2008 January 1, at a cost of USD 20,700. Depreciation has been recorded on the 2008 model through 2009 December 31, using the straight-line method, an expected four-year useful life, and an expected salvage value of USD 2,700. The exchange has commercial substance.

- a. Record depreciation expense for 2010.
- b. Prepare the journal entries needed to record the exchange of automobiles.

Alternate problem B On 2007 January 1, Wood Company purchased a truck for USD 43,200 cash. The truck has an estimated useful life of six years and an expected salvage value of USD 5,400. Depreciation on the truck was computed using the straight-line method.

- a. Prepare a schedule showing the computation of the book value of the truck on 2009 December 31.
- b. Prepare the journal entry to record depreciation for the six months ended 2010 June 30.
- c. Prepare journal entries to record the disposal of the truck on 2010 June 30, under each of the following unrelated assumptions:
 - (a) The truck was sold for USD 3,600 cash.
 - (b) The truck was sold for USD 25,200 cash.

(c)The truck was scrapped. Used parts valued at USD 6,660 were salvaged.

(d)The truck (which has a fair market value of USD 10,800) and USD 32,400 of cash were exchanged for a used back hoe that did not have a known market value. The transaction has commercial substance.

(e)The truck and USD 29,700 cash were exchanged for another truck that had a cash price of USD 51,300. The exchange has no commercial substance.

(f) The truck was stolen July 1, and insurance proceeds of USD 7,560 were expected.

Alternate problem C Kine Company purchased a new Model II computer 2009 October 1. Cash price of the new computer was USD 24,960; Jackson received a trade-in allowance of USD 9,300 from the cash price for a Model I computer. The old computer was acquired on 2007 January 1, at a cost of USD 23,040. Depreciation has been recorded through 2008 December 31, on a straight-line basis, with an estimated useful life of four years and USD 3,840 expected salvage value. The exchange has commercial substance.

Prepare the journal entries to record the exchange.

Alternate problem D On 2009 July 1, Morgan Company had the following balances in some of its accounts:

	Asset	Accumulated Depreciation
Land	\$ 672,000	
Leasehold	252,000	
Buildings	3,151,680	\$369,768
Equipment	1,370,880	436,800
Trucks	238,560	71,652

The leasehold covers a plot of ground leased on 2004 July 1, for a period of 25 years under an operating lease.

The office building is on the leased land and was completed on 2005 July 1, at a cost of USD 967,680; its physical life is set at 40 years. The factory building is on the owned land and was completed on 2004 July 1, at a cost of USD 2,184,000; its life is also set at 40 years with no expected salvage value.

The equipment has a 15-year useful life with no expected salvage value.

The company owns three trucks—A, B, and C. Truck A, purchased on 2007 July 1, at a cost of USD 53,760, had an expected useful life of three years and a salvage value of USD 3,360. Truck B, purchased on 2008 January 2, at a cost of USD 84,000, had an expected life of four years and an estimated salvage value of USD 6,720. Truck C, purchased on 2009 January 2, at a cost of USD 100,800, had an expected life of five years and an estimated salvage value of USD 10,080.

The following transactions occurred in the fiscal year ended 2010 June 30:

2009

July 1 Rent for 2009 July 1, through 2010 June 30, on leased land was paid, USD 31,920.

Oct. 1 Truck A was traded in on truck D. Cash price of the new truck was USD 107,520. Cash of USD 90,720 was paid. Truck D has an expected life of four years and a salvage value of USD 5,880. The exchange has no commercial substance.

2010

Feb. 2 Truck B was sold for USD 47,040 cash.

June 1 Truck C was completely demolished in an accident. The truck was not insured.

Prepare journal entries to record these transactions and the necessary 2010 June 30, adjusting entries. Use the straight-line depreciation method.

Alternate problem E In December 2008, Brown Company acquired a mine for USD 2,700,000. The mine contained an estimated 10 million tons of ore. It was also estimated that the land would have a value of USD 240,000 when the mine was exhausted and that only 4 million tons of ore could be economically extracted. A building was erected on the property at a cost of USD 360,000. The building had an estimated useful life of 35 years and no salvage value. Specialized mining equipment was installed at a cost of USD 495,000. This equipment had an estimated useful life of seven years and an estimated USD 33,000 salvage value. The company began operating on 2009 January 1, and put all of its assets into use on that date. During the year ended 2009 December 31, 400,000 tons of ore were extracted. The company decided to use the units-of-production method to record depreciation on the building and the straight-line method to record depreciation on the equipment.

Prepare journal entries to record the depletion and depreciation charges for the year ended 2009 December 31. Show calculations.

Alternate problem F Trask Company purchased a patent for USD 108,000 on 2009 January 2. The patent was estimated to have a finite life of 10 years. The USD 108,000 cost was properly charged to an asset account and amortized in 2009. On 2010 January 1, the company incurred legal and court costs of USD 32,400 in a successful defense of the patent in a lawsuit. The legal work was performed by an outside law firm.

a. Compute the patent amortization expense for 2009 and give the entry to record it.

b. Compute the patent amortization expense for 2010 and give the entry to record it.

Alternate problem G Selected transactions and other data for Grant Company:

a. The company purchased a patent in early January 2006 for USD 144,000 and began amortizing it over its finite life of 10 years. In early January 2008, the company hired an outside law firm and successfully defended the patent in an infringement suit at a cost of USD 38,400.

b. Research and development costs incurred in 2008 of USD 43,200 were expected to provide benefits over the three succeeding years.

c. On 2009 January 2, the company rented space in a warehouse for five years at an annual fee of USD 9,600. Rent for the first and last years was paid in advance.

d. A total of USD 96,000 was spent uniformly throughout 2009 by the company in promoting its lesser known trademark, which is expected to have a finite useful life of 20 years.

e. In January 2007, the company purchased all of the assets and assumed all of the liabilities of another company, paying USD 192,000 more than the fair market value of all identifiable assets acquired, less the liabilities assumed. The company expects the cash flow benefits for which it paid the USD 192,000 to last 10 years (finite useful life).

For each of these unrelated transactions, prepare journal entries to record only those entries (required for 2009. Note any items that do not require an entry in 2009.

11.12 Beyond the numbers-Critical thinking

Business decision case A During your audit examination of the Shirley Company's Plant, Property, and Equipment accounts, the following transaction came to your attention. On 2009 January 2, machine A was exchanged for machine B. Shirley Company acquired machine A for USD 90,000 on 2007 January 2. Machine A had an estimated useful life of four years and no salvage value, and the machine was depreciated on the straight-line basis. Machine B had a cash price of USD 108,000. In addition to machine A, cash of USD 30,000 was given up in the exchange. Machine B has an estimated useful life of five years and no salvage value, and the machine is being depreciated using the straight-line method. The exchange has no commercial substance. Upon further analysis, you discover that the company recorded the transaction as an exchange of nonmonetary assets having commercial substance instead of one not having commercial substance. You must now determine the following:

- a. What journal entry did the Shirley Company make when it recorded the exchange of machines? (Show computations.)
- b. What journal entry should the Shirley Company have made to record the exchange of machines?
- c. Assume the error was discovered on 2010 December 31, before adjusting journal entries have been made. What journal entries should be made to correct the accounting records? (Adjustments of prior years' net income because of errors should be debited or credited to Retained Earnings.) What adjusting journal entry should be made to record depreciation for 2010? (Ignore income taxes.)
- d. What effect did the error have on reported net income for 2009? (Ignore income taxes.)
- e. How should machine B be reported on the 2010 December 31, balance sheet?

Business decision case B Currently, many corporations are looking for acquisition opportunities. Tyre, Inc., is trying to decide whether to buy Amite Company or Beauman Company. Tyre, Inc., has hired you as a consultant to analyze the two companies' financial information and to determine the more advantageous

acquisition. Your review of the companies' books has revealed that both Amite and Beauman have assets with the following book values and fair market values:

	Book Value	Fair Market Value
Accounts receivable	\$150,000	\$ 150,000
Inventories	450,000	750,000
Land	375,000	675,000
Buildings	450,000	1,050,000
Equipment	180,000	300,000
Patents	120,000	150,000

Liabilities assumed on the purchase of either company include accounts payable, USD 300,000, and notes payable, USD 75,000.

The only difference between the companies is that Amite has net income that is about average for the industry, while Beauman's net income is greatly above average for the industry.

Top-level management at Tyre, Inc., has asked you to respond in writing to the following possible situations:

a. Assume Tyre, Inc., can buy Amite Company for USD 2,700,000 or Beauman Company for USD 3,450,000. Prepare the journal entries to record the acquisition of Amite Company and Beauman Company. What accounts for the difference between the purchase price of the two companies?

b. Assume Tyre, Inc, can buy either company for USD 2,700,000. Write a report for Tyre, Inc., advising which company to buy.

Annual report analysis C The mission of Rational Software Corporation is to ensure the success of customers constructing the software systems that they depend on.

Using the following excerpts from Rational Software's annual reports, calculate the firm's total assets turnover for 2004 and 2003. (Amounts are in USD thousands.)

	2004	2003	2002
Net sales	\$ 814,935	\$ 572,190	\$ 411,816
Total assets	1,709,323	1,225,776	453,956

In a written report, discuss the meaning of the total assets turnover ratio and what the ratio means to management and investors. Use the total assets turnover ratios you computed for Rational Software as an example in your report.

Ethics case D Based on the situation described in the ethics case regarding ABC Corporation, respond in writing to the following questions.

a. Depending on his actions, what are the possible consequences for John Gilbert in this situation?

b. Assuming that the president cannot find another appraiser to support the new allocations, what would you do if you were Gilbert?

c. If the president can find a reputable appraiser to support these new allocations, what would you do if you were Gilbert?

Group project E In teams of two or three students, find a recent annual report that includes intangible assets on the balance sheet. Select one member of each team to give an informal presentation discussing intangible asset disclosures on the face of the statements and in the notes to the financial statements. All members should be prepared to discuss intangible asset disclosures from their annual report in detail.

Group project F In a group of one or two other students, go to the library and locate *Statement of Financial Accounting Standards No. 2*, "Accounting for Research and Development Costs", published by the Financial Accounting Standards Board. Write a report to your instructor giving the highlights of the standard. For instance, what alternatives were considered and why did the board conclude that all research and development costs should be expensed when incurred?

Group project G In a group of one or two other students, go to the library and locate *Statement of Financial Accounting Standards No. 121*, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of", published by the Financial Accounting Standards Board. Write a report to your instructor giving the highlights of the standard. For instance, what does "impairment" mean and what are its causes? How can one determine that impairment of an asset has possibly occurred? Also review some of the background information as to why this was important enough for the FASB to act.

11.13 Using the Internet—A view of the real world

Visit the Accounting News Network at Microsoft's website:

<http://sba.microsoft.com/apnews/default.asp>

Click on each icon to investigate the information available at this site. Browse any of the areas that look interesting. How would accounting practitioners make good use of this site? In a report to your instructor, summarize the features available at this site.

Visit the Small Business Administration site at:

<http://www.sba.gov>

Suppose you wanted to start a small business. What helpful information would you find at this site? Would this site provide information on how to finance the business? Browse around this site to see what it offers. Then write a report to your instructor summarizing the types of helpful information this site provides.

11.14 Answers to self-test

True-false

False. No more depreciation can be taken on a fully depreciated plant asset.

True. The new asset is recorded at the fair market value of the asset received or given up, whichever is more clearly evident.

False. The residual value of land should be deducted from total costs subject to depletion.

False. Only intangible assets with finite useful lives should be amortized.

Multiple-choice

d. The cost and accumulated depreciation should not be removed from the accounts until the disposal of the asset.

a. On the date of exchange, the book value of the old truck is USD 20,700 (USD 45,000 minus accumulated depreciation of USD 24,300). The trade-in allowance of USD 22,500 indicates a gain on exchange of USD 1,800. In an exchange of nonmonetary assets not having commercial substance, a gain is not recognized, but reduces the cost of a new asset. Therefore, the cost of the new truck is USD 55,200 (USD 57,000 minus USD 1,800), and no gain is recognized.

c. The depletion charge for the first year is:

$$\text{Depletion charge per ton} = \frac{(\text{USD } 375,000 - \text{USD } 75,000)}{1,000,000}$$

$$= \text{USD } 0.30$$

$$\text{Depletion charge for the year} = \text{USD } 0.30 \times 100,000$$

$$= \text{USD } 30,000$$

Since all of the ore that was extracted was sold, all of the USD 30,000 is expensed as cost of ore sold.

b. The patent is amortized over 10 years:

$$\text{Annual amortization expense} = \frac{\text{USD } 36,000}{10}$$

$$= \text{USD } 3,600$$

12 Stockholders' equity: Classes of capital stock

12.1 Learning objectives

After studying this chapter, you should be able to:

- State the advantages and disadvantages of the corporate form of business.
- List the values commonly associated with capital stock and give their definitions.
- List the various kinds of stock and describe the differences between them.
- Present in proper form the stockholders' equity section of a balance sheet.
- Account for the issuances of stock for cash and other assets.
- Determine book values of both preferred and common stock.
- Analyze and use the financial results—return on average common stockholders' equity.

12.2 The accountant as a corporate treasurer

Most people think of the stock market as a place to buy and sell stock. However, few people give much thought to the other side of this transaction. The original purpose of the stock market is to allow corporations to raise the money needed to expand into new markets, invent new products, open new stores, and create new jobs. The initial public issuance of stock (i.e. going public) is one of the most significant milestones in the life of a public company.

For most individual investors, trading is done by stockbrokers. Who handles the stock transactions within a company? The treasurer or the person that performs the treasury functions is this person. This role requires someone with a strong background in accounting and finance.

When a company decides to issue bonds or additional shares of stock, the treasurer is the person responsible for executing the transaction at the lowest cost to the entity. The treasurer works closely with investment bankers and lawyers to get the stocks or bonds marketed and issued in accordance with state and federal laws. When a company issues stock for the first time (initial public offering, or IPO), the

task requires a thorough review of the financial position of the company and the public disclosure of this information for perhaps the first time. The treasurer/accountant must prepare what is called a prospectus. Among other things, the prospectus includes financial accounting information that is used in setting the price of the IPO.

The treasurer maintains custody of, or has access to, stocks owned by an entity and stock that is under the control of the entity. The treasurer also plays a pivotal role in the distribution of cash and stock dividends. The primary function of this position is controlling the cash inflows and outflows of the entity. A career as a corporate treasurer can involve the oversight of billions of dollars of stock, and the individual can earn a six-figure salary.

In this chapter, you study the corporate form of business organization in greater detail than in preceding chapters. Although corporations are fewer in number than single proprietorships and partnerships, corporations possess the bulk of our business capital and currently supply us with most of our goods and services.

This chapter discusses the advantages and disadvantages of the corporation, how to form and direct a corporation, and some of the unique situations encountered in accounting for and reporting on the different classes of capital stock. It is written from a US perspective, so you should be aware that laws and common practices may be different in other countries.

12.3 The corporation

A **corporation** is an entity recognized by law as possessing an existence separate and distinct from its owners; that is, it is a separate legal entity. Endowed with many of the rights and obligations possessed by a person, a corporation can enter into contracts in its own name; buy, sell, or hold property; borrow money; hire and fire employees; and sue and be sued.

Corporations have a remarkable ability to obtain the huge amounts of capital necessary for large-scale business operations. Corporations acquire their capital by issuing **shares of stock**; these are the units into which corporations divide their ownership. Investors buy shares of stock in a corporation for two basic reasons. First, investors expect the value of their shares to increase over time so that the stock

may be sold in the future at a profit. Second, while investors hold stock, they expect the corporation to pay them dividends (usually in cash) in return for using their money. Chapter 13 discusses the various kinds of dividends and their accounting treatment.

12.3.1 Advantages of the corporate form of business

Corporations have many advantages over single proprietorships and partnerships. The major advantages a corporation has over a single proprietorship are the same advantages a partnership has over a single proprietorship. Although corporations have more owners than partnerships, both have a broader base for investment, risk, responsibilities, and talent than do single proprietorships. Since corporations are more comparable to partnerships than to single proprietorships, the following discussion of advantages contrasts the partnership with the corporation.

- **Easy transfer of ownership.** In a partnership, a partner cannot transfer ownership in the business to another person if the other partners do not want the new person involved in the partnership. In a publicly held (owned by many stockholders) corporation, shares of stock are traded on a stock exchange between unknown parties; one owner usually cannot dictate to whom another owner can or cannot sell shares.

- **Limited liability.** Each partner in a partnership is personally responsible for all the debts of the business. In a corporation, the stockholders are not personally responsible for its debts; the maximum amount a stockholder can lose is the amount of his or her investment. However, when a small, closely held corporation (owned by only a few stockholders) borrows money, banks and lending institutions often require an officer of the small corporation to sign the loan agreement. Then, the officer has to repay the loan if the corporation does not.

- **Continuous existence of the entity.** In a partnership, many circumstances, such as the death of a partner, can terminate the business entity. These same circumstances have no effect on a corporation because it is a legal entity, separate and distinct from its owners.

- **Easy capital generation.** The easy transfer of ownership and the limited liability of stockholders are attractive features to potential investors. Thus, it is relatively easy for a corporation to raise capital by issuing shares of stock to many investors. Corporations with thousands of stockholders are not uncommon.

- **Professional management.** Generally, the partners in a partnership are also the managers of that business, regardless of whether they have the necessary expertise to manage a business. In a publicly held corporation, most of the owners (stockholders) do not participate in the day-to-day operations and management of the entity. They hire professionals to run the business on a daily basis.

- **Separation of owners and entity.** Since the corporation is a separate legal entity, the owners do not have the power to bind the corporation to business contracts. This feature eliminates the potential problem of mutual agency that exists between partners in a partnership. In a corporation, one stockholder cannot jeopardize other stockholders through poor decision making.

The corporate form of business has the following disadvantages:

- **Double taxation.** Because a corporation is a separate legal entity, its net income is subject to double taxation. The corporation pays a tax on its income, and stockholders pay a tax on corporate income received as dividends.

- **Government regulation.** Because corporations are created by law, they are subject to greater regulation and control than single proprietorships and partnerships.

- **Entrenched, inefficient management.** A corporation may be burdened with an inefficient management that remains in control by using corporate funds to solicit the needed stockholder votes to back its positions. Stockholders scattered across the country, who individually own only small portions of a corporation's stock, find it difficult to organize and oppose existing management.

- **Limited ability to raise creditor capital.** The limited liability of stockholders makes a corporation an attractive means for accumulating

stockholder capital. At the same time, this limited liability feature restrains the amount of creditor capital a corporation can amass because creditors cannot look to stockholders to pay the debts of a corporation. Thus, beyond a certain point, creditors do not lend some corporations money without the personal guarantee of a stockholder or officer of the corporation to repay the loan if the corporation does not.

Corporations are chartered by the state. Each state has a corporation act that permits the formation of corporations by qualified persons. **Incorporators** are persons seeking to bring a corporation into existence. Most state corporation laws require a minimum of three incorporators, each of whom must be of legal age, and a majority of whom must be citizens of the United States.

The laws of each state view a corporation organized in that state as a **domestic corporation** and a corporation organized in any other state as a **foreign corporation**. If a corporation intends to conduct business solely within one state, it normally seeks incorporation in that state because most state laws are not as severe for domestic corporations as for foreign corporations. Corporations conducting interstate business usually incorporate in the state that has laws most advantageous to the corporation being formed. Important considerations in choosing a state are the powers granted to the corporation, the taxes levied, the defenses permitted against hostile takeover attempts by others, and the reports required by the state.

Once incorporators agree on the state in which to incorporate, they apply for a corporate charter. A **corporate charter** is a contract between the state and the incorporators, and their successors, granting the corporation its legal existence. The application for the corporation's charter is called the **articles of incorporation**.

After supplying the information requested in the incorporation application form, incorporators file the articles with the proper office in the state of incorporation. Each state requires different information in the articles of incorporation, but most states ask for the following:

- Name of corporation.
- Location of principal offices.
- Purposes of business.

- Number of shares of stock authorized, class or classes of shares, and voting and dividend rights of each class of shares.
- Value of assets paid in by the incorporators (the stockholders who organize the corporation).
- Limitations on authority of the management and owners of the corporation.

On approving the articles, the state office (frequently the secretary of state's office) grants the charter and creates the corporation.

As soon as the corporation obtains the charter, it is authorized to operate its business. The incorporators call the first meeting of the stockholders. Two of the purposes of this meeting are to elect a board of directors and to adopt the bylaws of the corporation.

The **bylaws** are a set of rules or regulations adopted by the board of directors of a corporation to govern the conduct of corporate affairs. The bylaws must be in agreement with the laws of the state and the policies and purposes in the corporate charter. The bylaws contain, along with other information, provisions for: (1) the place, date, and manner of calling the annual stockholders' meeting; (2) the number of directors and the method for electing them; (3) the duties and powers of the directors; and (4) the method for selecting officers of the corporation.

Organization costs are the costs of organizing a corporation, such as state incorporation fees and legal fees applicable to incorporation. The firm debits these costs to an account called Organization Costs. The Organization Costs account is an asset because the costs yield benefits over the life of the corporation; if the fees had not been paid, no corporate entity would exist. Since the account is classified on the balance sheet as an intangible asset, it is amortized over its finite useful life. Most organizations write off these costs fairly rapidly because they are small in amount.

As an illustration, assume that De-Leed Corporation pays state incorporation fees of USD 10,000 and attorney's fees of USD 5,000 for services rendered related to the acquisition of a charter with the state. The entry to record these costs is:

Organization Costs (+A)	15,000	
Cash (-A)		15,000
To record costs incurred in organizing corporation.		

Assuming the corporation amortizes the organization costs over a 10-year period, this entry records amortization at the end of the year:

Amortization Expense—Organization Costs (- SE)	1,500
Organization Costs (-A)	1,500
To record organization costs amortization expense.	
(15,000/10 years = \$1,500).	

Management of the corporation is through the delegation of authority from the stockholders to the directors to the officers, as shown in the organization chart in Exhibit 19. The stockholders elect the board of directors. The board of directors formulates the broad policies of the company and selects the principal officers, who execute the policies.

Stockholders Stockholders do not have the right to participate actively in the management of the business unless they serve as directors and/or officers. However, stockholders do have certain basic rights, including the right to (1) dispose of their shares, (2) buy additional newly issued shares in a proportion equal to the percentage of shares they already own (called the **preemptive right**), (3) share in dividends when declared, (4) share in assets in case of liquidation, and (5) participate in management indirectly by voting at the stockholders' meeting.

The preemptive right allows stockholders to maintain their percentage of ownership in a corporation when additional shares are issued. For example, assume Joe Thornton owns 10 percent of the outstanding shares of Corporation X. When Corporation X decides to issue 1,000 additional shares of stock, Joe Thornton has the right to buy 100 (10 percent) of the new shares. Should he decide to do so, he maintains his 10 percent interest in the corporation. If he does not wish to exercise his preemptive right, the corporation may sell the shares to others.¹²

¹² Some corporations have eliminated the preemptive right because the preemptive right makes it difficult to issue large blocks of stock to the stockholders of another corporation to acquire that corporation.

Illustration 12.1 Typical Corporation's Organization Chart

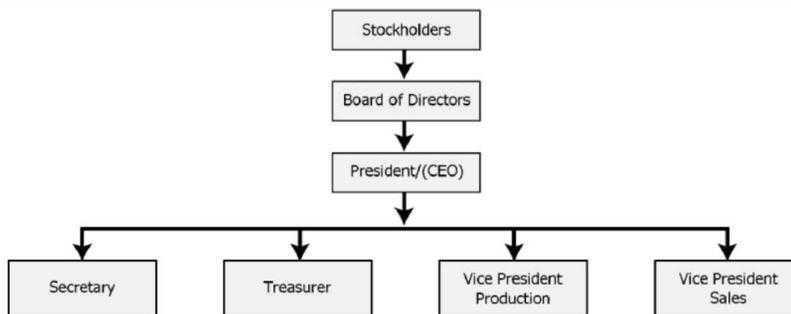


Exhibit 19: Typical corporation's organization chart

Normally, companies hold stockholders' meetings annually. At the annual stockholders' meeting, stockholders indirectly share in management by voting on such issues as changing the charter, increasing the number of authorized shares of stock to be issued, approving pension plans, selecting the independent auditor, and other related matters.

At stockholders' meetings, each stockholder is entitled to one vote for each share of voting stock held. Stockholders who do not personally attend the stockholders' meeting may vote by proxy. A **proxy** is a legal document signed by a stockholder, giving a designated person the authority to vote the stockholder's shares at a stockholders' meeting.

Board of directors Elected by the stockholders, the **board of directors** is primarily responsible for formulating policies for the corporation. The board appoints administrative officers and delegates to them the execution of the policies established by the board. The board's more specific duties include: (1) authorizing contracts, (2) declaring dividends, (3) establishing executive salaries, and (4) granting authorization to borrow money. The decisions of the board are recorded in the minutes of its meetings. The minutes are an important source of information to an independent auditor, since they may serve as notice to record transactions (such as a dividend declaration) or to identify certain future transactions (such as a large loan).

Corporate officers A corporation's bylaws usually specify the titles and duties of the officers of a corporation. The number of officers and their exact titles vary from corporation to corporation, but most have a president, several vice presidents, a secretary, a treasurer, and a controller.

The president is the chief executive officer (CEO) of the corporation. He or she is empowered by the bylaws to hire all necessary employees except those appointed by the board of directors.

Most corporations have more than one vice president. Each vice president is responsible for one particular corporate operation, such as sales, engineering, or production. The corporate secretary maintains the official records of the company and records the proceedings of meetings of stockholders and directors. The treasurer is accountable for corporate funds and may supervise the accounting function within the company. A controller carries out the accounting function. The controller usually reports to the treasurer of the corporation.

12.3.2 Documents, books, and records relating to capital stock

Capital stock consists of transferable units of ownership in a corporation. Each unit of ownership is called a share of stock. Typically, traders sell between 100 and 400 million shares of corporate capital stock every business day on stock exchanges, such as the New York Stock Exchange and the American Stock Exchange, and on the over-the-counter market. These sales (or trades) seldom involve the corporation issuing the stock as a party to the exchange. Existing stockholders sell their shares to other individual or institutional investors. The physical transfer of the stock certificates follows these trades.

A **stock certificate** is a printed or engraved document serving as evidence that the holder owns a certain number of shares of capital stock. When selling shares of stock, the stockholder signs over the stock certificate to the new owner, who presents it to the issuing corporation. When the old certificate arrives, the issuing corporation cancels the certificate and attaches it to its corresponding stub in the stock certificate book. The issuer prepares a new certificate for the new owner. To determine the

number of shares of stock outstanding at any time, the issuer sums the shares shown on the open stubs (stubs without certificates attached) in the stock certificate book.

Among the more important records maintained by a corporation is the stockholders' ledger. The **stockholders' ledger** contains a group of subsidiary accounts showing the number of shares of stock currently held by each stockholder. Since the ledger contains an account for each stockholder, in a large corporation this ledger may have more than a million individual accounts. Each stockholder's account shows the number of shares currently or previously owned, their certificate numbers, and the dates on which shares were acquired or sold. Entries are made in the number of shares rather than in dollars.

The stockholders' ledger and the stock certificate book contain the same information, but the stockholders' ledger summarizes it alphabetically by stockholder. Since a stockholder may own a dozen or more certificates, each representing a number of shares, this summary enables a corporation to (1) determine the number of shares a stockholder is entitled to vote at a stockholders' meeting and (2) prepare one dividend check per stockholder rather than one per stock certificate.

Many large corporations with actively traded shares turn the task of maintaining reliable stock records over to an outside stock-transfer agent and a stock registrar. The **stock-transfer agent**, usually a bank or trust company, transfers stock between buyers and sellers for a corporation. The stock-transfer agent cancels the certificates covering shares sold, issues new stock certificates, and makes appropriate entries in the stockholders' ledger. It sends new certificates to the **stock registrar**, typically another bank, that maintains separate records of the shares outstanding. This control system makes it difficult for a corporate employee to issue stock certificates fraudulently and steal the proceeds.

The **minutes book**, kept by the secretary of the corporation, is (1) a record book of the actions taken at stockholders' and board of directors' meetings and (2) the written authorization for many actions taken by corporate officers. Remember that all actions taken by the board of directors and the stockholders must be in accordance with the provisions in the corporate charter and the bylaws. The minutes book contains a variety of data, including:

- A copy of the corporate charter.
- A copy of the bylaws.
- Dividends declared by the board of directors.
- Authorization for the acquisition of major assets.
- Authorization for borrowing.
- Authorization for increases or decreases in capital stock.

12.3.3 Par value and no-par capital stock

Many times, companies issue par value stock. **Par value** is an arbitrary amount assigned to each share of a given class of stock and printed on the stock certificate. Par value per share is no indication of the amount for which the stock sells; it is simply the amount per share credited to the capital stock account for each share issued. Also, the total par value of all issued stock often constitutes the legal capital of the corporation. The concept of legal capital protects creditors from losses. **Legal capital**, or **stated capital**, is an amount prescribed by law (usually the par value or stated value of shares issued) below which a corporation may not reduce stockholders' equity through declaration of dividends or other payments to stockholders. Stated value relates to no-par stock and is explained below. Legal capital does not guarantee that a company can pay its debts, but it does keep a company from compensating owners to the detriment of creditors. The formula for determining legal capital is:

$$\text{Legal Capital} = \text{Shares Issued} \times \text{Par (Stated) Value}$$

In 1912, the state of New York first enacted laws permitting the issuance of **no-par stock (stock without par value)**. Many other states have passed similar, but not uniform, legislation.

A corporation might issue no-par stock for two reasons. One reason is to avoid confusion. The use of a par value may confuse some investors because the par value usually does not conform to the market value. Issuing a stock with no par value avoids this source of confusion.

A second reason is related to state laws regarding the original issue price per share. A **discount on capital stock** is the amount by which the shares' par value

exceeds their issue price. Thus, if stock with a par value of USD 100 is issued at USD 80, the discount is USD 20. Most states do not permit the original issuance of stock at a discount. Only Maryland, Georgia, and California allow its issuance. The original purchasers of the shares are contingently liable for the discount unless they have transferred (by contract) the discount liability to subsequent holders. If the contingent liability has been transferred, the present stockholders are contingently liable to creditors for the difference between par value and issue price. Although this contingent liability seldom becomes an actual liability, the issuance of no-par stock avoids such a possibility.

The board of directors of a corporation issuing no-par stock may assign a stated value to each share of capital stock. **Stated value** is an arbitrary amount assigned by the board to each share of a given class of no-par stock. The board may set this stated value, like par value, at any amount, although some state statutes specify a minimum amount, such as USD 5 per share. If not specified by applicable state law, the board may establish stated value either before or after the shares are issued.

12.3.4 Other values commonly associated with capital stock

Market value is the price of shares of capital stock bought and sold by investors in the market; it is the value of greatest interest to investors. Market price is directly affected by (1) all the factors that influence general economic conditions, (2) investors' expectations concerning the corporation, and (3) the corporation's earnings.

Book value per share is the amount per share that each stockholder would receive if the corporation were liquidated without incurring any further expenses and if assets were sold and liabilities liquidated at their recorded amounts. A later section discusses book value per share in greater detail.

Liquidation value is the amount a stockholder would receive if a corporation discontinued operations and liquidated by selling its assets, paying its liabilities, and distributing the remaining cash among the stockholders. Since the assets might be sold for more or less than the amounts at which they are recorded in the corporation's accounts, liquidation value may be more or less than book value. If only one class of capital stock is outstanding, each stockholder would receive, per

share, the amount obtained by dividing the remaining cash by the number of outstanding shares. If two or more classes of stock are outstanding, liquidation value depends on the rights of the various classes.

A corporation issues certain capital stock with the stipulation that it has the right to redeem it. **Redemption value** is the price per share at which a corporation may call in (or redeem) its capital stock for retirement.

12.3.5 Capital stock authorized and outstanding

The corporate charter states the number of shares and the par value, if any, per share of each class of stock that the corporation is permitted to issue. **Capital stock authorized** is the number of shares of stock that a corporation is entitled to issue as designated in its charter.

A corporation might not issue all of its authorized stock immediately; it might hold some stock for future issuance when additional funds are needed. If all authorized stock has been issued and more funds are needed, the state of incorporation must consent to an increase in authorized shares.

The authorization to issue stock does not trigger a journal entry. Instead, companies note the authorization in the capital stock account in the ledger (and often in the general journal) as a reminder of the number of shares authorized. **Capital stock issued** is the number of shares of stock sold and issued to stockholders.

Capital stock outstanding is the number of authorized shares of stock issued and currently held by stockholders. The total ownership of a corporation rests with the holders of the capital stock outstanding. For example, when a corporation authorized to issue 10,000 shares of capital stock has issued only 8,000 shares, the holders of the 8,000 shares own 100 percent of the corporation.

Each outstanding share of stock of a given class carries rights and privileges identical to any other outstanding share of that class. Shares authorized but not yet issued are referred to as **unissued shares** (the previous example had 2,000 unissued shares). No rights or privileges are attached to these shares until they are issued; they are not entitled to dividends, nor can they be voted at stockholders' meetings.

The number of shares issued and the number of shares outstanding may be different. Issued stock has been issued at some time, while outstanding shares are currently held by stockholders. All outstanding stock is issued stock, but the reverse is not necessarily true. The difference is due to shares returned to the corporation by stockholders; it is called treasury stock. Chapter 13 discusses treasury stock.

An accounting perspective:

Business insight

SCI Systems, Inc., designs, manufactures, and distributes electronic products for a wide variety of industries. The following illustration is adapted from the company's balance sheet. The stockholders' equity section shows the actual number of shares of common stock authorized and outstanding and shows the dollar amounts in thousands:

Common stock, USD0.10 par value; authorized 500,000,000 common shares, issued 147,132,428 shares in 2001 and 144,996,374 shares in 2000.	June 30 2001	2000
	USD 14,713	USD 14,500

12.3.6 Classes of capital stock

A corporation may issue two basic classes or types of capital stock—common and preferred.

If a corporation issues only one class of stock, this stock is common stock. All of the stockholders enjoy equal rights. **Common stock** is usually the residual equity in the corporation. This term means that all other claims against the corporation rank ahead of the claims of the common stockholder.

Preferred stock is a class of capital stock that carries certain features or rights not carried by common stock. Within the basic class of preferred stock, a company may have several specific classes of preferred stock, each with different dividend rates or other features.

Companies issue preferred stock to avoid: (1) using bonds with fixed interest charges that must be paid regardless of the amount of net income; (2) issuing so many additional shares of common stock that earnings per share are less in the current year than in prior years; and (3) diluting the common stockholders' control of the corporation, since preferred stockholders usually have no voting rights.

Unlike common stock, which has no set maximum or minimum dividend, the dividend return on preferred stock is usually stated at an amount per share or as a percentage of par value. Therefore, the firm fixes the dividend per share. Exhibit 20 shows the various classes and combinations of capital stock outstanding for a sample of 600 companies.

	2006	2005	2004	2003
Common stock with:				
No preferred stock	516	502	507	514
One class of preferred stock	73	81	80	71
Two classes of preferred stock	9	14	10	10
Three or more classes of preferred stock	2	3	3	
	5			
Total Companies	600	600	600	600
Companies included above with two or more classes of common stock	62	70	59	66

Exhibit 20: Capital structures

Source: Based on American Institute of Certified Public Accountants, Accounting Trends & Techniques (New York: AICPA, 2004), p. 307.

12.3.7 Types of preferred stock

When a corporation issues both preferred and common stock, the preferred stock may be:

- Preferred as to dividends. It may be noncumulative or cumulative.
- Preferred as to assets in the event of liquidation.
- Convertible or nonconvertible.
- Callable.

A **dividend** is a distribution of assets (usually cash) that represents a withdrawal of earnings by the owners. Dividends are normally paid in cash.

Stock preferred as to dividends means that the preferred stockholders receive a specified dividend per share before common stockholders receive any dividends. A **dividend on preferred stock** is the amount paid to preferred stockholders as a return for the use of their money. For no-par preferred stock, the dividend is a specific dollar amount per share per year, such as USD 4.40. For par value preferred stock, the dividend is usually stated as a percentage of the par value, such as 8 percent of par value; occasionally, it is a specific dollar amount per share. Most preferred stock has a par value.

Usually, stockholders receive dividends on preferred stock quarterly. Such dividends—in full or in part—must be declared by the board of directors before paid. In some states, corporations can declare preferred stock dividends only if they have retained earnings (income that has been retained in the business) at least equal to the dividend declared.

Noncumulative preferred stock **Noncumulative preferred stock** is preferred stock on which the right to receive a dividend expires whenever the dividend is not declared. When noncumulative preferred stock is outstanding, a dividend omitted or not paid in any one year need not be paid in any future year. Because omitted dividends are lost forever, noncumulative preferred stocks are not attractive to investors and are rarely issued.

Cumulative preferred stock **Cumulative preferred stock** is preferred stock for which the right to receive a basic dividend, usually each quarter, accumulates if the dividend is not paid. Companies must pay unpaid cumulative preferred dividends before paying any dividends on the common stock. For example, assume a company has cumulative, USD 10 par value, 10 percent preferred stock outstanding of USD 100,000, common stock outstanding of USD 100,000, and retained earnings of USD 30,000. It has paid no dividends for two years. The company would pay the preferred stockholders dividends of USD 20,000 (USD 10,000 per year times two years) before paying any dividends to the common stockholders.

Dividends in arrears are cumulative unpaid dividends, including the quarterly dividends not declared for the current year. Dividends in arrears never appear as a liability of the corporation because they are not a legal liability until declared by the board of directors. However, since the amount of dividends in arrears may influence the decisions of users of a corporation's financial statements, firms disclose such dividends in a footnote. An appropriate footnote might read: "Dividends in the amount of USD 20,000, representing two years' dividends on the company's 10 percent, cumulative preferred stock, were in arrears as of 2007 December 31".

Most preferred stocks are preferred as to assets in the event of liquidation of the corporation. **Stock preferred as to assets** is preferred stock that receives special treatment in liquidation. Preferred stockholders receive the par value (or a larger stipulated liquidation value) per share before any assets are distributed to common stockholders. A corporation's cumulative preferred dividends in arrears at liquidation are payable even if there are not enough accumulated earnings to cover the dividends. Also, the cumulative dividend for the current year is payable. Stock may be preferred as to assets, dividends, or both.

Convertible preferred stock is preferred stock that is convertible into common stock of the issuing corporation. Many preferred stocks do not carry this special feature; they are nonconvertible. Holders of convertible preferred stock shares may exchange them, at their option, for a certain number of shares of common stock of the same corporation.

Investors find convertible preferred stock attractive for two reasons: First, there is a greater probability that the dividends on the preferred stock will be paid (as compared to dividends on common shares). Second, the conversion privilege may be the source of substantial price appreciation. To illustrate this latter feature, assume that Olsen Company issued 1,000 shares of 6 percent, USD 100 par value convertible preferred stock at USD 100 per share. The stock is convertible at any time into four shares of Olsen USD 10 par value common stock, which has a current market value of USD 20 per share. In the next several years, the company reported much higher net income and increased the dividend on the common stock from USD 1 to USD 2 per share. Assume that the common stock now sells at USD 40 per share. The preferred stockholders can: (1) convert each share of preferred stock into four shares

of common stock and increase the annual dividend they receive from USD 6 to USD 8; (2) sell their preferred stock at a substantial gain, since it sells in the market at approximately USD 160 per share, the market value of the four shares of common stock into which it is convertible; or (3) continue to hold their preferred shares in the expectation of realizing an even larger gain at a later date.

If all 1,000 shares of USD 100 par value Olsen Company preferred stock are converted into 4,000 shares of USD 10 par value common stock, the entry is:

Preferred Stock (-SE)	100,00	
	0	
Common Stock (+SE)		40,00
		0
Paid-In Capital in Excess of Par Value—Common (+SE)		60,00
		0
To record the conversion of preferred stock into common stock.		

An accounting perspective:

Business insight

In the early 1970s, only about 10 percent of undergraduate degrees in accounting were awarded to women. This percentage increased steadily, and by the mid-1980s approximately half of all undergraduate accounting degrees were earned by women. By 1996, the rate increased to slightly more than half. This rate is more than twice the rate in the medical and legal professions. For more information see "Accounting's Big Gender Switch," *Business Week*, January 20, 1997, p. 20.

Most preferred stocks are callable at the option of the issuing corporation. **Callable preferred stock** means that the corporation can inform nonconvertible preferred stockholders that they must surrender their stock to the company. Also, convertible preferred stockholders must either surrender their stock or convert it to common shares.

Preferred shares are usually callable at par value plus a small premium of 3 or 4 percent of the par value of the stock. This **call premium** is the difference between

the amount at which a corporation calls its preferred stock for redemption and the par value of the stock.

An issuing corporation may force conversion of convertible preferred stock by calling in the preferred stock for redemption. Stockholders who do not want to surrender their stock have to convert it to common shares. When preferred stockholders surrender their stock, the corporation pays these stockholders par value plus the call premium, any dividends in arrears from past years, and a prorated portion of the current period's dividend. If the market value of common shares into which the preferred stock could be converted is higher than the amount the stockholders would receive in redemption, they should convert their preferred shares to common shares. For instance, assume that a stockholder owns 1,000 shares of convertible preferred stock. Each share is callable at USD 104 per share, convertible to two common shares (currently selling at USD 62 per share), and entitled to USD 10 of unpaid dividends. If the issuing corporation calls in its preferred stock, it would give the stockholder either (1) USD 114,000 $[(USD\ 104 + USD\ 10) \times 1,000]$ if the shares are surrendered or (2) common shares worth USD 124,000 $(USD\ 62 \times 2,000)$ if the shares are converted. Obviously, the stockholder should convert these preferred shares to common shares.

Why would a corporation call in its preferred stock? Corporations call in preferred stock for many reasons: (1) the outstanding preferred stock may require a 12 percent annual dividend at a time when the company can secure capital to retire the stock by issuing a new 8 percent preferred stock; (2) the issuing company may have been sufficiently profitable to retire the preferred stock out of earnings; or (3) the company may wish to force conversion of its convertible preferred stock because the cash dividend on the equivalent common shares is less than the dividend on the preferred shares.

12.3.8 Balance sheet presentation of stock

The stockholders' equity section of a corporation's balance sheet contains two main elements: paid-in capital and retained earnings. **Paid-in capital** is the part of stockholders' equity that normally results from cash or other assets invested by owners. Paid-in capital also results from services performed for the corporation in

exchange for capital stock and from certain other transactions discussed in Chapter 13. As stated earlier, **retained earnings** is the part of stockholders' equity resulting from accumulated net income, reduced by dividends and net losses. Net income increases the Retained Earnings account balance and net losses decrease it. In addition, dividends declared to stockholders decrease Retained Earnings. Since Retained Earnings is a stockholders' equity account and represents accumulated net income retained by the company, it normally has a credit balance. We discuss retained earnings in more detail in Chapter 13.

The following illustration shows the proper financial reporting for preferred and common stock. Assume that a corporation is authorized to issue 10,000 shares of USD 100 par value, 6 percent, cumulative, convertible preferred stock (five common for one preferred), all of which have been issued and are outstanding; and 200,000 shares of USD 10 par value common stock, of which 80,000 shares are issued and outstanding. The stockholders' equity section of the balance sheet (assuming USD 450,000 of retained earnings) is:

Stockholders' equity:		
Paid-in capital:		
Preferred stock – USD 100 par value, 6 percent cumulative, convertible (5 common for 1 preferred); authorized, issued, and outstanding, 10,000 shares	\$ 1,000,000	
Common stock – USD 10 par value; authorized, 200,000 shares; issued and outstanding 80,000 shares	800,000	
Total paid-in capital		\$ 1,800,000
Retained earnings		450,000
Total stockholders' equity		2,250,000

Notice that the balance sheet lists preferred stock before common stock because the preferred stock is preferred as to dividends, assets, or both. The company discloses the conversion rate in a parenthetical note within the description of preferred stock or in a footnote.

An accounting perspective:

Business insight

WHX corporation in its 1999 annual report provided the following presentation of preferred stock in the stockholders' equity second of its balance sheet:

	1999
Stockholders' equity:	
Preferred stock—\$.10 par value: authorized 10,000 shares; issued and outstanding: 5,883 shares	\$588.3M

12.3.9 Stock issuances for cash

Each share of common or preferred capital stock either has a par value or lacks one. The corporation's charter determines the par value printed on the stock certificates issued. Par value may be any amount—1 cent, 10 cents, 16 cents, USD 1, USD 5, or USD 100. Low par values of USD 10 or less are common in our economy.

As previously mentioned, par value gives no clue as to the stock's market value. Shares with a par value of USD 5 have traded (sold) in the market for more than USD 600, and many USD 100 par value preferred stocks have traded for considerably less than par. Par value is not even a reliable indicator of the price at which shares can be issued. New corporations can issue shares at prices well in excess of par value or for less than par value if state laws permit. Par value gives the accountant a constant amount at which to record capital stock issuances in the capital stock accounts. As stated earlier, the total par value of all issued shares is generally the legal capital of the corporation.

To illustrate the issuance of stock for cash, assume a company issues 10,000 authorized shares of USD 20 par value common stock at USD 22 per share. The following entry records the issuance:

Cash (+A)	220,000	
Common Stock (+SE)		200,000
Paid-In Capital in Excess of Par Value—Common (+SE)		20,000

To record the issuance of 10,000 shares of stock for cash.

Notice that the credit to the Common Stock account is the par value (USD 20) times the number of shares issued. The accountant credits the excess over par value (USD 20,000) to Paid-In Capital in Excess of Par Value; it is part of the paid-in capital contributed by the stockholders. Thus, **paid-in capital in excess of par (or stated) value** represents capital contributed to a corporation in addition to that assigned to the shares issued and recorded in capital stock accounts. The paid-in capital section of the balance sheet appears as follows:

Paid-in capital:	
Common stock—par value, \$20; 10,000 shares authorized, issued and outstanding	\$ 200,000
Paid-in capital in excess of par value—common	20,000
Total paid-in capital	\$ 220,000

When it issues no-par stock with a stated value, a company carries the shares in the capital stock account at the stated value. Any amounts received in excess of the stated value per share represent a part of the paid-in capital of the corporation and the company credits them to Paid-In Capital in Excess of Stated Value. The legal capital of a corporation issuing no-par shares with a stated value is usually equal to the total stated value of the shares issued.

To illustrate, assume that the DeWitt Corporation, which is authorized to issue 10,000 shares of common stock without par value, assigns a stated value of USD 20 per share to its stock. DeWitt issues the 10,000 authorized shares for cash at USD 22 per share. The entry to record this transaction is:

Cash (+A)	220,000	
	0	
Common Stock (+SE)		200,000
Paid-In Capital in Excess of Stated Value—Common (+SE)		20,000
To record issuance of 10,000 shares of stock for cash.		

The paid-in capital section of the balance sheet appears as follows:

Paid-in capital:	
Common stock—par value, \$20; 10,000 shares authorized, issued and outstanding	\$ 200,000
Paid-in capital in excess of stated value—common	20,000
Total paid-in capital	\$ 220,000

DeWitt carries the USD 20,000 received over and above the stated value of USD 200,000 permanently as paid-in capital because it is a part of the capital originally

contributed by the stockholders. However, the legal capital of the DeWitt Corporation is USD 200,000.

A corporation that issues no-par stock without a stated value credits the entire amount received to the capital stock account. For instance, consider the DeWitt Corporation's issuance of no-par stock. If no stated value had been assigned, the entry would have been as follows:

Cash (+A)	220,000	
Common Stock (+SE)		200,000
To record issuance of 10,000 shares for cash.		

Since the company may issue shares at different times and at differing amounts, its credits to the capital stock account are not uniform amounts per share. This contrasts with issuing par value shares or shares with a stated value.

To continue our example, the paid-in capital section of the company's balance sheet would be as follows:

Paid-in capital:	
Common stock—without par or stated value; 10,000 shares authorized, issued and outstanding	\$ 220,000
Total paid-in capital	\$ 220,000

The actual capital contributed by stockholders is USD 220,000. In some states, the entire amount received for shares without par or stated value is the amount of legal capital. The legal capital in this example would then be equal to USD 220,000.

12.3.10 Capital stock issued for property or services

When issuing capital stock for property or services, companies must determine the dollar amount of the exchange. Accountants generally record the transaction at the fair value of (1) the property or services received or (2) the stock issued, whichever is more clearly evident.

To illustrate, assume that the owners of a tract of land deeded it to a corporation in exchange for 1,000 shares of USD 12 par value common stock. The firm can only estimate the fair market value of the land. At the time of the exchange, the stock has an established total market value of USD 14,000. The required entry is:

Land (+A)	14,000	
Common Stock (+SE)		12,000
Paid-In Capital in Excess of Par Value—Common (+SE)		2,000
To record the receipt of land for capital stock.		

As another example, assume a firm issues 100 shares of common stock with a par value of USD 40 per share in exchange for legal services received in organizing as a corporation. No shares have been traded recently, so there is no established market value. The attorney previously agreed to a price of USD 5,000 for these legal services but decided to accept stock in lieu of cash. In this example, the correct entry is:

Organization Costs (+A)	5,000	
Common Stock (+SE)		4,000
Paid-In Capital in Excess of Par Value—Common (+SE)		1,000
To record the receipt of legal services for capital stock.		

The company should value the services at the price previously agreed on since that value is more clearly evident than the market value of the shares. It should debit an intangible asset account because these services benefit the corporation throughout its entire life. The company credits the amount by which the value of the services received exceeds the par value of the shares issued to a Paid-In Capital in Excess of Par Value—Common account.

12.3.11 Balance sheet presentation of paid-in capital in excess of par (or stated) value—Common or preferred

Accountants credit amounts received in excess of the par or stated value of shares to a Paid-In Capital in Excess of Par (or Stated) Value—Common (or Preferred) account. They carry the amounts received in excess of par or stated value in separate accounts for each class of stock issued. Using the following assumed data, the stockholders' equity section of the balance sheet of a company with both preferred and common stock outstanding would appear as follows:

Stockholders' equity:			
Paid-in capital:			
Preferred stock—\$100 par value, 6% cumulative; 1,000 shares authorized, issued, and outstanding	\$100,000		
Common stock—without par value, stated value, \$5; 100,000 shares authorized, 80,000 shares; issued and outstanding	400,000	\$ 500,000	
Paid-in capital in excess of par (or stated) value:			
From preferred stock issuances	\$ 5,000		
From common stock issuances	20,000	25,000	
Total paid-in capital			\$ 525,000
Retained earnings			200,000
Total stockholders' equity			\$ 725,000

The total book value of a corporation's outstanding shares is equal to its recorded net asset value—that is, assets minus liabilities. Quite simply, the amount of net assets is equal to stockholders' equity. When only common stock is outstanding, companies compute the **book value per share** by dividing total stockholders' equity by the number of common shares outstanding. In calculating book value, they assume that (1) the corporation could be liquidated without incurring any further expenses, (2) the assets could be sold at their recorded amounts, and (3) the liabilities could be satisfied at their recorded amounts. Assume the stockholders' equity of a corporation is as follows:

Stockholders' equity:

Paid-in capital:			
Common stock—without par value, stated value, \$10; authorized, 20,000 shares; issued and outstanding, 15,000 shares	\$ 150,000		
Paid-in capital in excess of stated value	10,000		
Total paid-in capital			\$ 160,000
Retained earnings			50,000
Total stockholders' equity			\$ 210,000
To determine the book value per share of the stock:			
Total stockholders' equity	\$210,000		
Total shares outstanding	÷15,000		
Book value per share			\$ 14

When two or more classes of capital stock are outstanding, the computation of book value per share is more complex. The book value for each share of stock depends on the rights of the preferred stockholders. Preferred stockholders typically are entitled to a specified liquidation value per share, plus cumulative dividends in

arrears, since most preferred stocks are preferred as to assets and are cumulative. In each case, the specific provisions in the preferred stock contract govern. To illustrate, assume the Celoron Corporation's stockholders' equity is as follows:

Stockholders' equity:	
Paid-in capital:	
Preferred stock—\$100 par value, 6% cumulative; 5,000 shares authorized, issued, and outstanding	\$ 500,000
Common stock—\$10 par value, 200,000 shares authorized, issued and outstanding	2,000,000
Paid-in capital in excess of par value—preferred	200,000
Total paid-in capital	\$2,700,000
Retained earnings	400,000
Total stockholders' equity	\$3,100,000

The preferred stock is 6 percent, cumulative. It is preferred as to dividends and as to assets in liquidation to the extent of the liquidation value of USD 100 per share, plus any cumulative dividends on the preferred stock. Dividends for four years (including the current year) are unpaid. You would calculate the book values of each class of stock as follows:

		Total	Per Share
Total stockholders' equity		\$3,100,000	
Book value of preferred stock (5,000 shares)	\$ 500,000	620,000	\$124.00*
Liquidation value (5,000 shares X \$100)	120,000	\$2,480,000	12.40 ^T
Dividends (4 years at \$30,000)			
Book value of common stock (200,000 shares)			
* \$620,000 ÷ 5,000 shares.			
^T \$2,480,000 ÷ 200,000 shares.			

Notice that Celoron did not assign the paid-in capital in excess of par value—preferred to the preferred stock in determining the book values. Celoron assigned only the liquidation value and cumulative dividends on the preferred stock to the preferred stock.

Assume now that the features attached to the preferred stock are the same except that the preferred stockholders have the right to receive USD 103 per share in liquidation. The book values of each class of stock would be:

	Total	Per Share
Total stockholders' equity	\$3,100,000	
Book value of preferred stock (5,000		

shares)	\$ 515,000		
Liquidation value (5,000 shares X \$103)	120,000	635,000	\$ 127.00
Dividends (4 years at \$30,000)		\$2,465,000	12.33
Book value of common stock (200,000 shares)			

Book value rarely equals market value of a stock because many of the assets have changed in value due to inflation. Thus, the market prices of the shares of many corporations traded regularly are different from their book values.

An accounting perspective:

Business insight

The Wall Street Journal publishes the New York Stock Exchange (NYSE) Composite Transactions each Monday through Friday except when the exchange is closed. For each stock listed on the NYSE, it lists the following data. We use data for the Kellogg Company, which produces ready-to-eat cereals and other food products, as recently reported in *The Wall Street Journal* as an example:

52 Weeks

Ytd per cent chg	Hi	Lo	Stock	Sym	Div	Ytd per cent	PE	Vol 100s	Last	Net Chg
+ 12.5	34	23.19	Kellogg	K	1.01	3.4	27	9957	29.54	+0.04

The first column reflects the stock price percentage change for the calendar year to date, adjusted for stock splits and dividends over 10 percent. The next two columns show the high and low price over the preceding 52 weeks plus the current week. The next two columns show the company name (Kellogg) and the NYSE's symbol (K) for that company. The Div column is the annual dividend based on the last quarterly, semiannual, or annual declaration. Yield percent is calculated as dividends paid divided by the current market price. The PE ratio is the closing market price divided by the total earnings per share for the most recent four quarters. The Vol 100s column shows

the unofficial daily total of shares traded, quoted in hundreds. Thus, 995,700 shares of Kellogg's were traded that day. The next to last column shows the closing price for that day. The final column shows the change in the closing price as compared to the closing price of the preceding day.

12.4 Analyzing and using the financial results—Return on average common stockholders' equity

Stockholders' equity is particularly important to managers, creditors, and investors in determining the return on equity, which is the return on average common stockholders' equity.

The **return on average common stockholders' equity** measures what a given company earned for its common stockholders from all sources as a percentage of the common stockholders' investment. From the common stockholders' point of view, it is an important measure of the income-producing ability of the company.

The ratio's formula is:

$$\text{Return on average common stockholders' equity} = \frac{\text{Net income available for common stockholders}}{\text{Average common stockholders' equity}}$$

If preferred stock is outstanding, the numerator is net income minus the annual dividend on preferred stock, and the denominator is the average total book value of common stock. If no preferred stock is outstanding, the numerator is net income, and the denominator is average stockholders' equity.

The Procter & Gamble Company reported the following information in its 2001 financial statements (USD millions):

	2001
Net earnings	\$ 2,922
Stockholders' equity, beginning	12,287
Stockholders' equity, ending	12,010

The return on average common stockholders' equity for Procter & Gamble is 24.1 percent, or USD 2,922/[(USD 12,287 + USD 12,010)/2]. Investors view any increase from year to year as favorable and any decrease as unfavorable.

Since the stock market is frequently referred to as an economic indicator, the knowledge you now have on corporate stock issuances should help you relate to stocks traded in the market. Chapter 13 continues the discussion of paid-in capital and also discusses treasury stock, retained earnings, and dividends.

**An ethical perspective:
Belex corporation**

Joe Morrison is the controller for Belex Corporation. He is involved in a discussion with other members of management concerning how to get rid of some potentially harmful toxic waste materials that are a by-product of the company's manufacturing process.

There are two alternative methods of disposing of the materials. The first alternative is to bury the waste in steel drums on a tract of land adjacent to the factory building. There is currently no legal prohibition against doing this. The cost of disposing of the materials in this way is estimated to be USD 50,000 per year. The best estimate is that the steel drums would not leak for at least 50 years, but probably would begin leaking after that time. The second alternative is to seal the materials in lead drums that would be disposed of at sea by a waste management company. The cost of this alternative is estimated to be USD 400,000 per year. The federal government has certified this method as the preferred method of disposal. The best estimate is that the lead drums would never rupture or leak.

Belex Corporation has seen some tough economic times. The company suffered losses until last year, when it showed a profit of USD 750,000 as a result of a new manufacturing project. So far, the waste materials from that project have been accumulating in two large vats on the company's land. However, these vats are almost full, so soon management must decide how to dispose of the materials.

One group of managers is arguing in favor of the first alternative because it is legally permissible and results in annual profits of about USD 700,000. They point out that using the second alternative would

reduce profits to about USD 350,000 per year and cut managers' bonuses in half. They also claim that some of their competitors are now using the first alternative, and to use the second alternative would place the company at a serious competitive disadvantage.

Another group of managers argues that the second alternative is the only safe alternative to pursue. They claim that when the steel drums start leaking they will contaminate the ground water and could cause serious health problems. When this contamination occurs, the company will lose public support and may even have to pay for the cleanup. The cost of that cleanup could run into the millions.

12.4.1 Understanding the learning objectives

- Advantages:
 - (a) Easy transfer of ownership.
 - (b) Limited liability.
 - (c) Continuous existence of the entity.
 - (d) Easy capital generation.
 - (e) Professional management.
 - (f) Separation of owners and entity.
- Disadvantages:
 - (a) Double taxation.
 - (b) Government regulation.
 - (c) Entrenched, inefficient management.
 - (d) Limited ability to raise creditor capital.
- Par value—an arbitrary amount assigned to each share of a given class of stock and printed on the stock certificate.
 - Stated value—an arbitrary amount assigned by the board of directors to each share of a given class of no-par stock.
 - Market value—the price at which shares of capital stock are bought and sold in the market.

- Book value—the amount per share that each stockholder would receive if the corporation were liquidated without incurring any further expenses and if assets were sold and liabilities liquidated at their recorded amounts.
- Liquidation value—the amount a stockholder would receive if a corporation discontinues operations, pays its liabilities, and distributes the remaining cash among the stockholders.
- Redemption value—the price per share at which a corporation may call in (redeem) its capital stock for retirement.
- Capital stock authorized—the number of shares of stock that a corporation is entitled to issue as designated in its charter.
- Capital stock issued—the number of shares of stock that have been sold and issued to stockholders.
- Capital stock outstanding—the number of authorized shares of stock that have been issued and that are still currently held by stockholders.
- Two basic classes of capital stock:
 - (a) Common stock—represents the residual equity.
 - (b) Preferred stock—may be preferred as to dividends and/or assets. Also may be cumulative and/or callable.
- If the company has paid-in capital in excess of par value, the proper form would be:

Stockholders' equity:

Paid-in capital:

Preferred stock—\$100 par value, 6% cumulative; 1,000 shares authorized, issued, and outstanding	\$ 100,000	
Common stock—without par value, stated value, \$5; 100,000 shares authorized, 80,000 shares; issued and outstanding	400,000	\$ 500,000

Paid-in capital in excess of par (or stated) value:

From preferred stock issuances	\$ 5,000	
From common stock issuances	20,000	25,000

Total paid-in capital		\$ 525,000
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Retained earnings		200,000
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Total stockholders' equity		\$ 725,000
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The following examples illustrate the issuance for cash of: (1) stock with a par value, (2) no-par value stock with a stated value, and (3) no-par value stock without a stated value.

- Issuance of par value stock for cash—10,000 shares of USD 20 par value common stock issued for USD 22 per share.

Cash (+A)	220,000	
Common Stock (+SE)		200,000
Paid-In Capital in Excess of Par Value—Common (+SE)		20,000

- Issuance of no-par, stated value stock for cash—10,000 shares (no-par value) with USD 20 per share stated value issued for USD 22 per share.

Cash (+A)	220,000	
Common Stock (+SE)		200,000
Paid-In Capital in Excess of Stated Value—Common (+SE)		20,000

- Issuance of no-par stock without a stated value for cash—10,000 shares (no-par value) issued at USD 22 per share.

Cash (+A)	220,000	
Common Stock (+SE)		220,000

- Example: A corporation has 200,000 shares of common stock and 5,000 shares of preferred stock outstanding. Preferred stock is 6 percent and cumulative. It is preferred as to dividends and as to assets in liquidation to the extent of the liquidation value of USD 100 per share, plus any cumulative dividends on the preferred stock. Dividends for three years are unpaid. Total stockholders' equity is USD 4,100,000. Calculations are as follows:

		Total	Per Share
Total stockholders' equity		\$4,100,000	
Book value of preferred stock (5,000 shares)			
Liquidation value (5,000 shares X \$100)	\$ 500,000		
Dividends (3 years at \$30,000)	90,000	590,000	\$ 118.00
Book value of common stock (200,000 shares)		\$3,510,000	17.55

- The return on average common stockholders' equity equals net income available to common stockholders divided by average common stockholders' equity.
- The return on average common stockholders' equity is an important measure of the income-producing ability of the company.

12.4.2 Demonstration problem

Demonstration problem A Violet Company has paid all required preferred dividends through 2004 December 31. Its outstanding stock consists of 10,000 shares of USD 125 par value common stock and 4,000 shares of 6 percent, USD 125 par value preferred stock. During five successive years, the company's dividend declarations were as follows:

2005	\$85,000
2006	52,500
2007	7,500
2008	15,000
2009	67,500

Compute the amount of dividends that would have been paid to each class of stock in each of the last five years assuming the preferred stock is:

- Cumulative.
- Noncumulative.

Demonstration problem B Terrier Company has been authorized to issue 100,000 shares of USD 6 par value common stock and 1,000 shares of 14 percent, cumulative, preferred stock with a par value of USD 12.

a. Prepare the entries for the following transactions that all took place in June 2009:

- 50,000 shares of common stock are issued for cash at USD 24 per share.
- 750 shares of preferred stock are issued for cash at USD 18 per share.
- 1,000 shares of common stock are issued in exchange for legal services received in the incorporation process. The fair market value of the legal services is USD 9,000.

b. Prepare the paid-in capital section of Terrier's balance sheet as of 2009 June 30.

Solution to demonstration problem A

VIOLET COMPANY		Assumptions	
Year	Dividends to	a	b
2005	Preferred	\$30,000*	\$30,000
	Common	55,000	55,000
2006	Preferred	30,000	30,000
	Common	22,500	22,500
2007	Preferred	7,500	7,500
	Common	-0-	-0-
2008	Preferred	15,000	15,000
	Common	-0-	-0-
2009	Preferred	67,500†	30,000‡
	Common	-0-	37,500

* 4,000 shares X \$125 X 0.06 = \$30,000

† \$30,000 + \$22,500 preferred dividend missed in 2007 + \$15,000 preferred dividend missed in 2008.

‡Only the basic \$30,000 dividend is paid because the stock is noncumulative.

Solution to demonstration problem B

a. (1)	Cash (+A)	1,200,000	
	Common Stock (+SE)		300,000
	Paid-In Capital in Excess of Par Value—Common Stock (+SE)		900,000
	To record issuance of 50,000 shares at \$24 per share.		
(2)	Cash (+A)	13,500	
	Preferred Stock (+SE)		9,000
	Paid-In Capital in Excess of Par Value—Preferred (+SE)		4,500
	To record the issuance of 750 shares for cash, at \$18 per share.		
(3)	Organization Costs (+A)	9,000	
	Common Stock (+SE)		6,000
	Paid-In Capital in Excess of Par Value—Common (+SE)		3,000
	To record the issuance of 1,000 shares in exchange for legal services.		

b.

TERRIER COMPANY
Partial Balance Sheet
2009 June 30

Paid-in Capital:			
Preferred stock—\$12 par value, 14% cumulative; 1,000 shares authorized; issued and outstanding, 750 shares			\$ 9,000
Common stock—\$6 par value per share; 100,000 shares authorized; issued and outstanding, 51,000 shares	306,000	\$ 315,000	
Paid-in capital in excess of par value:			
From preferred stock issuances		\$ 4,500	
From common stock issuances	903,000	907,500	
Total paid-in capital		\$1,222,500	0

12.5 Key Terms

Articles of incorporation The application for the corporation's charter.

Board of directors Elected by the stockholders to have primary responsibility for formulating policies for the corporation. The board also authorizes contracts, declares dividends, establishes executive salaries, and grants authorization to borrow money.

Book value per share Stockholders' equity per share; the amount per share each stockholder would receive if the corporation were liquidated without incurring any further expenses and if assets were sold and liabilities liquidated at their recorded amounts.

Bylaws A set of rules or regulations adopted by the board of directors of a corporation to govern the conduct of corporate affairs. The bylaws must be in agreement with the laws of the state and the policies and purposes in the corporate charter.

Callable preferred stock If the stock is nonconvertible, it must be surrendered to the company when the holder is requested to do so. If the stock is convertible, it may be either surrendered or converted into common shares when called.

Call premium (on preferred stock) The difference between the amount at which a corporation calls its preferred stock for redemption and the par value of the stock.

Capital stock Transferable units of ownership in a corporation.

Capital stock authorized The number of shares of stock that a corporation is entitled to issue as designated in its charter.

Capital stock issued The number of shares of stock that have been sold and issued to stockholders.

Capital stock outstanding The number of shares of authorized stock issued and currently held by stockholders.

Common stock Shares of stock representing the residual equity in the corporation. If only one class of stock is issued, it is known as common stock. All other claims rank ahead of common stockholders' claims.

Convertible preferred stock Preferred stock that is convertible into common stock of the issuing corporation.

Corporate charter The contract between the state and the incorporators of a corporation, and their successors, granting the corporation its legal existence.

Corporation An entity recognized by law as possessing an existence separate and distinct from its owners; that is, it is a separate legal entity. A corporation is granted many of the rights, and placed under many of the obligations, of a natural person. In any given state, all corporations organized under the laws of that state are domestic corporations; all others are foreign corporations.

Cumulative preferred stock Preferred stock for which the right to receive a basic dividend accumulates if any dividends have not been paid; unpaid cumulative preferred dividends must be paid before any dividends can be paid on the common stock.

Discount on capital stock The amount by which the par value of shares issued exceeds their issue price. The original issuance of shares at a discount is illegal in most states.

Dividend A distribution of assets (usually cash) that represents a withdrawal of earnings by the owners.

Dividend on preferred stock The amount paid to preferred stockholders as a return for the use of their money; usually a fixed or stated amount expressed in dollars per share or as a percentage of par value per share.

Dividends in arrears Cumulative unpaid dividends, including quarterly dividends not declared for the current year.

Domestic corporation See corporation.

Foreign corporation See corporation.

Incorporators Persons seeking to bring a corporation into existence.

Legal capital (stated capital) An amount prescribed by law (usually the par value or stated value of shares issued) below which a corporation may not reduce stockholders' equity through the declaration of dividends or other payments to stockholders.

Liquidation value The amount a stockholder will receive if a corporation discontinues operations and liquidates by selling its assets, paying its liabilities, and distributing the remaining cash among the stockholders.

Market value The price at which shares of capital stock are bought and sold in the market.

Minutes book The record book in which actions taken at stockholders' and board of directors' meetings are recorded; the written authorization for many actions taken by corporate officers.

Noncumulative preferred stock Preferred stock on which the right to receive a dividend expires if the dividend is not declared.

No-par stock Capital stock without par value, to which a stated value may or may not be assigned.

Organization costs Costs of organizing a corporation, such as incorporation fees and legal fees applicable to incorporation.

Paid-in capital Amount of stockholders' equity that normally results from the cash or other assets invested by owners; it may also result from services provided for shares of stock and certain other transactions.

Paid-in capital in excess of par (or stated) value—common or preferred Capital contributed to a corporation in addition to that assigned to the shares issued and recorded in capital stock accounts.

Par value An arbitrary amount assigned to each share of a given class of stock and printed on the stock certificate.

Preemptive right The right of stockholders to buy additional shares in a proportion equal to the percentage of shares already owned.

Preferred stock Capital stock that carries certain features or rights not carried by common stock. Preferred stock may be preferred as to dividends, as to assets, or as to both dividends and assets. Preferred stock may be callable and/or convertible and may be cumulative or noncumulative.

Proxy A legal document signed by a stockholder, giving another person the authority to vote the stockholder's shares at a stockholders' meeting.

Redemption value The price per share at which a corporation may call in (or redeem) its capital stock for retirement.

Retained earnings The part of stockholders' equity resulting from net income, reduced by dividends and net losses.

Return on average common stockholders' equity A measure of the income-producing ability of the company. It is the ratio of net income available to common stockholders divided by average common stockholders' equity.

Shares of stock Units of ownership in a corporation.

Stated value An arbitrary amount assigned by the board of directors to each share of a given class of no-par stock.

Stock certificate A printed or engraved document serving as evidence that the holder owns a certain number of shares of capital stock.

Stockholders' ledger Contains a group of subsidiary accounts showing the number of shares of stock currently held by each stockholder.

Stock preferred as to assets Means that in liquidation, the preferred stockholders are entitled to receive the par value (or a larger stipulated

liquidation value) per share before any assets may be distributed to common stockholders.

Stock preferred as to dividends Means that the preferred stockholders are entitled to receive a specified dividend per share before any dividend on common stock is paid.

Stock registrar Typically, a bank that maintains records of the shares outstanding for a company.

Stock-transfer agent Typically, a bank or trust company employed by a corporation to transfer stock between buyers and sellers.

Stock without par value See no-par stock.

Unissued shares Capital stock authorized but not yet issued.

12.6 Self-test

True-false

Indicate whether each of the following statements is true or false.

A person may favor the corporate form of organization for a risky business enterprise primarily because a corporation's shares can be easily transferred.

In the event of corporate liquidation, stockholders whose stock is preferred as to assets are entitled to receive the par value of their shares before any amounts are distributed to creditors or common stockholders.

The par value of a share of capital stock is no indication of the market value or book value of the share of stock.

When 10,000 shares of USD 20 par value common stock are issued in payment for a parcel of land with a fair market value of USD 300,000, the Common Stock account is credited for USD 200,000, and the Paid-In Capital in Excess of Par Value—Common account is credited for USD 100,000.

Multiple-choice

Select the best answer for each of the following questions.

Which of the following is not an advantage of the corporate form of organization?

- Continuous existence of the entity.
- Limited liability of stockholders.
- Government regulation.
- Easy transfer of ownership.

An arbitrary amount assigned by the board of directors to each share of a given class of no-par stock is:

- a. Quasi-par value.
- b. Stated value.
- c. Redemption value.
- d. Liquidation value.

Preferred stock that has dividends in arrears is:

- a. Noncumulative preferred stock.
- b. Noncumulative and callable preferred stock.
- c. Noncumulative and convertible preferred stock.
- d. Cumulative preferred stock.

Quinn Corporation issued 10,000 shares of USD 20 par value common stock at USD 50 per share. The amount that would be credited to Paid-In Capital in Excess of Par Value—Common is:

- a. USD 200,000.
- b. USD 300,000.
- c. USD 500,000.
- d. USD 700,000.
- e. None of the above.

You are given the following information: Capital Stock, USD 80,000 (USD 80 par); Paid-In Capital in Excess of Par Value—Common, USD 200,000; and Retained Earnings, USD 400,000. Assuming only one class of stock, the book value per share is:

- a. USD 680.
- b. USD 280.
- c. USD 80.
- d. USD 400.
- e. None of the above.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

Questions

- Cite the major advantages of the corporate form of business organization and indicate why each is considered an advantage.
- What is meant by the statement that corporate income is subject to double taxation? Cite several other disadvantages of the corporate form of organization.
- Why is Organization Expense not a good title for the account that records the costs of organizing a corporation? Could you justify leaving the balance of an Organization Costs account intact throughout the life of a corporation?
- What are the basic rights associated with a share of capital stock if there is only one class of stock outstanding?
- Explain the purpose or function of: (a) the stockholders' ledger, (b) the minutes book, (c) the stock-transfer agent, and (d) the stock registrar.
- What are the differences between par value stock and stock with no-par value?
- Corporate capital stock is seldom issued for less than par value. Give two reasons why this statement is true.
- Explain the terms liquidation value and redemption value.
- What are the meanings of the terms stock preferred as to dividends and stock preferred as to assets?
- What do the terms cumulative and noncumulative mean in regard to preferred stock?
- What are dividends in arrears, and how should they be disclosed in the financial statements?
- A corporation has 1,000 shares of 8 percent, USD 200 par value, cumulative, preferred stock outstanding. Dividends on this stock have not been declared for three years. Is the corporation legally liable to its preferred stockholders for these dividends? How should this fact be shown in the balance sheet, if at all?
- Explain why a corporation might issue a preferred stock that is both convertible into common stock and callable.

- Explain the nature of the account entitled Paid-In Capital in Excess of Par Value. Under what circumstances is this account credited?
- Blake Corporation issued 5,000 shares of USD 100 par value common stock at USD 120 per share. What is the legal capital of Blake Corporation, and why is the amount of legal capital important?
- What is the general approach of the accountant in determining the dollar amount at which to record the issuance of capital stock for services or property other than cash?
- What assumptions are made in determining book value?
- Assuming there is no preferred stock outstanding, how can the book value per share of common stock be determined? Of what significance is the book value per share? What is the relationship of book value per share to market value per share?

12.7 Exercises

Exercise A Winters Corporation has outstanding 1,000 shares of noncumulative preferred stock and 2,000 shares of common stock. The preferred stock is entitled to an annual dividend of USD 100 per share before dividends are declared on common stock. What are the total dividends received by each class of stock if Winters Corporation distributes USD 280,000 in dividends in 2010?

Exercise B Zeff Corporation has 2,000 shares outstanding of cumulative preferred stock and 6,000 shares of common stock. The preferred stock is entitled to an annual dividend of USD 18 per share before dividends are declared on common stock. No preferred dividends were paid for last year and the current year. What are the total dividends received by each class of stock if Zeff Corporation distributes USD 108,000 in dividends?

Exercise C Gordon Company issued 10,000 shares of common stock for USD 1,120,000 cash. The common stock has a par value of USD 100 per share. Give the journal entry for the stock issuance.

Exercise D Thore Company issued 30,000 shares of USD 20 par value common stock for USD 680,000. What is the journal entry for this transaction? What would the journal entry be if the common stock had no-par or stated value?

Exercise E Li & Tu, Inc., needed land for a plant site. It issued 100 shares of USD 480 par value common stock to the incorporators of their corporation in exchange for land, which cost USD 56,000 one year ago. Experienced appraisers recently valued the land at USD 72,000. What journal entry would be appropriate to record the acquisition of the land?

Exercise F Smart Corporation owes a trade creditor USD 30,000 on open account which the corporation does not have sufficient cash to pay. The trade creditor suggests that Smart Corporation issue to him 750 shares of the USD 24 par value common stock, which is currently selling on the market at USD 40. Present the entry or entries that should be made on Smart Corporation's books.

Exercise G Why would a law firm ever consider accepting stock of a new corporation having a total par value of USD 320,000 as payment in full of a USD 480,000 bill for legal services rendered? If such a transaction occurred, give the journal entry the issuing company would make on its books.

Exercise H The stockholders' equity of Graf Company's balance is as follows:

Stockholders' equity:		
Paid-in capital:		
Common stock—without par value, \$12 stated value; authorized 100,000 shares; issued and outstanding, 70,000 shares	\$ 840,000	
Paid-in capital in excess of stated value	340,000	
Total paid-in capital		\$1,180,000
Retained earnings		80,000
Total stockholders' equity		\$1,260,000

Compute the average price at which the 70,000 issued shares of common stock were sold. Compute the book value per share of common stock.

12.8 Problems

Problem A The outstanding capital stock of Robbins Corporation consisted of 3,000 shares of 10 percent preferred stock, USD 250 par value, and 30,000 shares of no-par common stock with a stated value of USD 250. The preferred was issued at USD 412, the common at USD 480 per share. On 2005 January 1, the retained earnings of the company were USD 250,000. During the succeeding five years, net income was as follows:

2005	\$767,500
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2006	510,000
2007	48,000
2008	160,000
2009	662,500

No dividends were in arrears as of 2005 January 1, and during the five years 2005-2009, the board of directors declared dividends in each year equal to net income of the year.

Prepare a schedule showing the dividends declared each year on each class of stock assuming the preferred stock is:

- a. Cumulative.
- b. Noncumulative.

Problem B On 2008 December 27, Glade Company was authorized to issue 250,000 shares of USD 24 par value common stock. It then completed the following transactions:

2009

Jan. 14 Issued 45,000 shares of common stock at USD 30 per share for cash.

29 Gave the promoters of the corporation 25,000 shares of common stock for their services in organizing the company. The board of directors valued these services at USD 744,000.

19 Exchanged 50,000 shares of common stock for the following assets at the indicated fair market values:

Land	USD 216,000
Building	528,000
Machinery	720,000

- a. Prepare general journal entries to record the transactions.
- b. Prepare the balance sheet of the company as of 2009 March 1.

Problem C In the corporate charter that it received on 2009 May 1, Norris Company was authorized to issue 15,000 shares of common stock. The company issued 1,000 shares immediately for USD 82 per share, cash.

On July 2, the company issued 100 shares of stock to a lawyer to satisfy a USD 8,400 bill for legal services rendered in organizing the corporation.

On July 5, the company issued 1,000 shares to the principal promoter of the corporation in exchange for a patent. Another 200 shares were issued to this same

person for costs incurred and services rendered in bringing the corporation into existence. The market value of the stock was USD 84 per share.

a. Set up T-accounts, and post these transactions. Then prepare a balance sheet for the Norris Company as of 2009 July 5, assuming the authorized stock has a par value of USD 75 per share.

b. Repeat part (a) for the stockholders' equity accounts, and prepare the stockholders' equity section of the July 5 balance sheet assuming the stock authorized has no par value but has a USD 30 per share stated value.

c. Repeat part (a) for the stockholders' equity accounts assuming the stock authorized has neither par nor stated value. Prepare the stockholders' equity section of the balance sheet.

Problem D On 2009 May 1, Farmington Company received a charter that authorized it to issue:

- 4,000 shares of no-par preferred stock to which a stated value of USD 12 per share is assigned. The stock is entitled to a cumulative dividend of USD 9.60, convertible into two shares of common stock, callable at USD 208, and entitled to USD 200 per share in liquidation.
- 1,500 shares of USD 400 par value, USD 20 cumulative preferred stock, which is callable at USD 420 and entitled to USD 412 in liquidation.
- 60,000 shares of no-par common stock to which a stated value of USD 40 is assigned.

May 1 All of the USD 9.60 cumulative preferred was issued at USD 204 per share, cash.

2 All of the USD 20 cumulative preferred was exchanged for merchandise inventory, land, and buildings valued at USD 128,000, USD 160,000, and USD 425,000, respectively.

3 Cash of USD 15,000 was paid to reimburse promoters for costs incurred for accounting, legal, and printing services. In addition, 1,000 shares of common stock were issued to the promoters for their services. The value of all of the services (including those paid in cash) was USD 55,000.

a. Prepare journal entries for these transactions.

b. Assume that retained earnings were USD 200,000. Prepare the stockholders' equity section of the 2009 May 31, balance sheet.

Problem E On 2008 January 2, the King Company received its charter. It issued all of its authorized 3,000 shares of no-par preferred stock at USD 104 and all of its 12,000 authorized shares of no-par common stock at USD 40 per share. The preferred stock has a stated value of USD 50 per share, is entitled to a basic cumulative dividend of USD 6 per share, is callable at USD 106 beginning in 2010, and is entitled to USD 100 per share plus cumulative dividends in the event of liquidation. The common stock has a stated value of USD 10 per share.

On 2009 December 31, the end of the second year of operations, retained earnings were USD 90,000. No dividends have been declared or paid on either class of stock.

a. Prepare the stockholders' equity section of King Company's 2009 December 31, balance sheet.

b. Compute the book value of each class of stock.

c. If USD 42,000 of dividends were declared as of 2009 December 31, compute the amount paid to each class of stock.

Problem F The common stock of Lang Corporation is selling on a stock exchange for USD 90 per share. The stockholders' equity of the corporation at 2009 December 31, consists of:

Stockholders' equity:	
Paid-in capital:	\$ 360,000
Preferred stock—9% cumulative, \$120 par value, \$120 liquidation value, 3,000 shares authorized, issued, and outstanding	
Common stock—\$72 par value, 30,000 shares authorized, issued and outstanding	2,160,000
Total paid-in capital	\$2,520,000
Retained earnings	354,000
Total stockholders' equity	\$2,874,000

Assume that in liquidation the preferred stock is entitled to par value plus cumulative unpaid dividends.

a. What is the total market value of all of the corporation's common stock?

b. If all dividends have been paid on the preferred stock as of 2009 December 31, what are the book values of the preferred stock and the common stock?

c. If two years' dividends were due on the preferred stock as of 2009 December 31, what are the book values of the preferred stock and common stock?

Problem G Haft Corporation has an agreement with each of its 15 preferred and 30 common stockholders that in the event of the death of a stockholder, it will purchase at book value from the stockholder's estate or heirs the shares of Haft Corporation stock held by the deceased at the time of death. The book value is to be computed in accordance with generally accepted accounting principles.

Following is the stockholders' equity section of the Haft Corporation's 2009 December 31, balance sheet.

Stockholders' equity:		
Paid-in capital:		
Preferred stock—without par value, \$50 stated value, \$15 cumulative; 3,000 shares authorized, issued, and outstanding	\$ 150,000	
Common stock—\$62.50 par value, 60,000 shares authorized, issued and outstanding	3,750,000	
Paid-in capital in excess of stated value—preferred	840,000	
Paid-in capital in excess of par value—common	30,000	
Total paid-in capital		\$4,770,000
Retained earnings		1,800,000
Total stockholders' equity		\$6,570,000

The preferred stock is cumulative and entitled to USD 300 per share plus cumulative dividends in liquidation. No dividends have been paid for 1 year.

A stockholder who owned 100 shares of preferred stock and 1,000 shares of common stock died on 2009 December 31. You have been employed by the stockholder's executor to compute the book value of each class of stock and to determine the price to be paid for the stock held by her late husband.

Prepare a schedule showing the computation of the amount to be paid for the deceased stockholder's preferred and common stock.

12.9 Alternate problems

Alternate problem A On 2005 January 1, the retained earnings of Quigley Company were USD 432,000. Net income for the succeeding five years was as follows:

2005	\$288,000
2006	216,000
2007	4,800
2008	48,000

The outstanding capital stock of the corporation consisted of 2,000 shares of preferred stock with a par value of USD 480 per share that pays a dividend of USD 19.20 per year and 8,000 shares of no-par common stock with a stated value of USD 240 per share. No dividends were in arrears as of 2005 January 1.

Prepare schedules showing how the net income for these five years was distributed to the two classes of stock if in each of the years the entire current net income was distributed as dividends and the preferred stock was:

- a. Cumulative.
- b. Noncumulative.

Alternate problem B On 2009 January 1, Cowling Company was authorized to issue 500,000 shares of USD 5 par value common stock. It then completed the following transactions:

2009

Jan. 14 Issued 90,000 shares of common stock at USD 24 per share for cash.

29 Gave the promoters of the corporation 50,000 shares of common stock for their services in organizing the company. The board of directors valued these services at USD 620,000.

Feb. 19 Exchanged 100,000 shares of common stock for the following assets at the indicated fair market values:

Equipment	USD 180,000
Building	440,000
Land	600,000

- a. Prepare general journal entries to record the transactions.
- b. Prepare the balance sheet of the company as of 2009 March 1.

Alternate problem C On 2009 July 3, Barr Company was authorized to issue 15,000 shares of common stock; 3,000 shares were issued immediately to the incorporators of the company for cash at USD 320 per share. On July 5 of that year, an additional 300 shares were issued to the incorporators for services rendered in organizing the company. The board valued these services at USD 96,000. On 2009 July 6, legal and printing costs of USD 12,000 were paid. These costs related to securing the corporate charter and the stock certificates.

a. Set up T-accounts and post these transactions. Then prepare the balance sheet of the Barr Company as of the close of 2009 July 10, assuming the authorized stock has a USD 160 par value.

b. Repeat (a) for the T-accounts involving stockholders' equity, assuming the stock is no-par stock with a USD 240 stated value. Prepare the stockholders' equity section of the balance sheet.

c. Repeat (a) for the T-accounts involving stockholders' equity, assuming the stock is no-par stock with no stated value. Prepare the stockholders' equity section of the balance sheet.

Alternate problem D Tempo Company received its charter on 2009 April 1, authorizing it to issue: (1) 10,000 shares of USD 400 par value, USD 32 cumulative, convertible preferred stock; (2) 10,000 shares of USD 12 cumulative no-par preferred stock having a stated value of USD 20 per share and a liquidation value of USD 100 per share; and (3) 100,000 shares of no-par common stock without a stated value.

On April 2, incorporators of the corporation acquired 50,000 shares of the common stock for cash at USD 80 per share, and 200 shares were issued to an attorney for services rendered in organizing the corporation. On April 3, the company issued all of its authorized shares of USD 32 convertible preferred stock for land valued at USD 1,600,000 and a building valued at USD 4,800,000. The property was subject to a mortgage of USD 2,400,000. On April 8, the company issued 5,000 shares of the USD 12 preferred stock in exchange for a patent valued at USD 1,040,000. On April 10, the company issued 1,000 shares of common stock for cash at USD 80 per share.

a. Prepare general journal entries for these transactions.

b. Prepare the stockholders' equity section of the 2009 April 30, balance sheet. Assume retained earnings were USD 80,000.

c. Assume that each share of the USD 32 convertible preferred stock is convertible into six shares of common stock and that one-half of the preferred is converted on 2009 September 1. Give the required journal entry.

Alternate problem E Kane Company issued all of its 5,000 shares of authorized preferred stock on 2008 January 1, at USD 100 per share. The preferred

stock is no-par stock, has a stated value of USD 5 per share, is entitled to a cumulative basic preference dividend of USD 6 per share, is callable at USD 110 beginning in 2009, and is entitled to USD 100 per share in liquidation plus cumulative dividends. On this same date, Kane also issued 10,000 authorized shares of no-par common stock with a USD 10 stated value at USD 50 per share.

On 2009 December 31, the end of its second year of operations, the company's retained earnings amounted to USD 160,000. No dividends have been declared or paid on either class of stock since the date of issue.

- a. Prepare the stockholders' equity section of Kane Company's 2009 December 31, balance sheet.
- b. Compute the book value in total and per share of each class of stock as of 2009 December 31.
- c. If USD 110,000 of dividends are to be declared as of 2009 December 31, compute the amount payable to each class of stock.

The stockholders' equity sections from three different corporations' balance sheets follow.

- 1) Stockholders' equity:
Paid-in capital:

Preferred stock—7% cumulative, \$240 par value, 500 shares authorized, issued, and outstanding	\$ 120,000	
Common stock—\$48 par value, 10,000 shares authorized, issued and outstanding	480,000	
Total paid-in capital		\$ 600,000
Retained earnings		422,400
Total stockholders' equity (All dividends have been paid.)		\$1,022,400

- 2) Stockholders' equity:
Paid-in capital:

Preferred stock—6% cumulative, \$80 par value, 10,000 shares authorized, issued, and outstanding	\$ 800,000	
Common stock—\$240 par value, 30,000 shares authorized, issued and outstanding	7,200,000	
Total paid-in capital		\$8,000,000
Retained earnings		88,000
Total stockholders' equity (The current year's dividends have not been paid.)		\$8,088,000

- 3) Stockholders' equity:
Paid-in capital:

Preferred stock—7% cumulative, \$480 par value, 10,000 shares authorized, issued, and outstanding	\$ 4,800,000	
Common stock—\$240 par value, 50,000 shares authorized, issued and outstanding	12,000,000	
Total paid-in capital		\$16,800,000
Retained earnings deficit		(1,872,000)
Total stockholders' equity (Dividends have not been paid for 2 previous years or the current year.)		\$14,928,000

Compute the book values per share of the preferred and common stock of each corporation assuming that in a liquidation the preferred stock receives par value plus dividends in arrears.

Alternate problem G Mendell, Inc., is a corporation in which all of the outstanding preferred and common stock is held by the four Lehman brothers. The brothers have an agreement stating that the remaining brothers will, upon the death of a brother, purchase from the estate his holdings of stock in the company at book value.

The stockholders' equity section of the balance sheet for the company on 2009 December 31, the date of the death of James Lehman, shows:

Stockholders' equity:
Paid-in capital:

Preferred stock—6%; \$320 par value; \$320 liquidation value, 4,000 shares authorized, issued, and outstanding	\$1,280,000	
Paid-in capital in excess of par—preferred	64,000	
Common stock—without par value, \$16 stated value, 60,000 shares authorized, issued and outstanding	960,000	
Paid-in capital in excess of par value—common	960,000	
Total paid-in capital		\$3,264,000
Retained earnings		128,000
Total stockholders' equity		\$3,392,000

No dividends have been paid for the last year on the preferred stock, which is cumulative. At the time of his death, James Lehman held 2,000 shares of preferred stock and 10,000 shares of common stock of the company.

- Compute the book value of the preferred stock.
- Compute the book value of the common stock.
- Compute the amount the remaining brothers must pay to the estate of James Lehman for the preferred and common stock that he held at the time of his death.

12.10 Beyond the numbers—Critical thinking

Business decision case A Rudd Company and Clay Company have extremely stable net income amounts of USD 4,800,000 and USD 3,200,000, respectively. Both companies distribute all their net income as dividends each year. Rudd Company has 100,000 shares of USD 80 par value, 6 percent preferred stock, and 500,000 shares of USD 8 par value common stock outstanding. Clay Company has 50,000 shares of USD 40 par value, 8 percent preferred stock, and 400,000 shares of USD 8 par value common stock outstanding. Both preferred stocks are cumulative.

- Compute the annual dividend per share of preferred stock and per share of common stock for each company.
- Based solely on the preceding information, which common stock would you predict to have the higher market price per share? Why?
- Which company's stock would you buy? Why?

Business decision case B Jesse Waltrip recently inherited USD 480,000 cash that he wishes to invest in the common stock of either the West Corporation or the East Corporation. Both corporations have manufactured the same types of products

for five years. The stockholders' equity sections of the two corporations' latest balance sheets follow:

WEST CORPORATION

Stockholders' equity:

Paid-in capital:

Common stock—\$125 par value, 30,000 shares authorized, issued and outstanding

\$3,750,000

Retained earnings

3,450,000

Total stockholders' equity

\$7,200,000

EAST CORPORATION

Stockholders' equity:

Paid-in capital:

Preferred stock—8%, \$500 par value, cumulative 4,000 shares authorized, issued and outstanding

\$2,000,000

Common stock—\$125 par value, 40,000 shares authorized, issued and outstanding

5,000,000

\$7,000,000

Retained earnings

560,000

Total stockholders' equity

\$7,560,000

The West Corporation has paid a cash dividend of USD 6 per share each year since its creation; its common stock is currently selling for USD 590 per share. The East Corporation's common stock is currently selling for USD 480 per share. The current year's dividend and three prior years' dividends on the preferred stock are in arrears. The preferred stock has a liquidation value of USD 600 per share.

a. What is the book value per share of the West Corporation common stock and the East Corporation common stock? Is book value the major determinant of market value of the stock?

b. Based solely on the previous information, which investment would you recommend to Waltrip? Why?

Annual report analysis C Determine the 2003 return on average common stockholders' equity for The Limited in the Annual report appendix. Explain in writing why this information is important to managers, investors, and creditors.

Ethics case D Refer to the ethics case concerning Joe Morrison to answer the following questions:

a. Which alternative would benefit the company and its management over the next several years?

b. Which alternative would benefit society?

c. If you were Morrison, which side of the argument would you take?

Group project E In teams of two or three students, examine the annual reports of three companies and calculate each company's return on common shareholders' equity for the most recent two years. At least two years are needed to observe any changes. As a team, decide in which of the three companies you would invest. Appoint a spokesperson for the team to explain to the class which company the team would invest in and why.

Group project F In a team of two or three students, locate the annual reports of three companies that have preferred stock in their stockholders' equity section. Determine the features of the preferred stock. Analyze the data in the annual report to determine whether dividends have been paid on the preferred stock each year. Are there dividends in arrears? Write a report to your instructor summarizing your findings. Also be prepared to make a short presentation to the class.

Group project G In a group of one or two students, contact state officials and/or consult library resources to inquire about the incorporation laws in your state. Determine your state laws regarding the issuance of stock at an amount below par value, how legal capital is determined, and the requirements and government fees for incorporating a company in your state. Write a report to your instructor summarizing the results of your investigation and be prepared to make a short presentation to your class.

12.11 Using the Internet—A view of the real world

Visit the following website for Macromedia:

<http://www.macromedia.com>

Pursue choices on the screen until you locate the consolidated statement of stockholders' equity. You will probably go down some "false paths" to get to this financial statement, but you can get there. This experience is all part of learning to use the Internet. Note the changes that have occurred in the Common Stock, Additional Paid-In Capital, and Retained Earnings accounts. Check out the notes to the financial statements for further information. Write a memo to your instructor summarizing your findings.

Visit the following website for Gartner Group:

<http://www.gartner.com>

Pursue choices on the screen until you locate the consolidated statement of stockholders' equity. You will probably go down some "false paths" to get to this financial statement, but you can get there. This experience is all part of learning to use the Internet. Trace the changes that have occurred in the last three years in the Common Stock account. Check out the notes to the financial statements for further information. Write a memo to your instructor summarizing your findings.

12.12 Answers to self-test

12.12.1 True-false

False. This is not the primary reason a person may prefer the corporate form of business organization in a situation involving considerable risk. The primary reason is that stockholders can lose only the amount of capital they have invested in a corporation.

False. The claims of the creditors rank ahead of the claims of the stockholders, even those stockholders whose stock is preferred as to assets.

True. Par value is simply the amount per share that is credited to the Capital Stock account for each share issued and is no indication of the market value or the book value of the stock.

True. When capital stock is issued for property or services, the transaction is recorded at the fair market value of (1) the property or services received or (2) the stock issued, whichever is more clearly evident.

12.12.2 Multiple-choice

c. This feature of corporations is one of the disadvantages of the corporate form of organization.

b. Stated value is an arbitrary amount assigned by the board of directors to each share of capital stock without a par value.

d. Dividends in arrears are cumulative unpaid dividends. Only cumulative preferred stock has dividends in arrears.

b. The amount credited to the Paid-In Capital in Excess of Par Value—Common is computed as follows:

10,000 shares X (USD 50 – USD 20) = USD 300,000

a. The book value of common stock is computed as follows:

Total book value of stockholders' equity	
(\$80,000 + \$200,000 + \$400,000)	\$ 680,000
Total shares	÷ 1,000
Book value per share	\$ 680

13 Corporations: Paid-in capital, retained earnings, dividends, and treasury stock

13.1 Learning objectives

After studying this chapter, you should be able to:

- Identify the different sources of paid-in capital and describe how to present them on a balance sheet.
- Account for a cash dividend, a stock dividend, a stock split, and a retained earnings appropriation.
- Account for the acquisition and reissuance of treasury stock.
- Describe the proper accounting treatment of discontinued operations, extraordinary items, and changes in accounting principle.
- Define prior period adjustments and show their proper presentation in the financial statements.
- Analyze and use the financial results—earnings per share and price-earnings ratio.

13.2 The accountant as a financial analyst

The primary purpose of financial reporting is to provide information to investors and creditors. Investors use financial information in purchasing and selling of stocks, while creditors (such as banks) use financial information in reviewing the credit-worthiness of companies wishing to obtain loans. In making these types of decisions, investors and creditors rely on financial analysts to give them accurate assessments of the value and strength of the company. The role of the financial analysts is to take the financial information reported by a company and translate that into a rating of company performance. It should therefore be no surprise that a successful financial analyst is one that has a deep understanding of financial accounting. Who better to analyze the financial statements than the person who prepared them? Who would have a better understanding of the data and information contained in financial statements than the accountant? Financial statements are

becoming ever more complex and difficult to interpret by users. Thus, accountants are becoming increasingly important in assisting others to understand and interpret financial information.

Helping users understand financial information involves such tasks as developing graphs, common-size statements, and performing horizontal and vertical analysis. Analysis could also involve performing data comparisons with relevant financial and nonfinancial data. The Altman Z Model is an example of a tool used by analysts to predict bankruptcy. The model includes such items as retained earnings/total assets and sales/total assets as variables in the calculation. Based upon this test, Cooper Tire & Rubber Company earned a score of 6.07 in a recent year. A score below 2.675 was considered an indication of possible bankruptcy. Therefore, analysts evaluated Cooper as a very healthy company not likely to go bankrupt.

Financial analysts make numerous judgments about the financial condition of companies, as in the example above. These services are essential to the decisions of investors and creditors. Thus, financial analysts with a strong accounting background are well compensated for their efforts.

As owners of a corporation, stockholders provide much of the capital for its activities. On the balance sheet, we show the stockholders' capital investment in the corporation as paid-in capital under stockholders' equity. Also included in stockholders' equity is the capital accumulated through the retention of corporate earnings (retained earnings). Paid-in capital is a relatively permanent portion of stockholders' equity; the retained earnings balance is a relatively temporary portion of corporate capital and is the source of stockholders' dividends.

The preceding chapter discussed the paid-in capital obtained by issuing shares of stock for cash, property, or services. This chapter describes additional sources of paid-in capital and items affecting retained earnings.

13.3 Paid-in (or contributed) capital

As you have learned in the preceding chapter, **paid-in capital**, or **contributed capital**, refers to all of the contributed capital of a corporation, including the capital carried in the capital stock accounts. The general ledger does not contain an account

titled "Paid-In Capital". Instead, paid-in capital is a category, and companies establish a separate account for each source of paid-in capital.

In Exhibit 21, we summarize several sources of stockholders' equity and list general ledger account titles used to record increases and decreases in capital from each of these sources. Chapter 12 discussed some of these general ledger accounts. This chapter discusses other general ledger accounts that record sources of stockholders' equity.

The stockholders' equity section of a balance sheet shows the different sources of the corporation's paid-in capital because these sources are important information. For example, these additional sources may be from stock dividends, treasury stock transactions, or donations.

Sources of stockholders' equity	Illustrative general ledger account titles
I. Capital paid in (or contributed)	
A. For, or assigned to, shares:	
1. Issued to the extent of par or stated value or the amount received for shares without par or stated value.	Common stock
2. To be distributed as a stock dividend.	5% preferred stock
3. In addition to par or stated value:	Stock dividend distributable – common (preferred)
a. In excess of par.	Paid-In capital in Excess of par value – Common (preferred)
b. In excess of stated value.	Paid-In capital in excess of stated value – Common (preferred)
c. Resulting from declaration of stock dividends.	Paid-In capital – Stock Dividends
d. Resulting from reissue of treasury stock at a price above its acquisition price.	Paid -In capital – Common (preferred) Treasury stock transactions
B. Donations (gifts), whether from stockholders or from others.	Paid-in Capital - Donations
II. Capital accumulated by retention of earnings (retained earnings).	Appropriation per loan agreement
A. Appropriated retained earnings.	Retained earnings (Unappropriated)
B. Free and unappropriated retained earnings.	

Exhibit 21: Sources of stockholders' equity

13.4 Paid-in capital—Stock dividends

When it declares a stock dividend, a corporation distributes additional shares of stock (instead of cash) to its present stockholders. A later section discusses and illustrates how the issuance of a stock dividend results in a credit to a Paid-In Capital—Stock Dividends account.

13.5 Paid-in capital—Treasury stock transactions

Another source of capital is treasury stock transactions. **Treasury stock** is the corporation's own stock, either preferred or common, that it has issued and reacquired. It is legally available for reissuance. By reacquiring shares of its own outstanding capital stock at one price and later reissuing them at a higher price, a corporation can increase its capital by the difference between the two prices. If the reissue price is less than acquisition cost, however, corporate capital decreases. We discuss treasury stock transactions at length later in this chapter.

13.6 Paid-in capital—Donations

Occasionally, a corporation receives a gift of assets, such as a USD 500,000 building. These donated gifts increase stockholders' equity and are called **donated capital**. The entry to record the gift of a USD 500,000 building is a debit to Buildings and a credit to Paid-In Capital—Donations. Accountants would make this entry in the amount of the USD 500,000 fair market value of the gift when received.

13.7 Retained earnings

The **retained earnings** portion of stockholders' equity typically results from accumulated earnings, reduced by net losses and dividends. Like paid-in capital, retained earnings is a source of assets received by a corporation. Paid-in capital is the actual investment by the stockholders; retained earnings is the investment by the stockholders through earnings not yet withdrawn.

The balance in the corporation's Retained Earnings account is the corporation's net income, less net losses, from the date the corporation began to the present, less the sum of dividends paid during this period. Net income increases Retained Earnings, while net losses and dividends decrease Retained Earnings in any given year. Thus, the balance in Retained Earnings represents the corporation's accumulated net income not distributed to stockholders.

When the Retained Earnings account has a debit balance, a **deficit** exists. A company indicates a deficit by listing retained earnings with a negative amount in the stockholders' equity section of the balance sheet. The firm need not change the

title of the general ledger account even though it contains a debit balance. The most common credits and debits made to Retained Earnings are for income (or losses) and dividends. Occasionally, accountants make other entries to the Retained Earnings account. We discuss some of these entries later in the chapter.

13.8 Paid-in capital and retained earnings on the balance sheet

The following stockholders' equity section of a balance sheet presents the various sources of capital in proper form:

Stockholders' equity:		
Paid-in capital:		
Preferred stock – 6%, \$100 par value; authorized, issued, and outstanding, 4,000 shares	\$400,000	
Common stock – no-par value, \$5 stated value; authorized, issued, and outstanding, 400,000 shares	2,000,000	\$2,400,000
Paid-in capital -		
From preferred stock issuances*	\$ 40,000	
From donations	10,000	50,000
Total paid-in capital		\$2,450,000
Retained earnings		500,000
Total stockholders' equity		\$2,950,000

* This label is not the exact account title but is representative of the descriptions used on balance sheets. The exact account title could be used, but shorter descriptions are often shown.

*This label is not the exact account title but is representative of the descriptions used on balance sheets. The exact account title could be used, but shorter descriptions are often shown.

In their highly condensed, published balance sheets, companies often omit the details regarding the sources of the paid-in capital in excess of par or stated value and replace them by a single item, such as:

Paid-in capital in excess of par (or stated) value USD 50,000

Dividends are distributions of earnings by a corporation to its stockholders. Usually the corporation pays dividends in cash, but it may distribute additional shares of the corporation's own capital stock as dividends. Occasionally, a company pays dividends in merchandise or other assets. Since dividends are the means whereby the owners of a corporation share in its earnings, accountants charge them against retained earnings.

Before dividends can be paid, the board of directors must declare them so they can be recorded in the corporation's minutes book. Three dividend dates are significant:

- **Date of declaration.** The date of declaration indicates when the board of directors approved a motion declaring that dividends should be paid. The board action creates the liability for dividends payable (or stock dividends distributable for stock dividends).

- **Date of record.** The board of directors establishes the date of record; it determines which stockholders receive dividends. The corporation's records (the stockholders' ledger) determine its stockholders as of the date of record.

- **Date of payment.** The date of payment indicates when the corporation will pay dividends to the stockholders.

To illustrate how these three dates relate to an actual situation, assume the board of directors of the Allen Corporation declared a cash dividend on 2010 May 5, (date of declaration). The cash dividend declared is USD 1.25 per share to stockholders of record on 2010 July 1, (date of record), payable on 2010 July 10, (date of payment). Because financial transactions occur on both the date of declaration (a liability is incurred) and on the date of payment (cash is paid), journal entries record the transactions on both of these dates. No journal entry is required on the date of record.

Exhibit 22 shows the frequencies of dividend payments made by a sample of representative companies for the years 1996-99. Note that cash dividends are far more numerous than stock dividends or dividends in kind (paid in merchandise or other assets).

An accounting perspective:

Uses of technology

After original issuance, investors may trade the stock of a company on secondary markets, such as the New York Stock Exchange. The company makes no entry on its books for these outside trades after

issuance. Often, a company uses a spreadsheet or database program to note trades between shareholders. These computer programs can print a report on the date of record. This information allows a company that declares a dividend to be certain the money or stock goes to the stockholders who own the stock on the date of record rather than to the stockholders who originally purchased the stock.

Cash dividends are cash distributions of accumulated earnings by a corporation to its stockholders. To illustrate the entries for cash dividends, consider the following example. On 2010 January 21, a corporation's board of directors declared a 2 percent quarterly cash dividend on USD 100,000 of outstanding preferred stock. This dividend is one-fourth of the annual dividend on 1,000 shares of USD 100 par value, 8 percent preferred stock. The dividend will be paid on 2010 March 1, to stockholders of record on 2010 February 5. An entry is not needed on the date of record; however, the entries at the declaration and payment dates are as follows:

2010		
Jan. 21	Retained earnings (-SE)	2,000
	Dividends payable (+L)	2,000
	Dividends declared: 2% on \$100,000 of outstanding preferred stock, payable 2010 March 1, to stockholders of record on 2010 February 5.	
Mar. 1	Dividends payable (-L)	2,000
	Cash (-A)	2,000
	Paid the dividend declared on 2010 January 21.	

Often a cash dividend is stated as so many dollars per share. For instance, the quarterly dividend could have been stated as USD 2 per share. When they declare a cash dividend, some companies debit a Dividends account instead of Retained Earnings. (Both methods are acceptable.) The Dividends account is then closed to Retained Earnings at the end of the fiscal year.

	Number of Companies			
	2006	2005	2004	2003
Cash dividends paid to common stock shareholders				
Per share amount disclosed in retained earnings statements	213	219	229	239
Per share amount not disclosed in retained earnings statements	157	135	156	164
Total:	370	354	385	403
Cash dividends paid to preferred stock shareholders				
Per share amount disclosed in retained earnings statements	22	22	17	25
Per share amount not disclosed in retained earnings statements	32	38	48	44
Total:	54	60	65	69
**Dividends paid by pooled companies				
Stock dividends	X	X	X	X
Dividends in kinds	4	6	4	12
Dividends in kinds	7	10	14	7
Stock purchase rights	1	4	7	9

Exhibit 22: Types of dividends

Once a cash dividend is declared and notice of the dividend is given to stockholders, a company generally cannot rescind it unless all stockholders agree to such action.¹³ Thus, the credit balance in the Dividends Payable account appears as a current liability on the balance sheet.

An accounting perspective:

Business insight

Fleetwood Enterprises, Inc., is the nation's leading producer of manufactured housing and recreational vehicles. Often investors believe a company that pays dividends is doing well. Therefore, companies try to maintain a record of paying dividends, as Fleetwood noted in a 2001 press release.

RIVERSIDE, Calif., Sept. 12 /PRNewswire/—The directors of Fleetwood Enterprises, Inc. (NYSE: FLE) have declared the company's regular quarterly cash dividend of 19 cents per share of Common stock, payable 2000 November 8, to shareholders of record 2000 October 6.

¹³ Stockholders might agree to rescind (cancel) a dividend already declared if the company is in difficult financial circumstances and needs to retain cash to pay bills or acquire assets to continue operations.

A company that lacks sufficient cash for a cash dividend may declare a stock dividend to satisfy its shareholders. Note that in the long run it may be more beneficial to the company and the shareholders to reinvest the capital in the business rather than paying a cash dividend. If so, the company would be more profitable and the shareholders would be rewarded with a higher stock price in the future.

Stock dividends are payable in additional shares of the declaring corporation's capital stock. When declaring stock dividends, companies issue additional shares of the same class of stock as that held by the stockholders.

Corporations usually account for stock dividends by transferring a sum from retained earnings to permanent paid-in capital. The amount transferred for stock dividends depends on the size of the stock dividend. For stock dividends, most states permit corporations to debit Retained Earnings or any paid-in capital accounts other than those representing legal capital. In most circumstances, however, they debit Retained Earnings when a stock dividend is declared.

Stock dividends have no effect on the total amount of stockholders' equity or on net assets. They merely decrease retained earnings and increase paid-in capital by an equal amount. Immediately after the distribution of a stock dividend, each share of similar stock has a lower book value per share. This decrease occurs because more shares are outstanding with no increase in total stockholders' equity.

Stock dividends do not affect the individual stockholder's percentage of ownership in the corporation. For example, a stockholder who owns 1,000 shares in a corporation having 100,000 shares of stock outstanding, owns 1 percent of the outstanding shares. After a 10 percent stock dividend, the stockholder still owns 1 percent of the outstanding shares—1,100 of the 110,000 outstanding shares.

A corporation might declare a stock dividend for several reasons:

- Retained earnings may have become large relative to total stockholders' equity, so the corporation may desire a larger permanent capitalization.

- The market price of the stock may have risen above a desirable trading range. A stock dividend generally reduces the per share market value of the company's stock.

- The board of directors of a corporation may wish to have more stockholders (who might then buy its products) and eventually increase their number by increasing the number of shares outstanding. Some of the stockholders receiving the stock dividend are likely to sell the shares to other persons.

- Stock dividends may silence stockholders' demands for cash dividends from a corporation that does not have sufficient cash to pay cash dividends.

The percentage of shares issued determines whether a stock dividend is a small stock dividend or a large stock dividend. Firms use different accounting treatments for each category.

Recording small stock dividends A stock dividend of less than 20 to 25 percent of the outstanding shares is a small stock dividend and has little effect on the market value (quoted market price) of the shares. Thus, the firm accounts for the dividend at the current market value of the outstanding shares.

Assume a corporation is authorized to issue 20,000 shares of USD 100 par value common stock, of which 8,000 shares are outstanding. Its board of directors declares a 10 percent stock dividend (800 shares). The quoted market price of the stock is USD 125 per share immediately before the stock dividend is announced. Since the distribution is less than 20 to 25 percent of the outstanding shares, the dividend is accounted for at market value. The entry for the declaration of the stock dividend on 2010 August 10, is:

Aug. 10	Retained earnings (or Stock Dividends) (800shares x \$125)	100,000	
	(-SE)		
	Stock dividend distributable – Common		80,000
	(800 shares x \$100) (+SE)		
	Paid-In capital – Stock dividends (+SE)		20,000
	To record the declaration of a 10% stock dividend; shares to be distributed on 2010 September 20, to stockholders of record on 2010 August 31.		

This entry records the issuance of the shares:

Sept. 20	Stock dividends distributable – Common (-SE)	80,000	
	Common stock (+SE)		80,000
	To record the distribution of 800 shares of common stock as authorized in stock dividends declared on 2010 August 10.		

The **stock dividend distributable—common account** is a stockholders' equity (paid-in capital) account credited for the par or stated value of the shares distributable when recording the declaration of a stock dividend. Since a stock dividend distributable is not to be paid with assets, it is not a liability. When a balance sheet is prepared between the date the 10 percent dividend is declared and the date the shares are issued, the proper statement presentation of the effects of the stock dividend is:

Stockholders' equity:		
Paid-in capital:		
Common stock - \$100 par value; authorized, 20,000 shares; issued and outstanding, 8,000 shares	\$800,000	
Stock dividend distributable on 2010 September 20, 800 shares at par value	80,000	
Total par value of shares issued and to be issued	\$880,000	
Paid-in capital	20,000	
Total paid-in capital		\$900,000
Retained earnings		150,000
Total stockholders' equity		\$1,050,000

Suppose, on the other hand, that the common stock in the preceding example is no-par stock and has a stated value of USD 50 per share. The entry to record the declaration of the stock dividend (when the market value is USD 125) is:

Retained earnings (800 shares x \$125) (-SE)	100,000	
Stock dividends distributable – Common (800 shares x \$50) (+SE)		40,000
Paid-in capital – stock dividends (800 shares x \$75) (+SE)		60,000
To record the declaration of a stock dividend.		

The entry to record the issuance of the stock dividend is:

Stock dividend distributable – Common (-SE)	40,000	
Common stock (+SE)		40,000
To record the issuance of the stock dividend.		

Recording large stock dividends A stock dividend of more than 20 to 25 percent of the outstanding shares is a large stock dividend. Since one purpose of a large stock dividend is to reduce the market value of the stock so the shares can be traded more easily, firms do not use the current market value of the stock in the entry. They account for such dividends at their par or stated value rather than at their current market value. The laws of the state of incorporation or the board of directors establish the amounts for stocks without par or stated value.

To illustrate the treatment of a stock dividend of more than 20 to 25 percent, assume X Corporation has been authorized to issue 10,000 shares of USD 10 par value common stock, of which 5,000 shares are outstanding. X Corporation declared a 30 percent stock dividend (1,500 shares) on 2010 September 20, to be issued on 2010 October 15. The required entries are:

Illustration 13.3 Stock Dividends

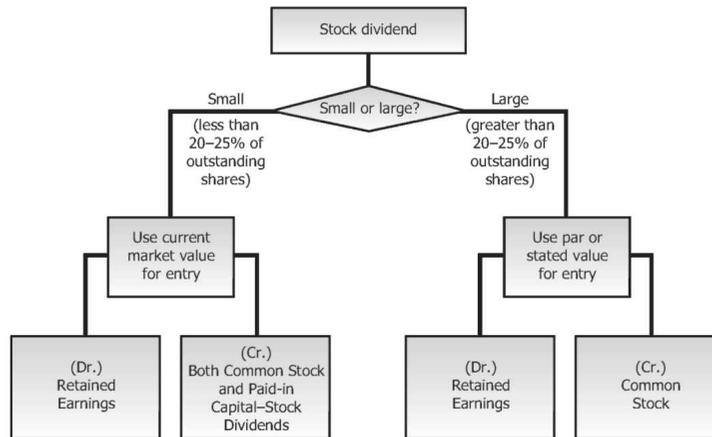


Exhibit 23: Stock dividends

Sept.	20	Retained earnings (or Stock Dividends) (1,500 shares x \$10) (-SE)	15,000	
		Stock dividend distributable – Common (+SE)		15,000
		To declare a 30% stock dividend.		
Oct.	15	Stock dividend distributable – Common (-SE)	15,000	
		Common stock (+SE)		15,000
		To issue the 30% stock dividend.		

Note that although firms account for the small stock dividend at current market value, they account for the 30 percent stock dividend at par value (1,500 shares X USD 10 = USD 15,000). Because of the differences in accounting for large and small stock dividends, accountants must determine the relative size of the stock dividend before making any journal entries.

To see the effect of small and large stock dividends on stockholders' equity, look at Exhibit 23.

A **stock split** is a distribution of 100 percent or more of additional shares of the issuing corporation's stock accompanied by a corresponding reduction in the par value per share. The corporation receives no assets in this transaction. A stock split causes a large reduction in the market price per share of the outstanding stock. A two-for-one split doubles the number of shares outstanding, a three-for-one split triples the number of shares, and so on. The split reduces the par value per share at the same time so that the total dollar amount credited to Common Stock remains the same. For instance, a two-for-one split halves the par value per share.¹⁴ If the corporation issues 100 percent more stock without a reduction in the par value per share, the transaction is a 100 percent stock dividend rather than a two-for-one stock split.

The entry to record a stock split depends on the particular circumstances. Usually, firms change only the number of shares outstanding and the par or stated value in the records. (The number of shares authorized may also change.) Thus, they would record a two-for-one stock split in which the par value of the shares decreases from USD 20 to USD 10 as follows:

Common stock - \$20 par value (-SE)	100,000	
Common stock - \$10 par value (+SE)		100,000
To record a two-for-one stock split; 5,000 shares of \$20 par value common stock were replaced by 10,000 shares of \$10 par value common stock.		

In Exhibit 24, we summarize the effects of stock dividends and stock splits. Stock dividends and stock splits have no effect on the total amount of stockholders' equity. In addition, stock splits have no effect on the total amount of paid-in capital or retained earnings. They merely increase the number of shares outstanding and decrease the par value per share. Stock dividends increase paid-in capital and decrease retained earnings by equal amounts.

¹⁴ If a corporation reduces the par value of its stock without issuing more shares, say, from USD 100 to USD 60 per share, then USD 40 per share must be removed from the appropriate capital stock account and credited to Paid-In Capital Recapitalization. Further discussion of this process, called recapitalization, is beyond the scope of this text.

	Total Stockholders' equity	Common Stock	Paid-in Capital - common	Retained Earnings	Number of Shares outstanding	Par value Per share
Stock dividends:						
Small	No effect	Increases	Increases*	Decreases	Increases	No effect
Large	No effect	Increases	No effect	Decreases	Increases	No effect
Stock splits	No effect	No effect	No effect	No effect	Increases	Decreases

Exhibit 24: Summary of effects of stock dividends and stock splits

The preceding chapter discussed how corporate laws differ regarding the legality of a dividend. State law establishes the legal or stated capital of a corporation as that portion of the stockholders' equity that must be maintained intact, unimpaired by dividend declarations or other distributions to stockholders. The legal capital often equals the par or stated value of the shares issued or a minimum price per share issued.

The objective of these state corporate laws is to protect the corporation's creditors, whose claims have priority over those of the corporation's stockholders. To illustrate the significance of the legal capital concept, assume a corporation in severe financial difficulty is about to go out of business. If there were no legal capital restrictions on dividends, the stockholders of that corporation might pay themselves a cash dividend or have the corporation buy back their stock, leaving no funds available for the corporation's creditors.

The board of directors of a corporation possesses sole power to declare dividends. The legality of a dividend generally depends on the amount of retained earnings available for dividends—not on the net income of any one period. Firms can pay dividends in periods in which they incurred losses, provided retained earnings and the cash position justify the dividend. And in some states, companies can declare dividends from current earnings despite an accumulated deficit. The financial advisability of declaring a dividend depends on the cash position of the corporation.

Normally, dividends are reductions of retained earnings since they are distributions of the corporation's net income. However, dividends may be distributions of contributed capital. These dividends are called **liquidating dividends**.

Accountants debit liquidating dividends to a paid-in capital account. Corporations should disclose to stockholders the source of any dividends that are not distributions

of net income by indicating which paid-in capital account was debited as a result of the dividend. The legality of paying liquidating dividends depends on the source of the paid-in capital and the laws of the state of incorporation.

An accounting perspective:

Business insight

The Private Securities Litigation Reform Act, passed in 1995, seeks to protect investors against white-collar crime. Auditors are required by this law to become more aggressive in looking for fraud in companies they audit. Risk factors that might encourage management to engage in fraudulent activities include weak internal controls, an aggressive effort to drive up the stock price by reporting higher earnings, and/or executive bonuses or stock options based on earnings. A strong company code of ethics and an effective internal control structure can help deter fraud from occurring.

13.9 Retained earnings appropriations

The amount of retained earnings that a corporation may pay as cash dividends may be less than total retained earnings for several contractual or voluntary reasons. These contractual or voluntary restrictions or limitations on retained earnings are **retained earnings appropriations**. For example, a loan contract may state that part of a corporation's USD 100,000 of retained earnings is not available for cash dividends until the loan is paid. Or a board of directors may decide to use assets resulting from net income for plant expansion rather than for cash dividends. An example of a voluntary restriction was General Electric's annual report statement that cash dividends were limited "to support enhanced productive capability and to provide adequate financial resources for internal and external growth opportunities".

Companies formally record retained earnings appropriations by transferring amounts from Retained Earnings to accounts such as "Appropriation for Loan Agreement" or "Retained Earnings Appropriated for Plant Expansion". Even though

some refer to retained earnings appropriations as retained earnings reserves, using the term reserves is discouraged.

Other reasons for appropriations of retained earnings include pending litigation, debt retirement, and contingencies in general. Such appropriations do not reduce total retained earnings. They merely disclose to balance sheet readers that a portion of retained earnings is not available for cash dividends. Thus, recording these appropriations guarantees that the corporation limits its outflow of cash dividends while repaying a loan, expanding a plant, or taking on some other costly endeavor. Recording retained earnings appropriations does not involve the setting aside of cash for the indicated purpose; it merely divides retained earnings into two parts—appropriated retained earnings and unappropriated retained earnings. The establishment of a separate fund would require a specific directive from the board of directors. The only entry required to record the appropriation of USD 25,000 of retained earnings to fulfill the provisions in a loan agreement is:

Retained earnings (-SE)	25,000	
Appropriation per loan agreement (+SE)		25,000
To record restriction on retained earnings.		

When the retained earnings appropriation has served its purpose of restricting dividends and the loan has been repaid, the board of directors may decide to return the appropriation intact to Retained Earnings. The entry to do this is:

Appropriation per loan agreement(-SE)	25,000	
Retained earnings (+SE)		25,000
To return balance in appropriation per Loan Agreement account to Retained earnings.		

On the balance sheet, retained earnings appropriations appear in the stockholders' equity section as follows:

Stockholders' equity:		
Paid-in capital:		
Preferred stock – 8%, \$50 par value; 500 shares authorized; issued and outstanding	\$25,000	
Common stock - \$5 par value; 10,000 shares authorized, issued and outstanding	50,000	
Total paid-in capital		\$75,000
Retained earnings:		
Appropriated:		
Per loan agreement	\$25,000	
Unappropriated	20,000	
Total retained earnings		45,000
Total stockholders' equity		\$120,000

Note that a retained earnings appropriation does not reduce either stockholders' equity or total retained earnings but merely earmarks (restricts) a portion of retained earnings for a specific reason.

The formal practice of recording and reporting retained earnings appropriations is decreasing. Footnote explanations such as the following are replacing these appropriations:

Note 7. Retained earnings restrictions. According to the provisions in the loan agreement, retained earnings available for dividends are limited to USD 20,000.

Such footnotes appear after the formal financial statements in "Notes to Financial Statements". The Retained Earnings account on the balance sheet would be referenced as follows: "Retained Earnings (see note 7)...USD 45,000".

Changes in the composition of retained earnings reveal important information about a corporation to financial statement users. A separate formal statement—the statement of retained earnings—discloses such changes.

13.10 Statement of retained earnings

A **statement of retained earnings** is a formal statement showing the items causing changes in unappropriated and appropriated retained earnings during a stated period of time. Changes in unappropriated retained earnings usually consist of the addition of net income (or deduction of net loss) and the deduction of dividends and appropriations. Changes in appropriated retained earnings consist of increases or decreases in appropriations.

Note Ward Corporation's statement of retained earnings in Exhibit 25. The only new appropriation during 2010 was an additional USD 35,000 for plant expansion. Ward added this new USD 35,000 to the USD 25,000 beginning balance in that account and subtracted that amount from unappropriated retained earnings. An alternative to the statement of retained earnings is the statement of stockholders' equity.

**Ward Corporation
Statement of Retained Earnings
For Year Ended 2010 December 31**

Unappropriated retained earnings:		
2010 January 1, balance		\$180,000
Add: Net income		80,000
		\$260,000
Less: Dividends	\$15,000	
Appropriation for plant expansion	35,000	50,000
Unappropriated retained earnings, 2010 December 31		\$210,000. 00
Appropriated retained earnings:		
Appropriation for plant expansion, 2010 January 1, balance	\$25,000.00	
Add: Increase in 2010	35,000	\$ 60,000
Appropriation for contract obligation, 2010 January 1, balance		20,000
Appropriated retained earnings, 2010 December 31		\$80,000
Total retained earnings, 2010 December 31		\$290,000

Exhibit 25: Statement of retained earnings

13.11 Statement of stockholders' equity

Most corporations include four financial statements in their annual reports: a balance sheet, an income statement, a statement of stockholders' equity (in place of a statement of retained earnings), and a statement of cash flows (discussed in Chapter 16). A **statement of stockholders' equity** is a summary of the transactions affecting the accounts in the stockholders' equity section of the balance sheet during a stated period. These transactions include activities affecting both paid-in capital and retained earnings accounts. Thus, the statement of stockholders' equity includes the information contained in a statement of retained earnings plus some additional information. The columns in the statement of stockholders' equity reflect the major account titles within the stockholders' equity section: the types of stock issued and outstanding, paid-in capital in excess of par (or stated) value, retained earnings, and

treasury stock. Each row indicates the effects of major transactions affecting one or more stockholders' equity accounts.

Look at Exhibit 26, a statement of stockholders' equity. The first row indicates the beginning balances of each account in the stockholders' equity section. This summary shows that Larkin Corporation issued 10,000 shares of common stock, declared a 5 percent stock dividend on common stock, repurchased 1,200 shares of treasury stock, earned net income of USD 185,000, and paid cash dividends on both its preferred and common stock. After the transactions' effects are indicated within each row, Larkin added or subtracted each column's components to determine the ending balance in each stockholders' equity account.

13.12 Treasury stock

Treasury stock is the corporation's own capital stock that it has issued and then reacquired; this stock has not been canceled and is legally available for reissuance. Because it has been issued, we cannot classify treasury stock as unissued stock.

Recall that when a corporation has additional authorized shares of stock that are to be issued after the date of original issue, in most states the preemptive right requires offering these additional shares first to existing stockholders on a pro rata basis. However, firms may reissue treasury stock without violating the preemptive right provisions of state laws; that is, treasury stock does not have to be offered to current stockholders on a pro rata basis.

Larkin Corporation
Statement of stockholders' equity
For the Year ended 2010 December 31

	\$50 par, value, 6% preferred stock	\$20 par value Common stock	Paid-In capital In excess of par value	Retained Earnings	Treasury Stock
Balance, 2010 January 1	\$250,000	\$300,000	\$200,000	\$500,000	\$(42,000)
Issuance of 10,000 shares of common stock		200,000	100,000		
5% stock dividend on common stock, 1,250 shares		25,000	27,500	(52,500)	
Purchase of 1,200 shares of treasury stock					(48,000)
Net income				185,000	
Cash dividends:					
Preferred stock				(15,000)	
Common stock				(25,000)	
Balance, 2010 December 31	\$250,000	\$525,000	\$327,500	\$592,500	\$(90,000)

Exhibit 26: Statement of stockholders' equity

A corporation may reacquire its own capital stock as treasury stock to: (1) cancel and retire the stock; (2) reissue the stock later at a higher price; (3) reduce the shares outstanding and thereby increase earnings per share; or (4) issue the stock to employees. If the intent of reacquisition is cancellation and retirement, the treasury shares exist only until they are retired and canceled by a formal reduction of corporate capital.

For dividend or voting purposes, most state laws consider treasury stock as issued but not outstanding, since the shares are no longer in the possession of stockholders. Also, accountants do not consider treasury shares outstanding in calculating earnings per share. However, they generally consider treasury shares outstanding for purposes of determining legal capital, which includes outstanding shares plus treasury shares.

In states that consider treasury stock as part of legal capital, the cost of treasury stock may not exceed the retained earnings at the date the shares are reacquired. This regulation protects creditors by preventing the corporation in financial difficulty from using funds to purchase its own stock instead of paying its debts. Thus, if a corporation is subject to such a law (as is assumed in this text), the retained earnings available for dividends must exceed the cost of the treasury shares on hand.

When firms reacquire treasury stock, they record the stock at cost as a debit in a stockholders' equity account called Treasury Stock.¹⁵ They credit reissuances to the Treasury Stock account at the cost of acquisition. Thus, the Treasury Stock account is debited at cost when shares are acquired and credited at cost when these shares are sold. Any excess of the reissue price over cost represents additional paid-in capital and is credited to **Paid-In Capital—Common (Preferred) Treasury Stock Transactions**.

To illustrate, assume that on 2010 February 18, the Hillside Corporation reacquired 100 shares of its outstanding common stock for USD 55 each. (The company's stockholders' equity consisted solely of common stock and retained earnings.) On 2010 April 18, the company reissued 30 shares for USD 58 each. The entries to record these events are:

2010				
Feb.	18	Treasury stock – Common (100 shares x \$55) (-SE)	5,500	
		Cash (-A)		5,500
		Acquired 100 shares of treasury stock at \$55.		
Apr.	18	Cash (30 shares x \$58) (+A)	1,740	
		Treasury stock – Common (30 shares x \$55) (+SE)		1,650
		Paid-In Capital – Common treasury stock transactions (+SE)		90
		Reissued 30 shares of treasury stock at \$58; cost is \$55 per share.		

When the reissue price of subsequent shares is less than the acquisition price, firms debit the difference between cost and reissue price to Paid-In Capital—Common Treasury Stock Transactions. This account, however, never develops a debit balance. By definition, no paid-in capital account can have a debit balance. If Hillside reissued an additional 20 shares at USD 52 per share on 2010 June 12, the entry would be:

June 12	Cash (20 shares x \$52) (+A)	1,040	
	Paid-In Capital – Common treasury stock transactions (-SE)	60	
	Treasury stock – Common (20 shares x \$55) (+SE)		1,100
	Reissued 20 shares of treasury stock at \$52; cost is \$55 per share.		

15 Another acceptable method of accounting for treasury stock transactions is the par value method. We leave further discussion of the par value method to intermediate accounting texts.

At this point, the credit balance in the Paid-In Capital—Common Treasury Stock Transactions account would be USD 30. If the remaining 50 shares are reissued on 2010 July 16, for USD 53 per share, the entry would be:

July	16	Cash (50 shares x \$53) (+A)	2,650
		Paid-In Capital – Common treasury stock transactions (-SE)	30
		Retained earnings (-SE)	70
		Treasury stock – Common (50 shares x \$55) (+SE)	
		Reissued 50 shares of treasury stock at \$53; cost is \$55 per share.	

Notice that Hillside has exhausted the Paid-In Capital—Common Treasury Stock Transactions account credit balance. If more than USD 30 is debited to that account, it would develop a debit balance. Thus, the remaining USD 70 of the excess of cost over reissue price is a special distribution to the stockholders involved and is debited to the Retained Earnings account.

Sometimes stockholders donate stock to a corporation. Since donated treasury shares have no cost to the corporation, accountants make only a memo entry when the shares are received.¹⁶ The only formal entry required is to debit Cash and credit the Paid-In Capital—Donations account when the stock is reissued. For example, if donated treasury stock is sold for USD 5,000, the entry would be:

Cash (+A)	5,000	
Paid-In capital – Donations (+SE)		5,000
To record the sale of donated treasury stock.		

When treasury stock is held on a balance sheet date, it customarily appears at cost, as a deduction from the sum of total paid-in capital and retained earnings, as follows:

Hypothetical Corporation
Partial balance sheet 2010 December 31

¹⁶ The method illustrated here is called the memo method. Other acceptable methods of accounting for donated stock are the cost method and par value method. Intermediate accounting texts discuss these latter two methods.

Stockholder's equity:		
Paid-In capital:		
Preferred stock -8%, \$100 par value; 2,000 shares authorized, issued, and outstanding		\$200,000
Common stock-\$10 par value; authorized, 100,000 shares; issued, 80,000 shares of which 1,000 are held in the treasury	\$800,000	
Stock dividend distributable on common stock on 2011 January 15, 7,900 shares	79,000	879,000
Paid-in capital-		
From common stock issuances	\$40,000	
From stock dividends	60,000	
From treasury stock transactions	30,000	
From donations	50,000	180,000
Total paid-in capital		\$1,259,000
Retained earnings:		
Appropriated:		
Per loan agreement	\$250,000	
Unappropriated (restricted to the extent of \$20,000, the cost of treasury shares held)	\$150,000	
Total retained earnings		400,000
Total paid-in capital and retained earnings		\$1,659,000
Less: Treasury stock, common, 1,000 shares at cost		20,000
Total stockholders' equity		\$1,639,000

Exhibit 27: Stockholders' equity section of the balance sheet

Stockholders' equity:		
Paid-in capital:		
Common stock-\$10 par value; authorized and issued, 20,000 shares, of which 2,000 shares are in the treasury	\$200,000	
Retained earnings (including \$22,000 restricted by acquisition of treasury stock)	80,000	
Total paid-in capital and retained earnings		\$280,000
Less: Treasury stock at cost, 2,000 shares		22,000
Total stockholders' equity		\$258,000

An accounting perspective:

Business insight

General Mills is a leading producer of ready-to-eat cereals, desserts and baking mixes, snack products, and dinner and side dish mixes. Popular brand names include Hamburger Helper, Betty Crocker, and Yoplait. For 2001 and 2000, General Mills reported common stock in the treasury (treasury stock) of 123,100,000 and 122,900,000 shares, respectively. General Mills deducted the cost of these shares in the stockholders' equity section of the balance sheet.

To summarize much of what we have discussed in Chapters 12 and 13, we present the stockholders' equity section of the balance sheet in Exhibit 27. This partial balance sheet shows: (1) the amount of capital assigned to shares outstanding; (2) the capital contributed for outstanding shares in addition to that assigned to the shares; (3) other forms of paid-in capital; and (4) retained earnings, appropriated and unappropriated.

**Anson Company Income Statement
For the Year Ended
2010 December 31**

Net sales		\$41,000,000
Other revenues		2,250,000
Total revenue		\$43,250,000
Cost of goods sold	\$22,000,000	
Administrative, selling, and general expenses	12,000,000	34,000,000
Income before federal income taxes		\$9,250,000
Deduct: Federal income taxes (40%)		3,700,000
Income from continuing operations		\$5,550,000
Discounted operations:		
Loss from operations of discontinued Cosmetics Division (net of 40% tax effect of \$800,000)	\$(1,200,000))
Loss on disposal of Cosmetics Division (net of 40% tax effect of \$200,000)	(300,000)	(1,500,000)
Income before extraordinary item and the cumulative effect of a change in accounting principle		\$4,050,000
Extraordinary item:		
Gain on sale of subsidiary over book value	\$40,000	
Less: Tax effect (40%)	16,000	24,000
Income after extraordinary item		\$4,074,000
Net income		\$4,074,000
Earnings per share of common stock:		
Income from continuing operations		\$ 5,550
Discontinued operations		(1.500)
Extraordinary item		0.024
Net income		\$4.074

Exhibit 28: Income statement

13.13 Net income inclusions and exclusions

Accounting has long faced the problem of what to include in the net income reported for a period. Should net income include only the revenues and expenses related to normal operations? Or should it include the results of discontinued operations and unusual, nonrecurring gains and losses? And further, should the determination of net income for 2010, for example, include an item that can be clearly associated with a prior year, such as additional federal income taxes for 2009?

Or should such items, including corrections of errors, be carried directly to retained earnings? How are the effects of making a change in accounting principle to be reported?

APB Opinion No. 9 (December 1966) sought to provide answers to some of these questions. The Opinion directed that unusual and nonrecurring items having an earnings or loss effect are extraordinary items (reported in the income statement) or prior period adjustments (reported in the statement of retained earnings). Extraordinary items are reported separately after net income from regular continuing activities.

In Exhibit 28 and Exhibit 30, we show the reporting of discontinued operations, extraordinary items, and prior period adjustments. For Exhibit 28 and Exhibit 30, assume that the Anson Company has 1,000,000 shares of common stock outstanding and the company's earnings are taxed at 40 percent. Also, assume the following:

- Anson sold its Cosmetics Division on 2010 August 1, at a loss of USD 500,000. The net operating loss of that division through 2010 July 31, was USD 2,000,000.
- Anson had a taxable gain in 2010 of USD 40,000 from a sale of a subsidiary at an amount greater than what was on the company's balance sheet (extraordinary item).
- In 2010, Anson discovered that the USD 200,000 cost of land acquired in 2009 had been expensed for both financial accounting and tax purposes. A prior period adjustment was made in 2010.

Next, we explain the effects of these assumptions in greater detail.

A **discontinued operation** occurs when a business sells a segment (usually an unprofitable department or division) to another company or abandons it. When a company discontinues a segment, it shows the relevant information in a special section of the income statement immediately after income from continuing operations and before extraordinary items. Two items of information appear:

- The income or loss (net of tax effect) from the segment's operations for the portion of the current year before it was discontinued.
- The gain or loss (net of tax effect) on disposal of the segment.

To illustrate, Anson's sale of its Cosmetics Division on August 1 led to a before-tax loss of USD 500,000. The after-tax loss was USD 500,000 X 60 percent = USD 300,000. The operating loss before taxes through July 31 was USD 2,000,000. The after-tax operating loss for that period was USD 2,000,000 X 60 percent = USD 1,200,000. Note this information on the income statement in Exhibit 28.

Prior to 1973, companies reported a gain or loss as an extraordinary item if it was either unusual in nature or occurred infrequently. As a result, companies were inconsistent in the financial reporting of certain gains and losses. This inconsistency led to the issuance of *APB Opinion No. 30* (September 1973). *Opinion No. 30* redefined **extraordinary items** as those unusual in nature and occurring infrequently. Note that both conditions must be met—unusual nature and infrequent occurrence. Accountants determine whether an item is unusual and infrequent in light of the environment in which the company operates. Examples of extraordinary items include gains or losses that are the direct result of a major catastrophe (a flood or hurricane where few have occurred before), a confiscation of property by a foreign government, or a prohibition under a newly enacted law.

Extraordinary items are included in the determination of periodic net income, but are disclosed separately (net of their tax effects) in the income statement below "Income from continuing operations". As shown in Exhibit 28, Anson reported the extraordinary items after reporting the loss from discontinued operations.

Gains or losses related to ordinary business activities are not extraordinary items regardless of their size. For example, material write-downs of uncollectible receivables, obsolete inventories, and intangible assets are not extraordinary items. However, such items may be separately disclosed as part of income from continuing operations.

	2006	2005	2004	2003
Nature				
Debt extinguishments	4	40	70	48
Other*	8	2	8	7
Total Extraordinary Items	12	42	78	55
Number of Companies				
Presenting extraordinary items	12	42	78	55
Not presenting extraordinary items	588	588	522	545
Total Companies	600	600	600	600

*For the current year, the nature of the other items included casualty losses and gains from asset disposals.

Exhibit 29: Extraordinary items

In Exhibit 29, note that in a sample of 600 companies for the years 2000-2003, most companies do not report extraordinary items.

Changes in accounting principle can materially alter a company's reported net income and financial position. **Changes in accounting principle** are changes in accounting methods pertaining to such items as inventory. Such a change includes a change in inventory valuation method from FIFO to LIFO.

According to *APB Opinion No. 20*, a company should consistently apply the same accounting methods from one period to another. However, a company may make a change if the newly adopted method is preferable and if the change is adequately disclosed in the financial statements. In the period in which a company makes a change in accounting principle, it must disclose on the financial statements the nature of the change, its justification, and its effect on net income. Also, the company must show on the income statement for the year of the change and the cumulative effect of the change on prior years' income (net of tax).

According to *FASB Statement No. 16*, **prior period adjustments** consist almost entirely of corrections of errors in previously published financial statements. Corrections of abnormal, nonrecurring errors that may have been caused by the improper use of an accounting principle or by mathematical mistakes are prior period adjustments. Normal, recurring corrections and adjustments, which follow inevitably from the use of estimates in accounting practice, are not treated as prior period adjustments. Also, mistakes corrected in the same year they occur are not prior period adjustments. To illustrate a prior period adjustment, suppose that

Anson purchased land in 2009 at a total cost of USD 200,000 and recorded this amount in an expense account instead of in the Land account. Discovery of the error on 2010 May 1, after publication of the 2009 financial statements, would require a prior period adjustment. The adjustment would be recorded directly in the Retained Earnings account. Assuming the error had resulted in an USD 80,000 underpayment of taxes in 2009, the entry to correct the error would be:

May 1	Land (+A)	200,000	
	Federal income taxes payable (+L)		80,000
	Retained earnings (or prior period adjustments – Land) (+SE)		120,000
	To correct an accounting error expensing land.		

**An ethical perspective:
Ace chemical company**

Ace Chemical Company is a small, privately held manufacturer that has been operating at a profit for years. The current balance in the Cash account is USD 8 million, and the balance in Retained Earnings is USD 4 million. The company's plant assets consist of special purpose equipment that can produce only certain chemicals. The company has long-term debt with a principal balance of USD 10 million. Its officers (all of whom are stockholders) are concerned about the future prospects of the company. Many similar firms have been sued by customers and employees claiming that toxic chemicals produced by the company caused their health problems. No such suits have yet been filed against Ace, but the officers fully expect them to be filed within the next two years.

The company's stock is not listed on a stock exchange, nor has it recently been traded. The officers hold 70 percent of the stock and estimate that their total stockholdings have a current market value of about USD 8 million (although its value would be much lower if all the facts were known). They are worried that if suits are filed and the company loses, there will not even be enough remaining assets to satisfy creditors' claims, and the officers' stock would be worthless.

Private legal counsel has informed the officers that the company is likely to lose any suits that are filed.

One of the officers suggested that they could at least receive something for their stock by having the company buy half of the shares held by the officers at a total price of USD 4 million. Another officer asked if such a treasury stock transaction would be legal. The response was that the transaction would be legal because it did not dip into the present legal capital of the company. Retained earnings would be reduced to a zero balance, but would not develop a debit balance as a result of the transaction.

Prior period adjustments do not appear on the income statements but in the current-year financial statements as adjustments to the opening balance of retained earnings on the statement of retained earnings (Exhibit 30).

Most discontinued operations, extraordinary items, changes in accounting principle, and prior period adjustments affect the amount of income taxes a corporation must pay. To report the income tax effect, *FASB Statement No. 96* requires reporting all of these items net of their tax effects, as shown in Exhibit 28 and Exhibit 30.¹⁷ **Net-of-tax effect** means that items appear at the dollar amounts remaining after deducting the income tax effects. Thus, the total effect of a discontinued operation, an extraordinary item, a change in accounting principle, or a prior period adjustment appears in one place in the appropriate financial statement. The reference to "Income from continuing operations" on the income statement represents the results of transactions (including income taxes) that are normal for the business and may be expected to recur. Note that the tax effect of an item may appear separately, as it does for the gain on voluntary early retirement of debt in Exhibit 28. Or the company may mention it parenthetically with only the net amount shown (see loss from discontinued operations and change in accounting principle in Exhibit 28 and correction of error in Exhibit 30).

¹⁷ FASB, *Statement of Financial Accounting Standards No. 96*, "Accounting for Income Taxes" (Stamford, Conn., 1987). Copyright © by the Financial Accounting Standards Board, High Ridge Park, Stamford, Connecticut 06905, U.S.A.

Anson Company
Statement of Retained Earnings For the Year Ended
2010 December 31

Retained earnings, 2010 January 1	\$5,000,000
Prior period adjustment:	
Correction of error of expensing land (net of tax effect of \$80,000)	120,000
Retained earnings, 2010 January 1, as adjusted	\$5,120,000
Add: Net income	4,077,600
	\$9,197,600
Less: Dividends	500,000
Retained earnings, 2010 December 31	\$8,687,600

Exhibit 30: Statement of retained earnings

- Income from continuing operations of USD 5,550,000 (Exhibit 28) is more representative of the continuing earning power of the company than is the net income figure of USD 4,077,600.
- Following income, the special items from continuing operations appear at their actual impact on the company—that is, net of their tax effect.
- EPS is reported both before (USD 5.550) and after (USD 4.078) the discontinued operations, extraordinary item, and the cumulative effect of a change in accounting principle (Exhibit 28).
- The correction of the USD 200,000 error adds only USD 120,000 to retained earnings (Exhibit 30). This result occurs because the mistake was included in the 2009 tax return and taxes were underpaid by USD 80,000. In the 2010 return, the USD 80,000 of taxes would have to be paid.

13.14 Analyzing and using the financial results— Earnings per share and price-earnings ratio

A major item of interest to investors and potential investors is how much a company earned during the current year, both in total and for each share of stock outstanding. Firms calculate the earnings per share amount only for the common shares of ownership. They compute **earnings per share (EPS)** as net income available to common stockholders divided by the average number of common shares outstanding during that period. **Income available to common stockholders** is net income less any dividends on preferred stock. They deduct the regular preferred dividend on cumulative preferred stock (but not a dividend in arrears) whether or

not declared; however, they deduct only declared dividends on noncumulative preferred stock.

To illustrate, Sun Microsystems, Incorporated, had 3,417,000,000 weighted-average common shares outstanding with income available to common shareholders of USD 922,590,000 during a recent year. Sun would compute EPS as follows:

$$\begin{aligned}\text{EPS} &= \frac{\text{Income available for common stockholders}}{\text{Weighted - average number of common shares outstanding}} \\ &= \frac{\text{USD } 922,590,000}{3,417,000,000} \\ &= \text{USD } 0.27 \text{ per share}\end{aligned}$$

Firms calculate EPS for each major category on the face of the income statement. In other words, they make an EPS calculation for income from continuing operations, discontinued operations, extraordinary items, changes in accounting principle, and net income. Note in Exhibit 28 that Anson reports the EPS amounts at the bottom of its income statement.

The **price-earnings ratio** (current market price per share of common stock divided by EPS) provides an index on whether a stock has future high income potential compared to other stocks. Stocks with future high income potential tend to have a high price-earnings ratio.

In the financial highlights of Kimball International, Incorporated's, recent annual report, the market price at year-end was USD 16.00. Earnings per share were USD .93 (average of class A & B common stock). Kimball would compute its price-earnings ratio that day as follows:

$$\begin{aligned}\text{Price - earnings ratio} &= \frac{\text{Current market price per share of common stock}}{\text{EPS}} \\ &= \frac{\text{USD } 16.00}{\text{USD } 0.93} \\ &= \text{USD } 17.20\end{aligned}$$

This chapter completes the study of stockholders' equity. In Chapter 14, you learn about stock investments and international accounting.

13.14.1 Understanding the learning objectives

- Paid-in capital is presented in the stockholders' equity section of the balance sheet. Each source of paid-in capital is listed separately.

- Sources of paid-in capital are:

- (a) Common stock.

- (b) Preferred stock.

- (c) In excess of par value or stated value (common and preferred).

- (d) Stock dividends.

- (e) Treasury stock transactions.

- (f) Donations.

- Cash dividend of 3 percent on USD 100,000 of outstanding common stock: declared on July 1 and paid on September 15.

July	1	Retained earnings (-SE)	3,000	
		Dividends payable (+L)		3,000
Sept.	15	Dividends payable (-L)	3,000	
		Cash (-A)		3,000

Ten percent stock dividend on 10,000 shares of common stock outstanding; par value, USD 100; market value at declaration, USD 125 per share (declared on January 1 and paid on February 1).

Jan. 1	Retained earnings (1,000 shares x \$125) (-SE)	125,000	
	Stock dividends distributable – Common (1,000 shares x \$100) (+SE)		100,000
	Paid-in Capital – Stock dividends (1,000 shares x \$25) (+SE)		25,000
Feb. 1	Stock dividend distributable – Common (-SE)	100,000	
	Common stock (+SE)		100,000

- Thirty percent stock dividend on 10,000 shares of common stock outstanding: declared on January 1 and payable on February 1; par value, USD 100.

Jan. 1	Retained earnings (3,000 shares x \$100) (-SE)	300,000	
	Stock dividend distributable – Common (+SE)		300,000
Feb. 1	Stock dividend distributable – Common (+SE)	300,000	
	Common stock (-SE)		300,000

- Stock split: 1,000 shares of USD 50 par value common stock replaced by 2,000 shares of USD 25 par value common stock.

Common stock - \$50 par value (-SE)	50,000	
Common stock - \$25 par value (+SE)		50,000

- Retained earnings appropriation: USD 75,000 appropriated for plant expansion.

Retained earnings (-SE)	75,000	
Retained earnings appropriated for plant expansion (+SE)		75,000

- Treasury stock transactions: 100 shares of common stock were reacquired at USD 100 each and reissued for USD 105 each.

Treasury stock – Common (100 shares x \$100)	10,000	
Cash		10,000
Cash (100 shares x \$105)	10,500	
Treasury stock – Common (100 shares x \$100)		10,000
Paid-in Capital – Common treasury stock transactions (100 shares x \$5)		500

- The income or loss (net of tax effect) from the segment's operations for the portion of the current year before it was discontinued is reported on the income statement below "Income from continuing operations".

- The gain or loss (net of tax effect) on disposal of the segment is also reported in that same section of the income statement.

- Extraordinary items are both unusual in nature and infrequent in occurrence. Extraordinary items appear on the income statement (net-of-tax effect) below "Income from continuing operations".

- In the period in which a change in principle is made, the nature of the change, its justification, and its effect on net income must be disclosed in the financial statements. Also, the cumulative effect of the change on prior years' income (net of tax effect) must be shown on the income statement for the year of the change below "Income from continuing operations".

- Prior period adjustments consist of errors in previously published financial statements. Prior period adjustments appear (net-of-tax effect) as a correction to the beginning retained earnings balance on the statement of retained earnings.

- EPS equals the income available to common stockholders divided by the weighted-average number of common shares outstanding. Income available to

common stockholders is net income less any dividends on preferred stock. EPS provides information on the return of an investment in common stock.

- The price-earnings ratio equals the current market price per share of common stock divided by EPS. The price-earnings ratio indicates whether a stock has a future high income potential as compared to other stocks.

13.14.2 Demonstration problem

Demonstration problem A Wylie Corporation has outstanding 10,000 shares of USD 150 par value common stock.

Prepare the entries to record:

- a. The declaration of a cash dividend of USD 1.50 per share.
- b. The declaration of a stock dividend of 10 percent at a time when the market value per share is USD 185.
- c. The declaration of a stock dividend of 40 percent at a time when the market value per share is USD 195.

Demonstration problem B Following are selected transactions of Brackett Company:

- The company reacquired 200 shares of its own USD 100 par value common stock, previously issued at USD 105 per share, for USD 20,600.
- Fifty of the treasury shares were reissued at USD 110 per share, cash.
- Seventy of the treasury shares were reissued at USD 95 per share, cash.
- Stockholders of the corporation donated 100 shares of their common stock to the company.
- The 100 shares of treasury stock received by donation were reissued for USD 9,000.

Prepare the necessary journal entries to record these transactions.

Demonstration problem C Selected account balances of Nexis Corporation at 2010 December 31, are:

Common stock (no par value; 100,000 shares authorized, issued, and outstanding; stated value of USD 20 per share)	USD 2,000,000
Retained earnings	570,000
Dividends payable (in cash, declared December 15 on preferred stock)	16,000
Preferred stock (8 percent, par value USD 200; 1,000 shares authorized, issued, and outstanding)	200,000

Paid-In capital from donation of plant site	100,000
Paid-in capital in excess of par value – preferred	8,000

Present in good form the stockholders' equity section of the balance sheet.

13.14.3 Solution to demonstration problem

Solution to demonstration problem A

a.	Retained earnings (or dividends) (-SE)	15,000	
	Dividends payable (+L)		15,000
	To record declaration of a cash dividend.		
b.	Retained earnings (or stock dividends)		
	(1,000 shares x \$185) (-SE)	185,000	
	Stock dividend distributable – Common		
	(1,000 shares x \$150) (+L)		150,000
	Paid-in capital – Stock dividends(+SE)		35,000
	To record declaration of a small stock dividend (10%).		
c.	Retained earnings (or stock dividends) (4,000 shares x \$150)	600,000	
	(-SE)		
	Stock dividend distributable – Common (+L)		600,000
	To record declaration of a large stock dividend (40%).		

Solution to demonstration problem B

1.	Treasury stock (-SE)	20,600	
	Cash (-A)		20,600
	Acquired 200 shares at \$20,600 (\$103 per share).		
2.	Cash (50 shares x \$110) (+A)	5,500	
	Treasury stock – Common (50 shares x \$103) (+SE)		5,150
	Paid-in capital – common treasury stock transactions (+SE)		350
	Reissued 50 shares at \$110 per share; cost is \$5,150.		
3.	Cash (70 shares x \$95) (+A)	6,650	
	Paid-in capital – Common treasury stock transactions (50 shares x \$7) (-SE)	350	
	Retained earnings (-SE)	210	
	Treasury stock – common (70 shares x \$103) (+SE)		7,210
	Reissued 70 shares at \$95 per share; cost is \$7,210.		

4. Stockholders donated 100 shares of common stock to the company. (Only memo entry is made.)

5.	Cash (+A)	9,000	
	Paid-in capital – Donations (100 shares x \$90) (+SE)		9,000
	Reissued donated shares at \$90 per share.		

Solution to demonstration problem C

Nexis Corporation

**Partial balance sheet
2010 December 31**

Stockholders' equity:		
Paid-in capital:		
Preferred stock – 8%, par value \$200; 1,000 shares authorized, issued, and outstanding	\$200,000	
Common stock – no par value, stated value of \$20 per share; 100,000 shares authorized, issued, and outstanding	2,000,000	
Paid-in capital from donation of plant site	100,000	
Paid-in capital in excess of par value – preferred	8,000	
Total paid-in capital		\$2,308,000
Retained earnings		570,000
Total stockholders' equity		\$2,878,000

13.15 Key terms

Cash dividends Cash distributions of accumulated earnings by a corporation to its stockholders.

Changes in accounting principle Changes in accounting methods pertaining to such items as inventory.

Contributed capital See paid-in capital.

Date of declaration (of dividends) The date the board of directors takes action in the form of a motion that dividends be paid.

Date of payment (of dividends) The date of actual payment of a dividend, or issuance of additional shares for a stock dividend.

Date of record (of dividends) The date of record established by the board that determines the stockholders who will receive dividends.

Deficit A debit balance in the Retained Earnings account.

Discontinued operation When a segment of a business is sold to another company or is abandoned.

Dividends Distribution of earnings by a corporation to its stockholders.

Dividends (cash) See cash dividends.

Dividends (stock) See stock dividends.

Donated capital Results from donation of assets to the corporation, which increases stockholders' equity.

Earnings per share (EPS) Earnings to the common stockholders on a per share basis, computed as income available to common stockholders divided by the weighted-average number of common shares outstanding.

Extraordinary items Items both unusual in nature and infrequent in occurrence; reported in the income statement net of their tax effects, if any.

Income available to common stockholders Net income less any dividends on preferred stock.

Liquidating dividends Dividends that are a return of contributed capital, not a distribution chargeable to retained earnings.

Net-of-tax effect Used for discontinued operations, extraordinary items, changes in accounting principle, and prior period adjustments, whereby items are shown at the dollar amounts remaining after deducting the effects of such items on income taxes, if any, payable currently.

Paid-in capital All of the contributed capital of a corporation, including that carried in capital stock accounts. When the words paid-in capital are included in the account title, the account contains capital contributed in addition to that assigned to the shares issued and recorded in the capital stock accounts.

Paid-In Capital—Common (Preferred) Treasury Stock Transactions The account credited when treasury stock is reissued for more than its cost; this account is debited to the extent of its credit balance when such shares are reissued at less than cost.

Price-earnings ratio The current market price per share of common stock divided by EPS.

Prior period adjustments Consist almost entirely of corrections of errors in previously published financial statements. Prior period adjustments are reported in the statement of retained earnings net of their tax effects, if any.

Retained earnings That part of stockholders' equity resulting from accumulated earnings; the account to which the results of corporate activity, including prior period adjustments, are carried and to which dividends and certain items resulting from capital transactions are charged.

Retained earnings appropriations Contractual or voluntary restrictions or limitations on retained earnings that reduce the amount of dividends that may be declared.

Statement of retained earnings A formal statement showing the items causing changes in unappropriated and appropriated retained earnings during a stated period of time.

Statement of stockholders' equity A summary of the transactions affecting the accounts in the stockholders' equity section of the balance sheet during a stated period of time.

Stock Dividend Distributable—Common account The stockholders' equity (paid-in capital) account that is credited for the par or stated value of the shares distributable when recording the declaration of a stock dividend.

Stock dividends Dividends that are payable in additional shares of the declaring corporation's capital stock.

Stock split A distribution of 100 percent or more of additional shares of the issuing corporation's stock, accompanied by a corresponding reduction in the par value per share. The purpose of a stock split is to cause a large reduction in the market price per share of the outstanding stock.

Treasury stock Shares of capital stock issued and reacquired by the issuing corporation; they have not been formally canceled and are available for reissuance.

13.16 Self-test

13.16.1 True-false

Indicate whether each of the following statements is true or false.

The retained earnings balance of a corporation is part of its paid-in capital.

The purchase of treasury stock does not affect stockholders' equity.

Dividends are expenses since they decrease stockholders' equity.

A stock dividend reduces the retained earnings balance and permanently capitalizes the reduced portion of the retained earnings.

A retained earnings appropriation reduces the total stockholders' equity shown on the balance sheet.

Heavy frost damage suffered by a Florida citrus grower's orange trees would probably be reported as an extraordinary item.

13.16.2 Multiple-choice

Select the best answer for each of the following questions.

Which of the following is not included in paid-in capital?

- a. Common Stock.
- b. Paid-In Capital—Donations.
- c. Stock Dividend Distributable.
- d. Appropriation per Loan Agreement.

Bevins Company issued 10,000 shares of USD 20 par value common stock at USD 24 per share. Bevins reacquired 1,000 shares of its own stock at a cost of USD 30 per share. The entry to record the reacquisition is:

a.	Premium on Treasury Stock (-SE)	10,000	
	Treasury stock (-SE)	20,000	
	Cash (-A)		30,000
b.	Premium on Treasury Stock (-SE)	6,000	
	Treasury stock (-SE)	24,000	
	Cash (-A)		30,000
c.	Treasury Stock (-SE)	30,000	
	Cash (-A)		30,000
d.	Treasury stock (-SE)	20,000	
	Paid-In Capital – Treasury Stock Transactions (-SE)	10,000	
	Cash (-A)		30,000

If the company reissues 500 shares of the treasury stock in (2) for USD 36 per share, the entry is:

a.	Cash (+A)	18,000	
	Treasury Stock (+SE)		15,000
	Paid-In Capital – Treasury Stock Transactions (+SE)		3,000
b.	Cash (+A)	18,000	
	Treasury stock (+SE)		18,000
c.	Cash (+A)	18,000	
	Treasury stock (+SE)		15,000
	Retained earnings (+SE)		3,000
d.	Cash (+A)	18,000	
	Treasury stock (+SE)		10,000
	Retained earnings (+SE)		8,000

Treasury stock should be shown on the balance sheet as a:

- Reduction of the corporation's stockholders' equity.
- Current asset.
- Current liability.
- Investment asset.

An individual stockholder is entitled to receive any dividends declared on stock owned, provided the stock is held on the:

- Date of declaration.
- Date of record.

- c. Date of payment.
- d. Last day of a fiscal year.

ABC Corporation declared the regular quarterly dividend of USD 2 per share. ABC had issued 12,000 shares and subsequently reacquired 2,000 shares as treasury stock. What would be the total amount of the dividend?

- a. USD 24,000.
- b. USD 28,000.
- c. USD 20,000.
- d. USD 4,000.

Which item is not reported as a separate line item below income from continuing operations, net of tax effects, in the income statement?

- a. Extraordinary items.
- b. Prior period adjustments.
- c. Discontinued operations.
- d. Changes in accounting principle.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

Questions

- What are the two main elements of stockholders' equity in a corporation? Explain the difference between them.
- Name several sources of paid-in capital. Would it suffice to maintain one account called Paid-In Capital for all sources of paid-in capital? Why or why not?
- Does accounting for treasury stock resemble accounting for an asset? Is treasury stock an asset? If not, where is it properly shown on a balance sheet?
- What are some possible reasons for a corporation to reacquire its own capital stock as treasury stock?
- What is the purpose underlying the statutes that provide for restriction of retained earnings in the amount of the cost of treasury stock? Are such statutes for the benefit of stockholders, management, or creditors?

- What is the effect of each of the following on the total stockholders' equity of a corporation: (a) declaration of a cash dividend, (b) payment of a cash dividend already declared, (c) declaration of a stock dividend, and (d) issuance of a stock dividend already declared?
- The following dates are associated with a cash dividend of USD 80,000: July 15, July 31, and August 15. Identify each of the three dates, and give the journal entry required on each date, if any.
- How should a declared but unpaid cash dividend be shown on the balance sheet? How should a declared but unissued stock dividend be shown?
- On May 8, the board of directors of Park Corporation declared a dividend, payable on June 5, to stockholders of record on May 17. On May 10, James sold his capital stock in Park Corporation directly to Benton for USD 20,000, endorsing his stock certificate and giving it to Benton. Benton placed the stock certificate in her safe. On May 30, Benton sent the certificate to the transfer agent of Park Corporation for transfer. Who received the dividend? Why?
- What are the possible reasons for a corporation to declare a stock dividend?
- Why is a dividend consisting of the distribution of additional shares of the common stock of the declaring corporation not considered income to the recipient stockholders?
- What is the difference between a small stock dividend and a large stock dividend?
- What are liquidating dividends?
- What is the purpose of a retained earnings appropriation?
- What is a statement of stockholders' equity?
- Describe a discontinued operation.
- What are extraordinary items? Where and how are they reported?
- Give an example of a change in accounting principle. How are the effects of changes in accounting principle reported?
- What are prior period adjustments? Where and how are they reported?

- Why are stockholders and potential investors interested in the amount of a corporation's EPS? What does the EPS amount reveal that total earnings do not.

13.17 Exercises

Exercise A The 2009 December 31, trial balance of Yamey Corporation had the following account balances:

Common stock (no-par value; 200,000 shares authorized, issued, and outstanding; stated value of \$20 per share)	\$4,000,000
Notes payable (12% due 2010 May 1)	500,000
Retained earnings, unappropriated	2,500,000
Dividends payable in cash (declared December 15, on preferred stock)	12,000
Appropriation per loan agreement	480,000
Preferred stock (6%, par value \$200; 2,000 shares authorized, issued, and outstanding)	400,000
Paid-In capital in excess of stated value – Common	300,000
Paid-In Capital in Excess of Par Value – Preferred	40,000

Present in proper form the stockholders' equity section of the balance sheet.

Exercise B Fogg Company has issued all of its authorized 5,000 shares of USD 400 par value common stock. On 2009 February 1, the board of directors declared a dividend of USD 12 per share payable on 2009 March 15, to stockholders of record on 2009 March 1. Give the necessary journal entries.

Exercise C The stockholders' equity section of Jay Company's balance sheet on 2009 December 31, shows 100,000 shares of authorized and issued USD 20 stated value common stock, of which 9,000 shares are held in the treasury. On this date, the board of directors declared a cash dividend of USD 2 per share payable on 2010 January 21, to stockholders of record on January 10. Give dated journal entries for these.

Exercise D Kevin Company has outstanding 75,000 shares of common stock without par or stated value, which were issued at an average price of USD 80 per share, and retained earnings of USD 3,200,000. The current market price of the common stock is USD 120 per share. Total authorized stock consists of 500,000 shares.

- Give the required entry to record the declaration of a 10 percent stock dividend.

b. If, alternatively, the company declared a 30 percent stock dividend, what additional information would you need before making a journal entry to record the dividend?

Exercise E Grant Corporation's stockholders' equity consisted of 60,000 authorized shares of USD 30 par value common stock, of which 30,000 shares had been issued at par, and retained earnings of USD 750,000. The company then split its stock, two for one, by changing the par value of the old shares and issuing new USD 15 par shares.

a. Give the required journal entry to record the stock split.

b. Suppose instead that the company declared and later issued a 10 percent stock dividend. Give the required journal entries, assuming that the market value on the date of declaration was USD 40 per share.

Exercise F The balance sheet of Willis Company contains the following:

Appropriation per loan agreement USD 900,000

a. Give the journal entry made to create this account.

b. Explain the reason for the appropriation's existence and its manner of presentation in the balance sheet.

Exercise G Kelly Company had outstanding 50,000 shares of USD 20 stated value common stock, all issued at USD 24 per share, and had retained earnings of USD 800,000. The company reacquired 2,000 shares of its stock for cash at book value from the widow of a deceased stockholder.

a. Give the entry to record the reacquisition of the stock.

b. Give the entry to record the subsequent reissuance of this stock at USD 50 per share.

c. Give the entry required if the stock is instead reissued at USD 30 per share and there were no prior treasury stock transactions.

Exercise H Evan Company received 200 shares of its USD 200 stated value common stock on 2009 December 1, as a donation from a stockholder. On 2009 December 15, it reissued the stock for USD 62,400 cash. Give the journal entry or entries necessary for these transactions.

Exercise I Vista Company has revenues of USD 80 million, expenses of USD 64 million, a tax-deductible earthquake loss (its first such loss) of USD 4 million, and a

tax-deductible loss of USD 6 million resulting from the voluntary early extinguishment (retirement) of debt. The assumed income tax rate is 40 percent. The company's beginning-of-the-year retained earnings were USD 30 million, and a dividend of USD 2 million was declared.

- a. Prepare an income statement for the year.
- b. Prepare a statement of retained earnings for the year.

Exercise J Conner Company had retained earnings of USD 56,000 as of 2009 January 1. In 2009, Conner Company had sales of USD 160,000, cost of goods sold of USD 96,000, and other operating expenses, excluding taxes, of USD 32,000. In 2009, Conner Company discovered that it had, in error, depreciated land over the last three years resulting in a balance in the accumulated depreciation account of USD 40,000. The assumed tax rate for Conner Company is 40 percent. Present in proper form a statement of retained earnings for the year ended 2009 December 31.

Exercise K The following information relates to Perry Corporation for the year ended 2009 December 31:

Common stock outstanding	75,000 shares
Income from continuing operations	\$1,523,200
Loss on discontinued operations (net of tax)	240,000
Extraordinary gain (net of tax)	144,000

Calculate EPS for the year ended 2009 December 31. Present the information in the same format used in the corporation's income statement.

Exercise L Dean Company had an average number of shares of common stock outstanding of 200,000 in 2009 and 215,000 in 2010. Net income for these two years was as follows:

2009	\$2,208,000
2010	2,304,000

- a. Calculate EPS for the years ended 2009 December 31, and 2010.
- b. What might the resulting figures tell a stockholder or a potential investor?

13.18 Problems

Problem A The bookkeeper of Hart Company has prepared the following incorrect statement of stockholders' equity for the year ended 2009 December 31:

Stockholders' equity:		
Paid-In Capital:		
Preferred stock – 6%, cumulative (8,000 shares)	\$1,003,200	
Common stock – 50,000 shares	2,856,000	
Total paid-in capital		\$3,859,200
Retained earnings		1,636,800
Total stockholders' equity		\$5,496,000

The authorized stock consists of 12,000 shares of preferred stock with a USD 120 par value and 75,000 shares of common stock, USD 48 par value. The preferred stock was issued on two occasions: (1) 5,000 shares at par, and (2) 3,000 shares at USD 134.40 per share. The 50,000 shares of common stock were issued at USD 62.40 per share. Five thousand shares of treasury common stock were reacquired for USD 264,000. The bookkeeper deducted the cost of the treasury stock from the Common Stock account.

Prepare the correct stockholders' equity section of the balance sheet at 2009 December 31.

Problem B The only stockholders' equity items of Jody Company at 2009 June 30, are:

Stockholders' equity:		
Paid-in capital:		
Common stock - \$200 par value, 10,000 shares authorized, 6,000 shares issued and outstanding	\$1,200,000	
Paid-in capital in excess of par value	480,000	
Total paid-in capital		\$1,680,000
Retained earnings		480,000
Total stockholders' equity		\$2,160,000

On 2009 August 4, a 4 percent cash dividend was declared, payable on September 3. On November 16, a 10 percent stock dividend was declared. The shares were issued on December 1. The market value of the common stock was USD 360 per share on November 16 and USD 354 per share on December 1.

Prepare journal entries for these dividend transactions.

Problem C Following are selected transactions of White Corporation:

2002

Dec. 31 The board of directors authorized the appropriation of USD 50,000 of retained earnings to provide for the future acquisition of a new plant site and the construction of a new building. (On the last day of the next six years, the same action was taken. You need not make entries for these six years.)

2007

Jan. 2 Purchased a new plant site for cash, USD 100,000.

Mar. 29 Entered into a contract for construction of a new building, payment to be made within 30 days following completion.

2009

Feb. 10 Following final inspection and approval of the new building, Dyer Construction Company was paid in full, USD 500,000.

Mar. 10 The board of directors authorized release of the retained earnings appropriated for the plant site and building.

Apr. 2 A 5 percent stock dividend on the 100,000 shares of USD 50 par value common stock outstanding was declared. The market price on this date was USD 55 per share.

Prepare journal entries for all of these transactions.

Problem D Following are selected data of Kane Corporation at 2009 December 31:

Net income for the year	\$512,000
Dividends declared on preferred stock	72,000
Retained earnings appropriated during the year for future plant expansion	240,000
Dividends declared on common stock	64,000
Retained earnings, January 1, unappropriated	720,000
Directors ordered that the balance in the "Appropriation per loan agreement", related to a loan repaid on 2009 March 31, be returned to unappropriated retained earnings	480,000

Prepare a statement of retained earnings for the year ended 2009 December 31.

Problem E The stockholders' equity of Sayers Company at 2009 January 1, is as follows:

Common stock – no-par value, stated value of \$20; 100,000 shares authorized, 60,000 shares issued	\$1,200,000
Paid-in capital in excess of stated value	200,000
Appropriation per loan agreement	75,200
Unappropriated retained earnings	424,000
Treasury stock (3,000 shares at cost)	(72,000)

During 2009, the following transactions occurred in the order listed:

- Issued 10,000 shares of stock for USD 368,000.
- Declared a 4 percent stock dividend when the market price was USD 48 per share.

- Sold 1,000 shares of treasury stock for USD 43,200.
- Issued stock certificates for the stock dividend declared in transaction 2.
- Bought 2,000 shares of treasury stock for USD 67,200.
- Increased the appropriation by USD 43,200 per loan agreement.

Prepare journal entries as necessary for these transactions.

Problem F The stockholders' equity of Briar Company on 2008 December 31, consisted of 1,000 authorized, issued, and outstanding shares of USD 72 cumulative preferred stock, stated value USD 240 per share, which were originally issued at USD 1,192 per share; 100,000 shares authorized, issued, and outstanding of no-par, USD 160 stated value common stock, which were originally issued at USD 160; and retained earnings of USD 1,120,000. Following are selected transactions and other data relating to 2009. No previous treasury stock transactions had occurred.

- The company reacquired 2,000 shares of its common stock at USD 336.
- One thousand of the treasury shares were reissued at USD 288.
- Stockholders donated 1,000 shares of common stock to the company. These shares were immediately reissued at USD 256 to provide working capital.
- The first quarter's dividend of USD 18 per share was declared and paid on the preferred stock. No other dividends were declared or paid during 2009.

The company suffered a net loss of USD 224,000 for the year 2009.

a. Prepare journal entries for the preceding numbered transactions.

b. Prepare the stockholders' equity section of the 2009 December 31, balance sheet.

Problem G The following stockholders' equity section is from Bell Company's 2008 October 31, balance sheet:

Stockholders' equity:		
Paid-in capital:		
Preferred stock - \$60 par value, 6%; 1,000 shares authorized; 350 shares issued and outstanding	\$ 21,000	
Common stock - \$6 par value; 100,000 shares authorized; 40,000 shares issued and outstanding	240,000	
Paid-in capital from donation of plant site	15,000	
Total paid-in capital		\$276,000
Retained earnings:		
Appropriated:		
Appropriation for contingencies	\$ 12,000	
Unappropriated	33,300	
Total retained earnings		45,300
Total stockholders' equity		\$321,300

During the ensuing fiscal year, Bell Company entered into the following transactions:

- The appropriation of USD 12,000 of retained earnings had been authorized in October 2008 because of the likelihood of an unfavorable court decision in a pending lawsuit. The suit was brought by a customer seeking damages for the company's alleged breach of a contract to supply the customer with certain products at stated prices in 2007. The suit was concluded on 2009 March 6, with a court order directing the company to pay USD 10,500 in damages. These damages were not deductible in determining the income tax liability. The board ordered the damages paid and the appropriation closed. The loss does not qualify as an extraordinary item.
- The company acquired 1,000 shares of its own common stock at USD 9 in May 2009. On June 30, it reissued 500 of these shares at USD 7.20.
- Dividends declared and paid during the year were 6 percent on preferred stock and 18 cents per share on common stock. Both dividends were declared on September 1 and paid on 2009 September 30.

For the fiscal year, the company had net income after income taxes of USD 11,400, excluding the loss of the lawsuit.

- Prepare journal entries for the preceding numbered transactions.
- Prepare a statement of retained earnings for the year ended 2009 October 31.
- Prepare the stockholders' equity section of the 2009 October 31, balance sheet.

Problem H Selected data for Brinks Company for 2009 are given below:

Common stock - \$20 par value	\$2,000,000
Sales, net	1,740,000
Selling and administrative expenses	320,000
Cash dividends declared and paid	120,000
Cost of goods sold	800,000
Depreciation expense	120,000
Interest revenue	20,000
Loss on write-down of obsolete inventory	40,000
Retained earnings (as of 2008/12/31)	2,000,000
Operating loss on Candy Division up to point of sale in 2009	40,000
Loss on disposal of Candy Division	200,000
Earthquake loss	96,000
Cumulative negative effect on prior years' income of changing from straight-line to an accelerated method of computing depreciation.	64,000

Assume the applicable federal income tax rate is 40 percent. All of the items of expense, revenue, and loss are included in the computation of taxable income. The earthquake loss resulted from the first earthquake experienced at the company's location. In addition, the company discovered that in 2008 it had erroneously charged to expense the USD 160,000 cost of a tract of land purchased that year and had made the same error on its tax return for 2008.

- a. Prepare an income statement for the year ended 2009 December 31.
- b. Prepare a statement of retained earnings for the year ended 2009 December 31.

13.19 Alternate problems

Alternate problem A The trial balance of Dex Corporation as of 2009 December 31, contains the following selected balances:

Notes payable (17%, due 2011 May 1)	\$4,000,000
Allowance for uncollectible accounts	60,000
Common stock (without par value, \$20 stated value; 300,000 shares authorized, issued, and outstanding)	6,000,000
Retained earnings, unappropriated	500,000
Dividends payable (in cash, declared December 15 on preferred stock)	14,000
Appropriation for pending litigation	600,000
Preferred stock (6%, \$200 par value; 3,000 shares authorized, issued, and outstanding)	600,000
Paid-In Capital – Donations	400,000
Paid-In Capital in Excess of Par Value – Preferred	10,000

Present the stockholders' equity section of the balance sheet as of 2009 December 31.

Alternate problem B The stockholders' equity section of Carson Company's 2008 December 31, balance sheet follows:

Stockholders' equity:	
Paid-In Capital:	
Common stock - \$120 par value; authorized, 2,000 shares; issued and outstanding, 1,000 shares	\$120,000
Paid-in capital in excess of par value	6,000
Total paid-in capital	\$126,000
Retained earnings	48,000
Total stockholders' equity	\$174,000

On 2009 July 15, the board of directors declared a cash dividend of USD 12 per share, which was paid on 2009 August 1. On 2009 December 1, the board declared a stock dividend of 10 percent, and the shares were issued on 2009 December 15.

Market value of the stock was USD 144 on December 1 and USD 168 on December 15.

Prepare journal entries for these dividend transactions.

Alternate problem C The ledger of Falcone Company includes the following account balances on 2009 September 30:

Appropriation for contingencies	\$210,000
Appropriation for plant expansion	392,000
Retained earnings, unappropriated	700,000

During October 2009, the company took action to:

- Increase the appropriation for contingencies by USD 60,000.
- Decrease the appropriation for plant expansion by USD 160,000.
- Establish an appropriation per loan agreement, with an annual increase of USD 48,000.
- Declare a cash dividend of USD 140,000.

Prepare the journal entries to record these transactions of Falcone Company.

Alternate problem D Following are selected transactions of Taylor Corporation:

2004

Dec. 31 By action of the board of directors, USD 450,000 of retained earnings was appropriated to provide for future expansion of the company's main building. (On the last day of each of the next four years, the same action was taken. You need not make entries for these years.)

2009

Jan. 3 Obtained, at a cost of USD 4,500, a building permit to construct a new wing on the main plant building.

July 30 Paid USD 1,800,000 to Starke Construction Company for completion of the new wing.

Aug. 4 The board of directors authorized the release of the sum appropriated for expansion of the plant building.

4 The board of directors declared a 10 percent common stock dividend on the 25,000 shares of USD 500 par value common stock outstanding. The market price on this date was USD 660 per share.

Prepare journal entries to record all of these transactions.

Alternate problem E The following information relates to Dahl Corporation for the year 2009:

Net income for the year	\$ 1,680,000
Dividends declared on common stock	235,000
Dividends declared on preferred stock	134,000
Retained earnings, January 1, unappropriated	5,040,000
Appropriation for retirement of bonds	672,000
Balance in "Appropriation for possible loss of a lawsuit", no longer needed on December 31 because of a favorable court decision, is (by directors' order) returned to unappropriated retained earnings	840,000

Prepare a statement of retained earnings for the year ended 2009 December 31.

Alternate problem F The stockholders' equity of Acorn Company as of 2008 December 31, consisted of 20,000 shares of authorized, issued, and outstanding USD 50 par value common stock, paid-in capital in excess of par of USD 240,000, and retained earnings of USD 400,000. Following are selected transactions for 2009:

May 1 Acquired 3,000 shares of its own common stock at USD 100 per share.

June 1 Reissued 500 shares at USD 120.

30 Reissued 700 shares at USD 90.

Oct. 1 Declared a cash dividend of USD 5 per share.

31 Paid the cash dividend declared on October 1.

Net income for the year was USD 80,000. No other transactions affecting retained earnings occurred during the year.

a. Prepare general journal entries for these transactions.

b. Prepare the stockholders' equity section of the 2009 December 31, balance sheet.

Alternate problem G The stockholders' equity section of Sager Company's 2008 December 31, balance sheet follows:

Stockholders' equity:		
Paid-In Capital:		
Preferred stock - \$60 par value, 5%; authorized, 5,000 shares; issued and outstanding, 2,500 shares		\$150,000
Common stock – without par or stated value; authorized, 50,000 shares; issued, 25,000 shares of which 500 are held in treasury		225,000
Paid-in capital in excess of par – preferred		3,000
Total paid-in capital		\$378,000
Retained earnings:		
Appropriated:		
For plant expansion	\$15,000	
Unappropriated (restricted as to dividends to the extent of \$6,000, the cost of the treasury stock held)	126,000	
Total retained earnings		141,000
Total paid-in capital and retained earnings		\$519,000
Less: Treasury stock, common, at cost (500 shares)		6,000
Total stockholders' equity		\$513,000

Following are selected transactions that occurred in 2009:

Jan. 13 Cash was received for 550 shares of previously unissued common stock at USD 13.20.

Feb. 4 A plot of land was accepted as payment in full for 500 shares of common stock, and the stock was issued. Closing market price of the common stock on this date was USD 12 per share.

Mar. 24 All of the treasury stock was reissued at USD 14.40 per share.

June 23 The regular semiannual dividend on the preferred stock was declared.

30 The preferred dividend was paid.

July 3 A 10 percent stock dividend was declared on the common stock. Market price on this date was USD 16.80.

18 The stock dividend shares were issued.

Oct. 4 The company reacquired 105 shares of its common stock at USD 14.40.

Dec. 18 The regular semiannual dividend on the preferred stock and a USD 0.24 per share dividend on the common stock were declared.

31 Both dividends were paid.

31 An additional appropriation of retained earnings of USD 3,000 for plant expansion was authorized.

a. Prepare journal entries to record the 2009 transactions.

b. Prepare a statement of retained earnings for the year 2009, assuming net income for the year was USD 25,800.

c. Prepare the stockholders' equity section of the 2009 December 31, balance sheet.

Alternate problem H Selected data of Ace Company for the year ended 2009 December 31, are:

Sales, net	\$1,000,000
Interest expense	90,000
Cash dividends on common stock	150,000
Selling and administrative expenses	245,000
Cash dividends on preferred stock	70,000
Rent revenue	400,000
Cost of goods sold	650,000
Flood loss (has never occurred before)	200,000
Interest revenue	90,000
Other revenue	150,000
Depreciation and maintenance on rental equipment	270,000
Stock dividend on common stock	300,000
Operating income on Plastics Division up to point of sale in 2009	50,000
Gain on disposal of Plastics Division	25,000
Litigation loss (has never occurred before)	400,000
Cumulative positive effect on prior years' income of changing to a different depreciation method	80,000

Assume the applicable federal income tax rate is 40 percent. All of the preceding items of expense, revenue, and loss are included in the computation of taxable income. The litigation loss resulted from a court award of damages for patent infringement on a product that the company produced and sold in 2005 and 2006, but was discontinued in 2006. In addition, the company discovered that in 2005 it had erroneously charged to expense the USD 250,000 cost of a tract of land purchased that year and had made the same error on its tax return for 2008. Retained earnings as of 2009 January 1, were USD 5,600,000. Assume there were 10,000 shares of common stock and 5,000 shares of preferred stock outstanding for the entire year.

Prepare an income statement and a statement of retained earnings for 2009.

13.20 Beyond the numbers—Critical thinking

Business decision case A The stockholders' equity section of the Bates Corporation's balance sheet for 2009 June 30, follows:

Stockholders' equity:		
Paid-in Capital:		
Common stock - \$20 par value; authorized 200,000 shares; issued and outstanding 80,000 shares	\$1,600,000	0
Paid-in capital in excess of par value	960,000	
Total paid-in capital		\$2,560,000
Retained earnings		1,520,000
Total stockholders' equity		\$4,080,000

On 2009 July 1, the corporation's directors declared a 10 percent stock dividend distributable on August 2 to stockholders of record on July 16. On 2009 November 1, the directors voted a USD 2.40 per share annual cash dividend payable on December 2 to stockholders of record on November 16. For four years prior to 2009, the corporation had paid an annual cash dividend of USD 2.52.

As of 2009 July 1, Bob Jones owned 8,000 shares of Bates Corporation's common stock, which he had purchased four years earlier. The market value of his stock was USD 48 per share on 2009 July 1, and USD 43.64 per share on 2009 July 16.

a. What amount of cash dividends will Jones receive in 2009? How does this amount differ from the amount of cash dividends Jones received in the previous four years?

b. Jones has asked you, his CPA, to explain why the price of the stock dropped from USD 48 to USD 43.64 on 2009 July 16. Write a memo to Jones explaining your answer.

c. Do you think Jones is better off as a result of the stock dividend and the USD 2.40 cash dividend than he would have been if he had just received the USD 2.52 cash dividend? Write a memo to Jones explaining your answer.

Business decision case B The following journal entries are for Keel Corporation:

- | | | |
|---|--------|--------|
| Retained earnings | 12,000 | |
| Reserve for uncollectible accounts | | 12,000 |
| To record the adjusting entry for uncollectible accounts. | | |
- | | | |
|---------------------------------|--------|--------|
| Retained earnings | 48,000 | |
| Reserve for depreciation | | 48,000 |
| To record depreciation expense. | | |
- | | | |
|--|---------|---------|
| Retained earnings | 120,000 | |
| Appropriation for plant expansion | | 120,000 |
| To record retained earnings appropriation. | | |

4.	Retained earnings	8,000	
	Stock dividend distributable – Common		8,000
	To record 10% stock dividend declaration (100 shares to be distributed - \$80 par value, \$120 market value).		
5.	Stock dividend distributable – Common	8,000	
	Common stock		8,000
	To record distribution of stock dividend.		
6.	Treasury Stock	32,000	
	Cash		32,000
	To record acquisition of 200 shares of \$80 par value common stock at \$160 per share.		
7.	Cash	17,600	
	Treasury Stock		17,600
	To record sale of 100 treasury shares at \$176 per share.		
8.	Cash	6,800	
	Treasury stock		6,800
	To record sale of 50 treasury shares at \$136 per share.		
9.	Common stock	16,000	
	Dividends payable		16,000
	To record declaration of cash dividend.		
10.	Dividends payable	16,000	
	Cash		16,000
	To record payment of cash dividend.		

The management of Keel Corporation has asked you, a CPA, to analyze these journal entries and decide whether each is correct. The explanations are all correct. Wherever a journal entry is incorrect, prepare the journal entry that should have been made.

Annual report analysis C The following questions are based on the Coca-Cola Company's 2006 annual report. To view the report, go to the Coca-Cola web site at www.cocacola.com. After you activate the web site, click on The Coca-Cola Company. Go to investors and a menu will drop down that has financials as an option with Financial Statements (select this) to its right. Click on Balance Sheet and then open it to find the total cost of treasury shares. Then go to Selected Financial Data and open it to find the number of common shares outstanding.

a. Based on the information in the balance sheet and the note, determine the number of common shares outstanding; and the total cost of treasury stock shares on hand at the end of 2006.

b. In writing, discuss what reasons Coca-Cola might have to acquire treasury stock.

c. Find Coca-Cola's basic EPS for 2006 listed in its Income Statement. If the common stock's market price at 2006 December 31, was USD 30, what was the price-earnings ratio?

Ethics case—Writing experience D Based on the ethics case, answer the following questions concerning Ace Chemical Company in writing:

a. Is this transaction fair to the creditors?

b. Why would the officers not merely declare a USD 4 million cash dividend? Is the proposed treasury stock transaction fair to the other stockholders?

c. If you were one of the officers, would you feel comfortable in going ahead with this proposed treasury stock transaction?

Group project E In teams of two to three students, go to the library to find articles evaluating accounting software packages. Use a periodicals index such as the *Accounting and Tax Index* or the *Business Periodicals Index* to locate these articles. Compare the cost and features of three accounting software packages. As a team, prepare a memorandum to the manager of a small retail business. Compare and contrast the three accounting software packages so the manager might decide which package to purchase. In the memorandum, cite the sources used in gathering the data and properly reference any direct quotes or paraphrasing. The heading of the memorandum should contain the date, to whom it is written, from whom, and the subject matter.

Group project F With a small group of students, go to the library and locate *Statement of Financial Accounting Standards No. 4, "Reporting Gains and Losses from Extinguishing of Debt"*, published by the Financial Accounting Standards Board. Write a report to your instructor giving the highlights of the standard. Why are these gains and losses treated as extraordinary items? Why did the Board act on this topic? Why did one member of the Board dissent?

Group project G With one or two other students, locate the annual reports of three companies and study their statements of stockholders' equity. Determine why the number of common shares outstanding changed (if at all) during the current year. For instance, the number of outstanding shares may have increased due to new

issuances, exercise of stock options, conversion of preferred stock, exercise of warrants, stock dividends, and other causes. The number of shares outstanding may have decreased because of repurchases of stock (treasury stock transactions). Write a report to your instructor presenting your findings. Also be prepared to make a short presentation to your class.

13.21 Using the Internet—A view of the real world

Visit the following website for the General Electric Company:

<http://www.ge.com>

Pursue choices on the screen until you locate the consolidated statement of changes in stockholders' equity. You will probably go down some "false paths" to get to this financial statement, but you can get there. This experience is all part of learning to use the Internet. Trace the changes that have occurred in the last three years in the dividends and other transactions with stockholders. Check out the notes to the financial statements for further information. Write a memo to your instructor summarizing your findings.

Visit the following website for 3M:

<http://www.3m.com>

Pursue choices on the screen until you locate the Financial Section. You will probably go down some "false paths" to get to this information, but you can get there. This experience is all part of learning to use the Internet. Trace the changes that have occurred in the stockholders' equity section for the most recent two years. Identify the causes of the changes. Check out the notes to the financial statements for further information. Write a memo to your instructor summarizing your findings.

13.22 Answers to self-test

13.22.1 True-false

False. The paid-in capital of a corporation only includes capital contributed by stockholders or others. Thus, it does not include retained earnings.

False. The purchase of treasury stock reduces total stockholders' equity.

False. Dividends are distributions of earnings in the past and are not expenses.

True. A stock dividend permanently capitalizes a portion of retained earnings by decreasing retained earnings and increasing paid-in capital by an equal amount.

False. The purpose of a retained earnings appropriation is to disclose that a portion of retained earnings is not available for cash dividends. Thus, such an appropriation does not reduce total stockholders' equity.

False. Such damage occurs too frequently to be considered nonrecurring.

13.22.2

d. Appropriation per Loan Agreement is part of retained earnings.

c. When treasury stock is reacquired, the stock is recorded at cost in a debit-balance stockholders' equity account, Treasury Stock.

a. The excess of the reissue price over the cost of treasury stock is recorded in the Paid-In Capital—Treasury Stock Transactions account.

a. Treasury stock is customarily shown as a deduction from total stockholders' equity.

b. The date of record determines who is to receive the dividends.

c. The total amount of dividends is computed as follows:

Total Outstanding shares at declaration:

(12,000 – 2,000) shares	10,000
Dividend per share	X USD 2
Total dividend amount	USD 20,000

b. Prior period adjustments are shown as adjustments to the opening balance of retained earnings on the statement of retained earnings.

14 Stock investments

14.1 Learning objectives

After studying this chapter, you should be able to:

- Report stock investments and distinguish between the cost and equity methods of accounting for stock investments.
- Prepare journal entries to account for short-term stock investments and for long-term stock
- Prepare journal entries to account for long-term stock investments of 20 percent to 50 percent.
- Describe the nature of parent and subsidiary corporations.
- Prepare consolidated financial statements through the use of a consolidated statement work sheet.
- Describe the uses and limitations of consolidated financial statements.
- Analyze and use the financial results—dividend yield on common stock and payout ratio on common stock.

14.2 The role of accountants in business acquisitions

The number and size of corporate mergers and acquisitions has accelerated at an amazing pace over the last decade. The combination of these sometimes mega-giant corporations, involves complex strategic alliance decisions. The potential rewards of mergers and acquisitions can be enormous—increased market share, broadened product lines, stability for the overall company, strengthened financial position, captured key executive or technical talent, and cost savings. In 1999, Exxon and Mobil merged in an USD 82 billion deal. The companies originally estimated that the merger would save the companies USD 2.8 billion, but by the end of 2002 that number had risen to nearly USD 7 billion.

Not all mergers and acquisitions turn out this well. In fact, many mergers and acquisitions weaken companies (for example, the acquisition of Skype by eBay). Beyond the need to record accounting transactions after the combination,

accountants are now being asked to play an increasing role in business valuation before the combination.

When considering the acquisition of a company, the first question is "Do we really want to go into business with this company?" Target companies may misrepresent their financial position or conceal suspicious behavior in an attempt to maximize their purchase price. Accountants are used by acquirers to scope out the full details of a target's financials, operations, and human assets. Accountants are intimately familiar with accounting practices and recording procedures and therefore are best trained to find financial statement misrepresentations. Discoveries by accountants have canceled many giant mergers and acquisitions.

The second question to consider is "What is the target worth?" The acquiring company generally requires the target company to make available its financial statements. Accounting professionals are asked to interpret the financial statements and other financial data to determine the value of the target. Accounting professionals also understand how accounting numbers translate into firm value and which aspects of firm value are not captured by accounting numbers.

Business acquisitions are commonplace in every industry. The role of accounting professionals in business valuation is essential to the success of the company and represents one of the fastest growing areas in accounting.

Often a large company attempts to take over a smaller company by acquiring a controlling interest (more than 50 percent of the outstanding shares) in that target company. Some of these takeover attempts are friendly (not resisted by the target company), and some are unfriendly (resisted by the target company). If the attempt is successful, the two companies become one business entity for accounting purposes, and consolidated financial statements are prepared. The company that takes over another company is the parent company; the company acquired is the subsidiary company. This chapter discusses accounting for parent and subsidiary companies.

When a corporation purchases the stock of another corporation, the method of accounting for the stock investment depends on the corporation's motivation for making the investment and the relative size of the investment. A corporation's motivation for purchasing the stock of another company may be as: (1) a short-term

investment of excess cash; (2) a long-term investment in a substantial percentage of another company's stock to ensure a supply of a required raw material (for example, when large oil companies invest heavily in, or purchase outright, wildcat oil drilling companies); or (3) a long-term investment for expansion (when a company purchases another profitable company rather than starting a new business operation). On the balance sheet, the first type of investment is a current asset, and the last two types are long-term (noncurrent) investments. As explained in the chapter, the purchaser's level of ownership of the investee company determines whether the investment is accounted for by the cost method or the equity method.

14.3 Cost and equity methods

Investors in common stock can use two methods to account for their investments the cost method or the equity method. Under both methods, they initially record the investment at cost (price paid at acquisition). Under the **cost method**, the investor company does not adjust the investment account balance subsequently for its share of the investee's reported income, losses, and dividends. Instead, the investor company receives dividends and credits them to a Dividends Revenue account. Under the **equity method**, the investor company adjusts the investment account for its share of the investee's reported income, losses, and dividends.

The Accounting Principles Board (the predecessor of the Financial Accounting Standards Board) has identified the circumstances under which each method must be used. This chapter illustrates each of those circumstances. The general rules for determining the appropriate method of accounting follow:

Types of Common Stock Investment	Method of accounting required By accounting principles board in most cases
All short-term investments	Cost
Long-term investments of:	
Less than 20%:	
If no significant influence	Cost
If significant influence	Equity
20% - 50%	Equity
More than 50%	Cost or equity

14.4 Accounting for short-term stock investments and for long-term stock investments of less than 20 percent

Accountants use the **cost method** to account for all short-term stock investments. When a company owns less than 50 percent of the outstanding stock of another company as a long-term investment, the percentage of ownership determines whether to use the cost or equity method. A purchasing company that owns less than 20 percent of the outstanding stock of the investee company, and does not exercise significant influence over it, uses the cost method. A purchasing company that owns from 20 percent to 50 percent of the outstanding stock of the investee company or owns less than 20 percent, but still exercises significant influence over it, uses the **equity method**. Thus, firms use the cost method for all short-term stock investments and almost all long-term stock investments of less than 20 percent. For investments of more than 50 percent, they use either the cost or equity method because the application of consolidation procedures yields the same result.

14.5 Cost method for short-term investments and for long-term investments of less than 20 percent

When a company purchases stock (equity securities) as an investment, accountants must classify the stock according to management's intent. If management bought the security for the principal purpose of selling it in the near term, the security would be a **trading security**. If the stock will be held for a longer term, it is called an **available-for-sale security**. Trading securities are always current assets. Available-for-sale securities may be either current assets or noncurrent assets, depending on how long management intends to hold them. Each classification is accounted for differently. This topic will be discussed later in this chapter.

Securities can be transferred between classifications; however, there are specific rules that must be met for these transfers to be allowed. These rules will be addressed in intermediate accounting. Under the cost method, investors record stock

investments at cost, which is usually the cash paid for the stock. They purchase most stocks from other investors (not the issuing company) through brokers who execute trades in an organized market, such as the New York Stock Exchange. Thus, cost usually consists of the price paid for the shares, plus a broker's commission.

For example, assume that Brewer Corporation purchased as a near-term investment 1,000 shares of Cowen Company's USD 10 par value common stock at USD 14.22 per share, plus a USD 180 broker's commission. Brokers quote most stock prices in dollars and cents. Brewer's entry to record its investment is:

Trading securities [(1,000 shares x \$14.22) + \$180 commission] (-SE)	14,400	
Cash (-A)		14,400
Purchased 1,000 share of Cowen common stock as a near-term investment at 14.22 plus commission.		

Accounting for cash dividends received Investments in stock provide dividends revenue. As a general rule, investors debit cash dividends to Cash and credit Dividends Revenue. The only exception to this general rule is when a dividend declared in one accounting period is payable in the next. This exception allows a company to record the revenue in the proper accounting period. Assume that Cowen declared a USD 1 per share cash dividend on 2010 December 1, to stockholders of record as of December 20, payable on 2011 January 15. Brewer should make the following entry in 2010:

2010			
Dec. 1	Dividends receivable (+A)	1,000	
	Dividends revenue (+SE)		1,000
	To record \$1 per share cash dividend on Cowen common stock, payable 2010 January 15.		

When collecting the dividend on 2011 January 15, Brewer debits Cash and credits Dividends Receivable:

2011			
Jan. 15	Cash (+A)	1,000	
	Dividends receivable (-A)		1,000
	To record the receipt of a cash dividend on Cowen common stock.		

Stock dividends and stock splits As discussed in Chapter 13, a company might declare a stock dividend rather than a cash dividend. An investor does not

recognize revenue on receipt of the additional shares from a stock dividend. The investor merely records the number of additional shares received and reduces the cost per share for each share held. For example, if Cowen distributed a 10 percent stock dividend in February 2011, Brewer, which held 1,000 shares at a cost of USD 14,400 (or USD 14.40 per share), would receive another 100 shares and would then hold 1,100 shares at a cost per share of USD 13.09 (computed as USD 14,400/1,100 shares). Similarly, when a corporation declares a stock split, the investor would note the shares received and the reduction in the cost per share.

FASB Statement No. 115 (1993) governs the subsequent valuation of marketable equity securities accounted for under the fair market value method.¹⁸ Marketable refers to the fact that the stocks are readily saleable; equity securities are common and preferred stocks. The Statement also addresses the subsequent valuation of debt securities. *FASB Statement No. 159* (2007) amends *FASB Statement No. 115* and gives a fair value alternative that allows companies to elect to measure certain items at fair value at a specified date. The subsequent valuation of debt securities will be addressed in intermediate accounting classes.

Company	No. of shares	Cost per Share	Market Price per share 2010/12/31	Total cost	Total market 2007/12/31	Increase/ (decrease) in market value
A	200	\$35	\$40	\$ 7,000	\$ 8,000	\$ 1,000
B	400	10	15	4,000	6,000	2,000
C	100	90	50	9,000	5,000	(4,000)
				\$20,000	\$19,000	\$ (1,000)

Exhibit 31: Stock portfolio of Hanson company

The *FASB Statement* requires that at year-end, companies adjust the carrying value of each of their two portfolios (trading securities and available-for-sale securities) to their fair market value. Fair market value is considered to be the

18 FASB, *Statement of Financial Accounting Standards No. 115*, "Accounting for Certain Marketable Securities" (Stamford, Conn., 1993). Copyright © by the Financial Accounting Standards Board, Stamford, Connecticut 06856, U.S.A. Quoted (or excerpted) with permission. Copies of the complete document are available from the FASB.

19. FASB, *Statement of Financial Accounting Standards No. 159*, "The Fair Value Option for Financial Assets and Financial Liabilities" (Norwalk, Conn., 2007). Copyright © by the Financial Accounting Standards Board, Norwalk, Connecticut 06856, U.S.A.

market price of the securities or what a buyer or seller would pay to exchange the securities. An unrealized holding gain or loss will usually result in each portfolio.

Trading securities To illustrate the application of the fair market value to trading securities, assume that Hanson Company has the securities shown in Exhibit 31 in its trading securities portfolio. Applying the fair market value method reveals that the total fair market value of the trading securities portfolio is USD 1,000 less than its cost. The journal entry required at the end of 2010 is:

2010				
Dec.	31	Unrealized loss on trading securities (-SE)	1,000	
		Trading securities (-A)		1,000
		To record unrealized loss from market decline of trading securities.		

Note that the debit is to the Unrealized Loss on Trading Securities account. This loss is unrealized because the securities have not been sold. However, **the loss is reported in the income statement as a deduction in arriving at net income.** The credit in the preceding entry is to the Trading Securities account so as to adjust its balance to its fair market value. (An unrealized holding gain would be an addition to net income.)

If Hanson sold investment C on 2011 January 1, the company would receive USD 5,000 (assuming no change in market values from the previous day). The loss on the sale results from market changes in 2010 rather than in 2011; the fair market value procedure placed that loss in the proper year. The entry for the sale is:

2011				
Jan.	1	Cash (+A)	5,000	
		Trading securities- Company C Stock (-A)		5,000
				0
		To record sale of Company C Stock.		

No adjustment needs to be made to the unrealized loss account previously debited because the unrealized loss recorded in 2010 has flowed through the income statement and been closed to retained earnings through the closing process.

Available-for-sale securities Assume a marketable equity security that management does not intend to sell in the near term has a cost of USD 32,000 and a current market value on 2010 December 31, of USD 31,000. The treatment of the loss depends on whether it results from a temporary decline in market value of the

stock or a permanent decline in the value. Assume first that the loss is related to a "temporary" decline in the market value of the stock. The required entry is:

2010			
Dec.	31	Unrealized loss on available-for-sale securities (-SE)	1,000
		Available-for-sale securities (-A)	0
		To record unrealized loss from market decline of available-for-sale securities.	1,000

These accounts would appear on the balance sheet as follows:

**Hanson Company
Partial Balance Sheet
2010 December 31**

Investments (or Current Assets)*:	
Available-for-sale securities	\$31,000
Stockholders' equity:	
Capital stock	\$xxx,xxx
Additional paid-in capital	X,xxx
Total paid-in capital	\$xxx,xxx
Less: Unrealized loss on available-for-sale securities	1,000
	\$xxx,xxx
Retained earnings	Xx,xxx
Total stockholders' equity	\$xxx,xxx

*Depending on the length of time management intends to hold the securities.

Note that the unrealized loss for available-for-sale securities appears in the balance sheet as a separate negative component of stockholders' equity rather than in the income statement (as it does for trading securities). An unrealized gain would be shown as a separate positive component of stockholders' equity. An unrealized loss or gain on available-for-sale securities is not included in the determination of net income because it is **not** expected to be realized in the near future. These securities will probably not be sold soon.

The sale of an available-for-sale security results in a realized gain or loss and is reported on the income statement for the period. Any unrealized gain or loss on the balance sheet must be recognized at that time. Assume the stock discussed above is sold on 2011 January 1, for USD 31,000 (assuming no change in market value from the previous day) after the company had held the stock for three years. The entries to record this sale are:

2011			
Jan.	1	Realized loss on available-for-sale securities (-SE)	1,000
		Unrealized loss on available-for-sale securities (+SE)	1,000
		Cash	31,000

The account debited in the first entry shows that the unrealized loss has been realized with the sale of the security; the amount is reported in the income statement. The second entry writes off the security and records the cash received and is similar to the entry for the sale of trading securities.

A loss on an individual available-for-sale security that is considered to be "permanent" is recorded as a realized loss and deducted in determining net income. The entry to record a permanent loss of USD 1,400 reads:

Realized loss on available-for-sale securities (-SE)	1,400	
Available-for-sale securities (-A)		1,400
To record loss in value of available-for-sale securities.		

No part of the USD 1,400 loss is subject to reversal if the market price of the stock recovers. The stock's reduced value is now its "cost". When this stock is later sold, the sale will be treated in the same manner as trading securities. The loss or gain has already been recognized on the income statement. Therefore, the entry would simply record the cash received and write off the security sold for its fair market value. If the market value of the security has fluctuated since the last time the account had been adjusted (end of the year), then an additional gain or loss may have to be recorded to account for this fluctuation.

An accounting perspective:

Business insight

On Pearl Harbor Day, 1941 December 7, the stock market fell from 116.60 to 112.52. The average fell to 92.92 by April 1942. By the end of WWII, the average had risen to 119.40. The average has risen tremendously since that time, although some time in fits and starts. For instance, in 2007 the Dow-Jones Industrial Average broke through the 14,000 barrier. The Dow was back below 7,000 in the spring of 2009 and then rose to over 10,000 by the end of that year. Over the last 60 years, investors have averaged about a 10 percent to

12 percent return annually by investing in the stock market. No one knows what will happen in the future, but many people invest in stocks to try to stay ahead of inflation. You can visit the DJIA site on the Internet at <http://www.dowjones.com> to learn more about the stock market.

14.6 The equity method for long-term investments of between 20 percent and 50 percent

When a company (the **investor**) purchases between 20 percent and 50 percent of the outstanding stock of another company (the investee) as a long-term investment, the purchasing company is said to have significant influence over the investee company. In certain cases, a company may have significant influence even when its investment is less than 20 percent. In either situation, the investor must account for the investment under the equity method.

When using the **equity method** in accounting for stock investments, the investor company must recognize its share of the investee company's income, regardless of whether or not it receives dividends. The logic behind this treatment is that the investor company may exercise influence over the declaration of dividends and thereby manipulate its own income by influencing the investee's decision to declare (or not declare) dividends.

Thus, when the investee reports income or losses, the investor company must recognize its share of the investee's income or losses. For example, assume that Tone Company (the investor) owns 30 percent of Dutch Company (the investee) and Dutch reports USD 50,000 net income in the current year. Under the equity method, Tone makes the following entry as of the end of 2010:

Investment in Dutch Company (+A)	15,000	
Income from Dutch Company ($\$50,000 \times 0.30$) (+SE)		15,000
To record 30% of Dutch Company's Net Income.		

The USD 15,000 income from Dutch would be reported on Tone's 2010 income statement. The investment account is also increased by USD 15,000.

If the investee incurs a loss, the investor company debits a loss account and credits the investment account for the investor's share of the loss. For example, assume Dutch incurs a loss of USD 10,000 in 2011. Since it still owns 30 percent of Dutch, Tone records its share of the loss as follows:

Loss from Dutch Company ($\$10,000 \times 0.30$) (-SE)	3,000	
Investment in Dutch Company (-A)		3,000
To recognize 30% of Dutch Company's loss.		

Tone would report the USD 3,000 loss on its 2011 income statement. The USD 3,000 credit reduces Tone's equity in the investee. Furthermore, because dividends are a distribution of income to the owners of the corporation, if Dutch declares and pays USD 20,000 in dividends, this entry would also be required for Tone:

Cash (+A)		6,000
Investment in Dutch Company ($\$20,000 \times 0.30$) (-A)	6,000	
To record receipt of 30% of dividends paid by Dutch Company.		

Under the equity method just illustrated, the Investment in the Dutch Company account always reflects Tone's 30 percent interest in the net assets of Dutch.

14.7 Reporting for stock investments of more than 50 percent

In recent years, many companies have expanded by purchasing a major portion, or all, of another company's outstanding voting stock. The purpose of such acquisitions ranges from ensuring a source of raw materials (such as oil), to desiring to enter into a new industry, or seeking income on the investment. Both corporations remain separate legal entities, regardless of the investment purpose. In this section, you learn how to account for business combinations.

As stated in the introduction to this chapter, a corporation that owns more than 50 percent of the outstanding voting common stock of another corporation is the **parent company**. The corporation acquired and controlled by the parent company is the **subsidiary company**.

A parent company and its subsidiaries maintain their own accounting records and prepare their own financial statements. However, since a central management controls the parent and its subsidiaries and they are related to each other, the parent company usually must prepare one set of financial statements. These statements, called **consolidated statements**, consolidate the parent's financial statement amounts with its subsidiaries' and show the parent and its subsidiaries as a single enterprise.

According to *FASB Statement No. 94*, consolidated statements must be prepared (1) when one company owns more than 50 percent of the outstanding voting common stock of another company, and (2) unless control is likely to be temporary or if it does not rest with the majority owner (e.g. the company is in legal reorganization or bankruptcy).¹⁹ Thus, almost all subsidiaries must be included in the consolidated financial statements under *FASB Statement No. 94*. Previously, the consolidated statements did not include subsidiaries in markedly dissimilar businesses than those of the parents.

An accounting perspective:

Business insight

Procter & Gamble markets more than 300 brands. Examples include Tide, Ariel, Pantene Pro-V, Pringles, and Folgers. The company's 2000 annual report includes the following information about presentation of subsidiaries and equity investments:

The consolidated financial statements include The Procter & Gamble Company and its controlled subsidiaries (the Company). Investments in companies over which the Company exerts significant influence, but does not control the financial and operating decisions, are accounted for by the equity method.

¹⁹ FASB, *Statement of Financial Accounting Standards No. 94*, "Consolidation of All Majority-Owned Subsidiaries" (Stamford, Conn., 1987), p. 5. Copyright © by the Financial Accounting Standards Board, High Ridge Park, Stamford, Connecticut 06905, U.S.A.

Financial transactions involving a parent and one of its subsidiaries or between two of its subsidiaries are **intercompany transactions**. In preparing consolidated financial statements, parent companies eliminate the effects of intercompany transactions by making **elimination entries**. Elimination entries allow the presentation of all account balances as if the parent and its subsidiaries were a single economic enterprise. Elimination entries appear only on a consolidated statement work sheet, not in the accounting records of the parent or subsidiaries. After elimination entries are prepared, the parent totals the amounts remaining for each account of the work sheet and prepares the consolidated financial statements.

To illustrate the need for elimination entries, assume Y Company formed the Z Company, receiving all of Z Company's USD 100,000 par value common stock for USD 100,000 cash. If the stock of an existing company had been acquired, it would have been purchased from that company's stockholders. The parent records the following entry on its books:

Investment in Z Company (+A)	100,000	
Cash(-A)		100,000
To record an investment in Z Company. Purchased 100% of Z Company stock.		

Z Company, the subsidiary, records the following entry on its books:

Cash (+A)	100,000	
Common stock (+SE)		100,000
To record issuance of all the common stock to Y Company.		

An elimination entry can offset the parent company's subsidiary investment account against the stockholders' equity accounts of the subsidiary. On the consolidated statements work sheet, the required elimination is:

Common stock (Z company) (-SE)	100,000	
Investment in Z Company (-A)		100,000

This elimination is required because the parent company's investment in the stock of the subsidiary actually represents an equity interest in the net assets of the subsidiary. Unless the investment is eliminated, the same resources appear twice on the consolidated balance sheet—first as the investment account of the parent and second as the assets of the subsidiary. By eliminating Z Company's common stock, the parent avoids double counting stockholders' equity. Viewing the two companies

as if they were one, the Z Company common stock is really not outstanding; it is held within the consolidated group.

Consolidated financial statements present financial data as though the companies were a single entity. Since no entity can owe an amount to itself or be due an amount from itself, Z Company must eliminate intercompany receivables and payables (amounts owed to and due from companies within the consolidated group) during the preparation of consolidated financial statements. For example, assume the parent company purchased USD 5,000 of bonds issued by its subsidiary company. Because no debt is owed to or due from any entity outside the consolidated enterprise, Y Company would eliminate those balances by an entry like the following that offsets the Investment in Bonds against the Bonds Payable:

Bonds payable (subsidiary company) (-L)	5,000	
Investment in bonds (parent company) (-A)		5,000
To eliminate intercompany bonds and bond investment.		

**P Company and Subsidiary S Company
Work Sheet for Consolidated balance sheet
2010 January 1 (date of acquisition)**

	P	S	Elimination s	Consolidated	
Assets	Company	Company	Debit	Credit	Amounts
Cash	26,000	12,000			38,000
Notes receivable	5,000			(2) 5,000	
Accounts receivable, net	24,000	15,000			39,000
Merchandise inventory	35,000	30,000			65,000
Investment in S Company	106,000			(1) 106,000	
Equipment, net	41,000	15,000			56,000
Building, net	65,000	35,000			100,000
Land	20,000	10,000			30,000
	322,000	117,000			328,000
Liabilities and stockholders' equity					
Accounts payable	18,000	6,000			24,000
Notes payable		5,000	(2) 5,000		
Common stock	250,000	100,000	(1) 100,000		
Paid-in capital excess of par value - common		4,000	(1) 4,000		
Retained earnings	54,000	2,000	(1) 2,000		
	322,000	117,000	111,000	111,000	328,000

Exhibit 32: Consolidated balance sheet work sheet (stock acquired at book value)

When preparing consolidated statements, the parent would similarly eliminate other intercompany balances.

14.8 Consolidated balance sheet at time of acquisition

A parent company may acquire a subsidiary at its book value or at a cost above or below book value. Also, the parent may acquire 100 percent of the outstanding voting common stock of the subsidiary or some lesser percentage exceeding 50 percent.

To consolidate its assets and liabilities with those of its subsidiaries, a parent company prepares a consolidated statement work sheet similar to the one in Exhibit 32. A **consolidated statement work sheet** is an informal record on which elimination entries are made for the purpose of showing account balances as if the parent and its subsidiaries were a single economic enterprise. The first two columns of the work sheet show assets, liabilities, and stockholders' equity of the parent and subsidiary as they appear on each corporation's balance sheet. The pair of columns labeled Eliminations allows intercompany items to be offset and consequently eliminated from the consolidated statement. The final column shows the amounts that will appear on the consolidated balance sheet.

The work sheet in Exhibit 32 consolidates the accounts of P Company and its subsidiary, S Company, on 2010 January 1. P Company acquired S Company on 2010 January 1, by purchasing all of its outstanding voting common stock for USD 106,000 cash, which was the book value of the stock. Book value is equal to stockholders' equity, or net assets (assets minus liabilities). Thus, common stock (USD 100,000), paid-in capital in excess of par value—common (USD 4,000), and retained earnings (USD 2,000) equal USD 106,000. When P Company acquired the S Company stock, P Company made the following entry in its books:

Investment in S company	106,000	
Cash		106,000
To record investment in S Company.		

The Investment in S Company account appears as an asset on P Company's balance sheet. By buying the subsidiary's stock, the parent acquired a 100 percent

equity, or ownership, interest in the subsidiary's net assets. Thus, if both the investment account and the subsidiary's assets appear on the consolidated balance sheet, the same resources would be counted twice. The Common Stock and Retained Earnings accounts of the subsidiary also represent an equity interest in the subsidiary's assets. Therefore, P's investment in S Company must be offset against S Company's stockholders' equity accounts so that the subsidiary's assets and the ownership interest in these assets appear only once on the consolidated balance sheet. P Company accomplishes this elimination by entry 1 under Eliminations on the work sheet. The entry debits S Company's Common Stock for USD 100,000, Paid-In Capital in Excess of Par Value—Common for USD 4,000, and Retained Earnings for USD 2,000 and credits Investment in S Company for USD 106,000. In journal entry form, the elimination entry made only on the consolidated work sheet is:

Common stock (-SE)	100,000	
Paid-in capital in excess of par value – Common (-SE)	4,000	
Retained earnings (-SE)	2,000	
Investment in S Company (-A)		106,000
To eliminate investment account and subsidiary stockholder's equity.		

Entry 2 eliminates the effect of an intercompany debt. On the date it acquired S Company, P Company loaned S Company USD 5,000. The loan is a USD 5,000 note receivable on P's books and a USD 5,000 note payable on S's books. If the elimination entry is not made on the work sheet, the consolidated balance sheet would show USD 5,000 owed to the consolidated enterprise by itself. From the viewpoint of the consolidated equity, neither an asset nor a liability exists. Therefore, entry 2 on the work sheet eliminates both the asset and liability. The entry debits Notes Payable and credits Notes Receivable for USD 5,000. In general journal form, entry 2 is:

Notes payable (-L)	5,000	
Notes receivable (-A)		5,000
To eliminate intercompany payable and receivable.		

Note that P Company makes elimination entries only on the consolidated statement work sheet; no elimination entries appear in the accounting records of

either P Company or S Company. P Company uses the final work sheet column to prepare the consolidated balance sheet.

An accounting perspective:

Uses of technology

Computer applications have greatly simplified the preparation of consolidated work sheets. Spreadsheet programs in particular expedite the process of constructing consolidated financial statements.

In the previous example, P Company acquired 100 percent of S Company at a cost equal to book value. In some cases, firms acquire subsidiaries at a cost greater than or less than book value. For example, assume P Company purchased 100 percent of S Company's outstanding voting common stock for USD 125,000 (instead of USD 106,000). The book value of this stock is USD 106,000. Cost exceeds book value by USD 19,000. P Company's management may have paid more than book value because (1) the subsidiary's earnings prospects justify paying a price greater than book value or (2) the total fair market value of the subsidiary's assets exceeds their total book value.

Where cost exceeds book value because of expected above-average earnings, the investor labels the excess goodwill on the consolidated balance sheet. **Goodwill** is an intangible value attached to a business primarily due to above-average earnings prospects (as discussed in Chapter 11). On the other hand, if the excess is attributable to the belief that assets of the subsidiary are undervalued, then the investor increases the asset values on the consolidated balance sheet to the extent of the excess. In Exhibit 33, USD 4,000 is due to the undervaluation of land owned by the company, and the remaining USD 15,000 of the excess of cost over book value is due to expected above-average earnings. As a result, P Company adds USD 4,000 of the USD 19,000 excess to Land, and identifies the other USD 15,000 as Goodwill on the work sheet (Exhibit 33) and on the balance sheet (Exhibit 34).

P Company establishes Goodwill as part of the first elimination entry. Elimination entry 1 in Exhibit 33 involves debits to the subsidiary's Common Stock for USD 100,000, Paid-In Capital in Excess of Par Value—Common for USD 4,000, Retained Earnings for USD 2,000, Land for USD 4,000, and Goodwill for USD 15,000, and a credit to Investment in S Company for USD 125,000. In journal form, entry 1 is:

Common stock (-SE)	100,000	
Paid-in capital in excess of par value – common (-SE)	4,000	
Retained earnings (-SE)	2,000	
Land (+A)	4,000	
Goodwill (+A)	15,000	
Investment in S Company (-A)		125,000
To eliminate investment and subsidiary stockholder's equity and to establish increased value of land and goodwill.		

Entry 2 is the same as elimination entry 2 in Exhibit 32. Entry 2 eliminates the intercompany loan by debiting Notes Payable and crediting Notes Receivable for USD 5,000.

After these elimination entries are made, the company consolidates and extends the remaining amounts to the Consolidated Amounts column. It uses the amounts in this column to prepare the consolidated balance sheet in Exhibit 34. Notice that the firm carries the USD 15,000 debit to Goodwill to the Consolidated Amounts column and lists it as an asset in the consolidated balance sheet.

As noted earlier, a company may purchase all or part of another company at more than book value and create goodwill on the consolidated balance sheet. *FASB Statement No. 142* (2001) requires goodwill to be recorded at acquisition cost and to remain at this amount until there is evidence of impairment. We leave a discussion of this topic to a more advanced text.

Under some circumstances, a parent company may pay less than book value of the subsidiary's net assets. In such cases, it is highly unlikely that a bargain purchase has been made. The most logical explanation is that some of the subsidiary's assets are overvalued. Firms use the excess of book value over cost to reduce proportionately the value of the noncurrent assets acquired (except long-term investments in marketable securities). If noncurrent assets are reduced to zero, the remaining dollar amount is a deferred credit entitled, Excess of Fair Value Over Cost of Assets Acquired.

**P Company and Subsidiary S Company
Work Sheet for consolidation balance sheet
2010 January 1 (date of acquisition)**

Assets	P Company	S Compan y	Elimination S Debit	Credits	Consolidated Amounts
Cash	7,000	12,000			19,000
Notes receivable	5,000			(2) 5,000	
Accounts receivable, net	24,000	15,000			39,000
Merchandise inventory	35,000	30,000			65,000
Investment in S Company	125,000			(1) 125,000	
Equipment, net	41,000	15,000			56,000
Building, net	65,000	35,000			100,000
Land	20,000	10,000	(1) 4,000		34,000
Goodwill			(1) 15,000		15,000
	322,000	117,000			328,000
Liabilities and stockholders' equity					
Accounts payable	18,000	6,000			24,000
Notes payable		5,000	(2) 5,000		
Common stock	250,000	100,000	(1) 100,000		250,000
Paid-in capital excess of par value – common		4,000	(1) 4,000		-0-
Retained earnings	54,000	2,000	(1) 2,000		54,000
	322,000	117,000	130,000	130,000	328,000

Exhibit 33: Consolidated balance sheet work sheet (stock acquired at more than book value)

Sometimes a parent company acquires less than 100 percent of the outstanding voting common stock of a subsidiary. For example, assume P Company acquired 80 percent of S Company's outstanding voting common stock. P Company is the majority stockholder, but another group of stockholders owns the remaining 20 percent of the stock. Stockholders who own less than 50 percent of a subsidiary's outstanding voting common stock are minority stockholders, and their claim or interest in the subsidiary is the **minority interest**. Minority stockholders have an interest in the subsidiary's net assets and share the subsidiary's income or loss with the parent company.

Look at Exhibit 35, which shows the elimination entries required when P Company purchases 80 percent of S Company's stock for USD 90,000. The book value of the stock acquired by P Company is USD 84,800 (80 percent of USD

106,000). Assuming no assets are undervalued, P Company attributes the excess of cost (USD 90,000) over book value (USD 84,800) of USD 5,200 to S Company's above-average earnings prospects (goodwill).

Elimination entry 1 eliminates S Company's stockholders' equity by debiting Common Stock for USD 100,000, Paid-In Capital in Excess of Par Value—Common for USD 4,000, and Retained Earnings for USD 2,000. To establish minority interest, it credits a Minority Interest account for USD 21,200 (20 percent of USD 106,000). P Company eliminates the investment account by crediting Investment in S Company for USD 90,000. The USD 5,200 debited to Goodwill makes the debits equal the credits. In journal form, the elimination entry 1 is:

**P Company and Subsidiary S Company
Consolidation balance sheet
2010 January 1**

Assets		
Current assets:		
Cash	\$19,000	
Accounts receivable, net	39,000	
Merchandise inventory	65,000	
Total current assets		\$123,000
Property, plant, and equipment:		
Equipment, net	\$56,000	
Building, net	100,000	
Land	34,000	
Total property, plant, and equipment		190,000
Goodwill		15,000
Total assets		\$328,000
Liabilities and stockholders' equity		
Current liabilities:		
Account payable		\$24,000
Stockholders' equity:		
Common stock	\$250,000	
Retained earnings	54,000	
Total stockholders' equity		304,000
Total liabilities and stockholders equity		\$328,000

Exhibit 34: Consolidated balance sheet

Common stock (-SE)	100,000	
Paid-in capital in excess of par value – Common (-SE)	4,000	
Retained earnings (-SE)	2,000	
Goodwill (+A)	5,200	
Investment in S Company (-A)		90,000
Minority interest (+L)		21,200
To eliminate investment and subsidiary stockholder's equity and to establish minority interest and goodwill.		

Elimination entry 2 is the same as shown in Exhibit 32. The entry eliminates intercompany debt by debiting Notes Payable and crediting Notes Receivable for USD 5,000.

On the consolidated balance sheet (Exhibit 36), minority interest appears between the liabilities and stockholders' equity sections.

14.9 Accounting for income, losses, and dividends of a subsidiary

When a subsidiary is operating profitably, its net assets and retained earnings increase. The subsidiary pays dividends to both the parent company and minority stockholders. The subsidiary records all transactions in its accounting records in a normal manner.

As noted earlier, two different methods used by an investor to account for investments in common stock are the cost and equity methods. A parent company may use either the cost or equity method of accounting for its investment in a consolidated subsidiary. This choice is allowed because the investment account is eliminated during the consolidation process; therefore, the results are identical after consolidation. To illustrate the consolidation process at a date after acquisition, we assume the parent company uses the equity method.

**P Company and Subsidiary S Company
Work Sheet for consolidated balance sheet
2010 January 1 (date of acquisition)**

Assets	P Company	S Company	Eliminations Debit	Credit	Consolidated Amounts
Cash	42,000	12,000			54,000
Notes receivable	5,000			(2) 5,000	
Accounts receivable, net	24,000	15,000			39,000
Merchandise inventory	35,000	30,000			65,000
Investment in S Company	90,000			(1) 90,000	
Equipment, net	41,000	15,000			56,000
Building, net	65,000	35,000			100,000
Land	20,000	10,000			30,000
Goodwill			(1) 5,200		5,200
	322,000	117,000			349,200
Liabilities and stockholders' equity					
Accounts payable	18,000	6,000			24,000
Notes payable		5,000	(2) 5,000		
Common stock	250,000	100,000	(1) 100,000		
Paid-in capital excess Of par value- common		4,000	(1) 4,000		-0-
Retained earnings	54,000	2,000	(1) 2,000		54,000
Minority interest				(1) 21,200	21,200
	322,000	117,000	116,200	116,200	349,200

Exhibit 35: Consolidated balance sheet work sheet (80 percent of stock acquired at more than book value)

14.10 Consolidated financial statements at a date after acquisition

Under the equity method, the investment account on the parent company's books increases and decreases as the parent records its share of the income, losses, and dividends reported by the subsidiary. Thus, the balance in the investment account differs after acquisition from its balance on the date of acquisition. Consequently, the amounts eliminated on the consolidated statements work sheet differ from year to year. As an illustration, assume the following facts:

- P Company acquired 100 percent of the outstanding voting common stock of S Company on 2010 January 1. P Company paid USD 121,000 for stockholders' equity totaling USD 106,000. The excess of cost over book value is attributable to (a) an undervaluation of land amounting to USD 4,000 and (b) the remainder to S Company's above-average earnings prospects.
- During 2010, S Company earned USD 20,000 from operations.

- On 2010 December 31, S Company paid a cash dividend of USD 8,000.
- S Company owes P Company USD 5,000 on a note at December 31.
- Including its share (100 percent) of S Company's income, P Company earned USD 31,000 during 2010.
- P. Company paid a cash dividend of USD 10,000 during December 2010.
- P Company uses the equity method of accounting for its investment in S Company.

**P Company and Subsidiary S Company
Consolidation Balance Sheet
2010 January 1**

Assets			
Current assets:			
Cash		\$ 54,000	
Accounts receivable, net		39,000	
Merchandise inventory		65,000	
Total current assets			\$158,000
Property, plant, and equipment:			
Equipment, net		\$ 56,000	
Building, net		100,000	
Land		30,000	
Total property, plant, and equipment			186,000
Goodwill			5,200
Total assets			\$349,200
Liabilities and stockholders' equity			
Current liabilities:			
Account payable			24,000
Minority interest			21,200
Stockholders' equity:			
Common stock		\$250,000	
Retained earnings		54,000	
Total stockholders' equity			304,000
Total liabilities and stockholders equity			\$349,200

Exhibit 36: Consolidated balance sheet

The financial statements for the two companies as of 2010 December 31, are in the first two columns of Exhibit 37.

The work sheet shown in Exhibit 37 allows us to prepare a consolidated income statement, statement of retained earnings, and balance sheet. Notice that in Exhibit 37, P Company has a balance of USD 20,000 in its Income of S Company account and a balance of USD 133,000 in its Investment in S Company account. These balances are the result of the following journal entries made by P Company in 2010:

2010			
Jan. 1	Investment in S Company (+A)	121,000	
	Cash (-A)		121,000
	To record 100% investment in subsidiary.		

Dec. 31	Investment in S Company (+A) Income in S Company (+SE) To record income of subsidiary.	20,000	20,000
31	Cash (+A) Investment in S Company (-A) To record dividends received from subsidiary.	8,000	8,000

The explanations for the elimination entries on the work sheet in Exhibit 37 are as follows:

Entry 1: During the year, S Company earned USD 20,000. P Company increased its investment account balance by USD 20,000. Entry 1 on the work sheet eliminates the subsidiary's income from the Investment in S Company account and the Income of S Company account (USD 20,000). This entry reverses the entry made on the books of P Company to recognize the parent's share of the subsidiary's income (the first December 31 journal entry).

**P Company and Subsidiary S Company
Work Sheet for Consolidated Balance Sheet
2010 December 31**

	P	S	Elimination		Consolidated
Income Statement	Company	Company	Debit	Credit	Amounts
Revenue from sales	397,000	303,000			700,000
Income of S Company	20,000		(1) 20,000		
Cost of goods sold	(250,000)	(180,000)			(430,000)
Expenses (excluding depreciation and taxes)	(100,000)	(80,000)			(180,000)
Depreciation expense	(7,400)	(5,000)			(12,400)
Federal income tax expense	(28,600)	(18,000)			(46,000)
Net income, carried forward	31,000	20,000			31,000*
Statement of Retained Earnings					
Retained earnings – January 1:					
P Company	54,000				54,000
S Company		6,000	(3) 6,000		
Net income brought forward	31,000	20,000			31,000*

	85,000	26,000			85,000*
Dividends:					
P Company	(10,000)				(10,000)
S Company		(8,000)		(2) 8,000	
Retained earnings – Dec. 31 carried forward	75,000	18,000			75,000*
Balance sheet assets					
Cash	38,000	16,000			54,000
Notes receivable	5,000			(4) 5,000	
Accounts receivable, net	25,000	18,000			43,000
Merchandise inventory	40,000	36,000			76,000
Investment in S Company	133,000		(2) 8,000	(3) 121,000	
				(1) 20,000	
Equipment, net	35,900	12,000			48,900
Building, net	61,700	33,000			94,700
Land	20,000	10,000	(3) 4,000		34,000
Goodwill			(3) 11,000		11,000
	359,600	125,000			361,600*
Liabilities and stockholders' equity					
Accounts payable	19,600	2,000			21,600
Notes payable	15,000	5,000	(4) 5,000		15,000
Common stock	250,000	100,000	(3) 100,000		250,000
Retained earnings	75,000	18,000			75,000*
	359,000	125,000	154,000	154,000	361,600*

*Totals are determined vertically, not horizontally

Exhibit 37: Consolidated work sheet one year after acquisition

Entry 2: When S Company paid its cash dividend, P Company debited Cash and credited the investment account for USD 8,000 (the second December 31 journal entry). Entry 2 restores the investment account to its balance before the dividends from S Company were deducted. That is, P Company debits its investment account and credits S Company's dividends account for USD 8,000. On a consolidated basis, a company cannot pay a dividend to itself.

Entry 3: Entry 3 eliminates the original investment account balance (USD 121,000) and the subsidiary's stockholders' equity accounts as of the date of acquisition (retained earnings of USD 6,000 and common stock of USD 100,000). The entry also establishes goodwill of USD 11,000 and increases land by USD 4,000 to account for the excess of acquisition cost over book value.

Entry 4: Entry 4 eliminates the intercompany debt of USD 5,000.

After the first three entries have been made, the investment account contains a zero balance from the viewpoint of the consolidated entity.

After making the eliminations, P Company combines the corresponding amounts and places them in the Consolidated Amounts column. Notice that certain totals in the first two columns do not add across to the total in the Consolidated Amounts column. For instance, consolidated net income is USD 31,000, not USD 31,000 plus USD 20,000. The firm carries the net income row in the Income Statement section forward to the net income row in the Statement of Retained Earnings section. Likewise, it carries the ending retained earnings row in the Statement of Retained Earnings section forward to the retained earnings row in the Balance Sheet section. P Company uses the final work sheet column to prepare the consolidated income statement (Exhibit 38), the consolidated statement of retained earnings (Exhibit 39), and the consolidated balance sheet (Exhibit 40).

14.11 Uses and limitations of consolidated statements

Consolidated financial statements are of primary importance to stockholders, managers, and directors of the parent company. The parent company benefits from the income and other financial strengths of the subsidiary. Likewise, the parent company suffers from a subsidiary's losses and other financial weaknesses.

Consolidated financial statements are of limited use to the creditors and minority stockholders of the subsidiary. The subsidiary's creditors have a claim against the subsidiary alone; they cannot look to the parent company for payment. Minority stockholders in the subsidiary do not benefit or suffer from the parent company's operations. These minority stockholders benefit from the subsidiary's income and financial strengths; they suffer from the subsidiary's losses and financial weaknesses. Thus, the subsidiary's creditors and minority stockholders are more interested in the

subsidiary's individual financial statements than in the consolidated statements. Because of these factors, annual reports always include the financial statements of the consolidated entity, and sometimes include the financial statements of certain subsidiary companies alone, but never include the parent company's financial statements alone.

14.12 Analyzing and using the financial results— Dividend yield on common stock and payout ratios

Investors often search for stock that fulfills their needs. To locate this stock, potential stockholders may use the dividend yield on common stock ratio or the payout ratio on common stock. To demonstrate these ratios, consider the 2000 annual report of Tyco International.

P Company and Subsidiary S Company	
Consolidated Income Statement	
For the year ended 2010 December 31	
Revenue from sales	\$700,000
Cost of goods sold	430,000
Gross margin	\$270,000
Expenses (excluding depreciation and taxes)	\$180,000
	0
Depreciation expense	12,400
Federal income tax expense	46,600
Net sales	239,000
	\$31,000

Exhibit 38: Consolidated income statement

P Company and Subsidiary S Company	
Consolidated statement of Retained Earnings	
For the Year Ended 2010 December 31	
Retained earnings, 2010 January 1	\$54,000
Net income	31,000
Subtotal	\$85,000
Dividends	10,000
Retained earnings, 2010 December 31	\$75,000

Exhibit 39: Consolidated statement of retained earnings

P Company and Subsidiary S Company	
Consolidation Balance Sheet	
2010 December 31	

Assets		
Current assets:		
Cash	\$54,000	
Accounts receivable, net	43,000	
Merchandise inventory	76,000	
Total current assets		\$173,000
Property, plant, and equipment:		
Equipment, net	\$48,900	
Building, net	94,700	
Land	34,000	
Total property, plant, and equipment		177,600
Goodwill		11,000
Total assets		\$361,600
Liabilities and stockholders' equity		
Current liabilities:		
Account payable	\$21,600	
Notes payable	15,000	
Total liabilities		\$36,600
Stockholders' equity:		
Common stock	\$250,000	
Retained earnings	75,000	
Total stockholders' equity		325,000
Total liabilities and stockholders equity		\$361,600

Exhibit 40: Consolidated balance sheet (one year after acquisition)

	2000	1999
Dividend per share of common stock	\$ 0.05	\$ 0.05
Current market price per share	53.81	50.25
Earnings per share	2.68	0.62

Investors use the **dividend yield on common stock ratio** as a tool to compare stocks. Some investors favor stocks with a high dividend yield ratio and a high payout ratio. Other investors would rather have the corporation retain more of the funds and use them to attempt to increase future earnings and the market price of the stock. The formula for the dividend yield on common stock ratio is:

$$\text{Dividend yield on common stock ratio} = \frac{\text{Dividend per share of common stock}}{\text{Current market price per share}}$$

For Tyco, the dividend yield on common stock ratios are:

2003: USD 0.05/USD 53.81 = .09 percent

2002: USD 0.05/USD 50.25 = .10 percent

To determine the relevance of this ratio, an investor compares these numbers to ratios calculated on other stocks.

Investors calculate the **payout ratio on common stock** as follows:

$$\text{Payout ratio on common stock} = \frac{\text{Dividend per share of common stock}}{\text{Earnings per share (EPS)}}$$

This ratio indicates whether a company pays out a large percentage of earnings as dividends or reinvests most of its earnings. When computing the payout ratio, remember that negative earnings per share result in an invalid calculation. Tyco's payout ratios are:

2003: $\text{USD } 0.05 / \text{USD } 2.68 = 1.87$ percent

2002: $\text{USD } 0.05 / \text{USD } 0.62 = 8.06$ percent

Now that you have studied consolidated financial statements, you should realize the importance of presenting a complete picture of the business operations of a company. In Chapter 15 you learn about long-term financing, its advantages and disadvantages, and how bonds differ from stocks.

14.12.1 Understanding the learning objectives

- Under the cost method, the investor company records its investment at the price paid at acquisition and does not adjust the investment account balance subsequently. The cost method is used for all short-term investments, long-term investments of less than 20 percent where the purchasing company does not exercise significant influence over the investee company, and may be used for long-term investments of more than 50 percent.

- Under the equity method, the investment is also initially recorded at acquisition price but is then adjusted periodically for the investor company's share of the investee's reported income, losses, and dividends. The equity method is used for all long-term investments of between 20 percent and 50 percent and may be used for investments of more than 50 percent. This method is also used for investments of less than 20 percent if the purchasing company exercises significant influence over the investee company.

- Under the cost method, the initial investment is debited to either Trading Securities or Available-for-Sale Securities, depending on whether the investment is a near-term or longer-term investment.

- At the end of each accounting period, the company must adjust the carrying value of each investment. The fair market value method is applied independently to each of these portfolios.

- Under the cost method, dividends received are credited to Dividend Revenue.

- Under the equity method, the initial investment is debited to an Investment in (Company Name) account. Income, losses, and dividends result in increases or decreases to the investment account.
- The equity method must be used for long-term investments of 20 percent to 50 percent and for long-term investments of less than 20 percent where significant influence is present.
- The initial investment is debited to an Investment in (Company Name) account. The purchasing company's share of the investee's income is debited to the investment account, and the purchaser's share of the investee's losses and dividends is credited to the investment account as they are reported by the investee.
- A corporation that owns more than 50 percent of the outstanding voting common stock of another corporation is called the parent company.
- The corporation acquired and controlled by the parent company is known as the subsidiary company.
- A parent company and its subsidiaries maintain their own accounting records and prepare their own financial statements, but the parent company must also prepare consolidated financial statements. The consolidated financial statements consolidate the financial results of the parent and subsidiaries as a single enterprise.
- Consolidated financial statements must be prepared (1) when one company owns more than 50 percent of the outstanding voting stock of another company and (2) unless control is likely to be temporary or if it does not rest with the majority owner.
- In preparing consolidated financial statements, the effects of intercompany transactions must be eliminated by making elimination entries. Elimination entries are made only on a consolidated statement work sheet, not in the accounting records of either company.
- One elimination entry offsets the parent company's subsidiary investment account against the stockholders' equity accounts of the subsidiary. Intercompany receivables and payables also must be eliminated.

- A consolidated financial statements work sheet is an informal record in which elimination entries are made for the purpose of showing account balances as if the parent and its subsidiaries were a single economic enterprise.

- A consolidated balance sheet work sheet is prepared at the time of acquisition. The first two columns of the work sheet show assets, liabilities, and stockholders' equity of the parent and subsidiary as they appear on each corporation's individual balance sheet. The next pair of columns shows the eliminations. The final column shows the amounts that appear on the consolidated balance sheet.

- A consolidated work sheet is prepared at various dates after acquisition. The first two columns show the income statements, statements of retained earnings, and balance sheets of the parent and subsidiary. The next pair of columns shows the eliminations. The final column shows the amounts that appear in the consolidated financial statements.

- Consolidated financial statements are of primary importance to stockholders, managers, and directors of the parent company. On the other hand, consolidated financial statements are of limited use to the creditors and minority stockholders of the subsidiary.

- Dividend yield on common stock ratio = $\frac{\text{Dividend per share of common stock}}{\text{Current market price per share}}$

- This ratio helps investors to compare stocks.

- Payout ratio on common stock = $\frac{\text{Dividend per share of common stock}}{\text{Earnings per share (EPS)}}$

- This ratio indicates whether a company pays out a large percentage of earnings as dividends or reinvests most of its earnings.

14.12.2 Demonstration problem

Demonstration problem A Following are selected transactions and other data for Kelly Company for 2010:

Mar. 21 Purchased 600 shares of Sly Company common stock at USD 48.75 per share, plus a USD 450 broker's commission. Also purchased 100 shares of Rob Company common stock at USD 225 per share, plus a USD 376 broker's commission. Both investments are expected to be temporary.

June 2 Received cash dividends of USD 1.50 per share on the Sly common shares and USD 3 per share on the Rob common shares.

Aug. 12 Received shares representing a 100 percent stock dividend on the Rob shares.

30 Sold 100 shares of Rob common stock at USD 120 per share, less a USD 360 broker's commission.

Sept. 15 Received shares representing a 10 percent stock dividend on the Sly common stock. Market price today was USD 52.50 per share.

Dec. 31 Per share market values for the two investments in common stock are Sly, USD 45.75, and Rob, USD 106.50. Both investments are considered temporary.

Prepare journal entries to record these transactions and the necessary adjustments for a December 31 closing.

Demonstration problem B Lanford Company acquired all of the outstanding voting common stock of Casey Company on 2010 January 2, for USD 300,000 cash. After the close of business on the date of acquisition, the balance sheets for the two companies were as follows:

	Lanford Company	Casey Company
Assets		
Cash	\$75,000	\$30,000
Accounts receivable, net	90,000	37,700
Notes receivable	15,000	7,750
Merchandise inventory	112,500	45,000
Investment in Casey Company	300,000	
Investment in bonds		30,000
Plant and equipment, net	303,000	195,000
Total assets	\$895,500	\$345,000
Liabilities and stockholders' equity		
Accounts payable	\$ 75,000	\$ 45,000
Notes payable	22,500	15,000
Bonds payable	225,000	
Common stock - \$.50 par value	300,000	150,000
Paid-in capital excess of par value – common		60,000
Retained earnings	273,000	75,000
Total liabilities and stockholders' equity	\$895,500	\$345,000

On 2010 January 2, Casey Company borrowed USD 15,000 from Lanford Company by giving a note. On that same day, Casey Company purchased USD 30,000 of Lanford Company's bonds. The excess of cost over book value is attributable to Casey Company's above-average earnings prospects.

Prepare a work sheet for a consolidated balance sheet on the date of acquisition.

Solution to demonstration problem A

2010				
Mar.	21	Trading securities (+A)	52,576	
		Cash (-A)		52,576
		To record purchase of 600 shares of Sly common stock for \$29,700 and 100 of Rob common stock for \$22,876		
June	2	Cash (+A)	1,200	
		Dividend revenue (+SE)		1,200
		To record cash dividends: \$900 Sly and \$300 Rob.		
Aug.	12	Received 100 shares of Rob common stock as a 100% stock dividend. The new cost per share is \$22,876/200 shares = \$114.38		
	30	Cash (+A)	11,640	
		Trading securities (-A)		11,438
		Gain on sale of trading securities (+SE)		202
		To record the sale of trading securities: Proceeds = \$12,000 - \$360; cost = \$114.38 x 100 shares.		
Sept.	15	Received 60 shares of Sly common stock as a 10% stock dividend. New cost per share is \$29,700/660 shares = \$45.		
Dec.	31	Unrealized loss on trading securities (-SE)	293	
		Trading securities (-A)		293
		To write trading securities down to market value.		

	Cost	Market	Inc. (Dec.) in marketable value
Sly common stock	\$29,700	\$30,195*	\$495
Rob common stock	11,438	10,650†	(788)
Total	\$41,138	\$40,845	\$(293)

* \$45.75 x 660 shares = \$30,195.

† \$106.50 x 100 shares = \$10,650.

Solution to demonstration problem B

Landford Company and Subsidiary Casey Company Work Sheet for Consolidation Balance Sheet 2010 January 2 (date of acquisition)

	P	S	Eliminations		Consolidate
Assets	Company	Company	Debit	Credit	Amounts
Cash	75,000	30,000			105,000
Accounts receivable, net	90,000	37,500			127,500
Notes receivable	15,000	7,500		(2) 15,000	7,500
Merchandise inventory	112,500	45,000			157,500
Investment in Casey Company	300,000			(1) 300,000	-0-
Investment in bonds		30,000		(3) 30,000	-0-
Plant and equipment, net	303,000	195,000			498,000

Goodwill			(1) 15,000		15,000
	895,500	345,000			910,500
Liabilities and stockholders' equity					
Accounts payable	75,000	45,000			120,000
Notes payable	22,500	15,000	(2) 15,000		22,500
Bonds payable	225,000		(3) 30,000		195,000
Common stock	300,000	150,000	(1) 150,000		300,000
Paid-in capital excess of par value – Common		60,000	(1) 60,000		-0-
Retained earnings	273,000	75,000	(1) 75,000		273,000
	895,500	345,000	345,000	345,000	910,500

14.13 Key terms

Available-for-sale securities Securities purchased that will be held for longer than the near term.

Consolidated statements The financial statements that result from consolidating the parent's financial statement amounts with those of its subsidiaries (after certain eliminations have been made). The consolidated statements reflect the financial position and results of operations of a single economic enterprise.

Consolidated statement work sheet An informal record on which elimination entries are made to show account balances as if the parent and its subsidiaries were a single economic enterprise.

Cost method A method of accounting for stock investments in which the investor company does not adjust the investment account balance for its share of the investee's reported income, losses, and dividends. Dividends received are credited to Dividends Revenue.

Dividend yield on common stock ratio Equal to dividend per share of common stock divided by the current market price per share. Investors use this ratio to compare stocks.

Elimination entries Entries made on a consolidated statement work sheet to remove certain intercompany items and transactions. Elimination entries allow the presentation of all account balances as if the parent and its subsidiaries were a single economic enterprise.

Equity method A method of accounting for stock investments where the investment account is adjusted periodically for the investor company's share of the investee's income, losses, and dividends as they are reported by the investee.

Goodwill An intangible value attached to a business primarily due to above-average earnings prospects.

Intercompany transactions Financial transactions involving a parent and one of its subsidiaries or between two of the subsidiaries.

Investee A company that has 20 percent to 50 percent of its stock purchased by another company (the investor) as a long-term investment.

Investor A company that purchases 20 percent to 50 percent of another company (the investee) as a long-term investment.

Marketable equity securities Readily saleable common and preferred stocks of other companies.

Minority interest The claim or interest of the stockholders who own less than 50 percent of a subsidiary's outstanding voting common stock. The minority stockholders have an interest in the subsidiary's net assets and share the subsidiary's earnings with the parent company.

Parent company A corporation that owns more than 50 percent of the outstanding voting common stock of another corporation.

Payout ratio on common stock Calculated by dividing dividend per share of common stock by earnings per share (EPS). The ratio indicates whether a company pays out a large percentage of earnings as dividends or reinvests most of its earnings.

Subsidiary company A corporation acquired and controlled by a parent corporation; control is established by ownership of more than 50 percent of the subsidiary's outstanding voting common stock.

Trading securities Securities bought principally for sale in the near term.

14.14 Self-test

True-false

Indicate whether each of the following statements is true or false.

Under the cost method, the investment account is adjusted when dividends are received.

The cost method should be used when a corporation makes a long-term investment of less than 20 percent, and there is no significant control.

In a stock split, the investor does not recognize revenue, but reduces the cost per share of stock.

Trading securities and available-for-sale securities should be grouped separately in applying the fair market value rules.

When making elimination entries, the entries are made only on the consolidated statements work sheet and not on the accounting records of the parent and subsidiary.

Multiple-choice

Select the best answer for each of the following questions.

In which of the following cases is the investor company limited to use of the equity method in accounting for its stock investments?

- a. Short-term investments.
- b. Long-term investments of less than 20 percent.
- c. Long-term investments of 20 percent—50 percent.
- d. Long-term investments of more than 50 percent.

Under the equity method, which of the following is true?

- a. Dividends received reduce the investment account.
- b. Dividends received increase the investment account.
- c. The investor's share of net income decreases the investment account.
- d. The investor's share of net loss increases the investment account.

When the fair market value rules are followed, which of the following is true when the market value of the stocks in the Trading Securities account falls below their cost?

- a. The Unrealized Losses on Trading Securities account is credited.
- b. The Recovery of Market Value of Trading Securities account is credited.
- c. The Allowance for Market Decline of Current Marketable Equity Securities is debited.
- d. The Unrealized Loss on Trading Securities is debited.

Under the equity method, the investment account always reflects only the:

- a. Dividends paid by the investee corporation.
- b. Investor's interest in the net assets of the investee.
- c. Investor's share of net income.
- d. Historical cost of the investment.

The excess of cost over the book value of an investment that is due to expected above-average earnings is labeled on the consolidated balance sheet as:

- a. Goodwill.
- b. Common stock.
- c. Retained earnings.
- d. Loss on investment.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

Questions

- For what reasons do corporations purchase the stock of other corporations?
- Explain how marketable securities should be classified in the balance sheet.
- Describe the valuation bases used for marketable equity securities.
- Under what circumstances is the equity method used to account for stock investments?
- Explain briefly the accounting for stock dividends and stock splits from the investor's point of view.
- Of what significance is par value to the investing corporation?
- What is the purpose of preparing consolidated financial statements?
- Under what circumstances must consolidated financial statements be prepared?
- Why is it necessary to make elimination entries on the consolidated statement work sheet? Are these elimination entries also posted to the accounts of the parent and subsidiary? Why or why not?
- Why might a corporation pay an amount in excess of the book value for a subsidiary's stock? Why might it pay an amount less than the book value of the subsidiary's stock?
- The item Minority interest often appears as one amount in the consolidated balance sheet. What does this item represent?
- How do a subsidiary's earnings, losses, and dividends affect the investment account of the parent when the equity method of accounting is used?
- Why are consolidated financial statements of limited usefulness to the creditors and minority stockholders of a subsidiary?

14.15 Exercises

Exercise A On 2010 July 1, Tam Company purchased 200 shares of Del Company capital stock as a temporary investment (trading securities) at USD 676.80 per share plus a commission of USD 720. On July 15, a 10 percent stock dividend was received. Tam received a cash dividend of USD 3.60 per share on 2010 August 12. On November 1, Tam sold all of the shares for USD 835.20 per share, less a commission of USD 720. Prepare entries to record all of these transactions in Tam Company's accounts.

Exercise B Key Company purchased 200 shares of Franklin Company stock at a total cost of USD 7,560 on 2010 July 1. At the end of the accounting year (2010 December 31), the market value for these shares was USD 6,840. By 2011 December 31, the market value had risen to USD 7,920. This stock is the only marketable equity security that Key Company owns. The company classifies the securities as trading securities. Give the entries necessary at the date of purchase and at 2010 December 31, and 2011.

Exercise C Corbit Company has marketable equity securities that have a fair market value at year-end that is USD 13,440 below their cost. Give the required entry if:

- a. The securities are current assets classified as trading securities.
- b. The securities are noncurrent assets classified as available-for-sale securities, and the loss is considered to be temporary.
- c. The securities are noncurrent assets classified as available-for-sale securities, and the loss is considered to be permanent.

State where each of the accounts debited in (a), (b), and (c) would be reported in the financial statements.

Exercise D Ruiz Company owns 75 percent of Sim Company's outstanding common stock and uses the equity method of accounting. Sim Company reported net income of USD 702,000 for 2010. On 2010 December 31, Sim Company paid a cash dividend of USD 189,000. In 2011, Sim Company incurred a net loss of USD 125,000. Prepare entries to reflect these events on Ruiz Company's books.

Exercise E On 2010 February 1, Larkin Company acquired 100 percent of the outstanding voting common stock of TRD Company for USD 8,400,000 cash. The stockholders' equity of the TRD Company consisted of common stock, USD 6,720,000, and retained earnings, USD 1,680,000. Prepare (a) the entry to record the investment in TRD Company and (b) the elimination entry on the work sheet used to prepare a consolidated balance sheet as of the date of acquisition.

Exercise F Given the facts in the previous exercise, how much would be recorded as goodwill in each of the following instances? The same amount was paid, but the parent company acquired a—

- a. 90 percent interest.
- b. 70 percent interest.
- c. 55 percent interest.

Exercise G Heidi Corporation acquired, for cash, 80 percent of the outstanding voting common stock of Sumpter Company. After the close of business on the date of acquisition, Sumpter Company's stockholders' equity consisted of common stock, USD 5,880,000, and retained earnings, USD 2,184,000. The cost of the investment exceeded the book value by USD 302,400 and was attributable to above-average earnings prospects. Prepare (a) the entry to record the investment in Sumpter Company and (b) the elimination entry on the work sheet used to prepare consolidated financial statements as of the date of acquisition.

Exercise H On 2009 January 1, Company J acquired 85 percent of the outstanding voting common stock of Company K. On that date, Company K's stockholders' equity consisted of:

Stockholders' equity:	
Paid-in capital:	
Common stock, \$90 par; 30,000 shares authorized, issued, and outstanding	\$2,700,000
Retained earnings	675,000
Total stockholders' equity	\$3,375,000

Compute the difference between cost and book value in each of the following cases:

- a. Company J pays USD 2,868,750 cash for its interest in Company K.
- b. Company J pays USD 3,375,000 cash for its interest in Company K.
- c. Company J pays USD 2,610,000 cash for its interest in Company K.

Exercise I The 2010 January 1, stockholders' equity section of Saye Company's balance sheet follows:

Stockholders' equity:	
Paid-in capital:	
Common stock, \$144 par; authorized, 200,000 shares; issued, and outstanding, 150,000 shares	\$21,600,00 0
Paid-in capital in excess of par value	3,600,000
Total paid-in capital	\$25,200,00 0
Retained earnings	2,160,000
Total stockholders' equity	\$27,360,00 0

Ninety percent of Saye Company's outstanding voting common stock was acquired by Tim Company on 2011 January 1, for USD 24,048,000. Compute (a) the book value of the investment, (b) the difference between cost and book value, and (c) the minority interest.

Exercise J Company S purchased 90 percent of Company T's outstanding voting common stock on 2010 January 2. The investment is accounted for under the equity method. Company S paid USD 2,790,000 for its proportionate equity of USD 2,430,000. The difference was due to undervalued land owned by Company T. Company T earned USD 324,000 during 2010 and paid cash dividends of USD 108,000.

- Compute the balance in the investment account on 2010 December 31.
- Compute the amount of the minority interest on (1) 2010 January 2, and (2) 2010 December 31.

14.16 Problems

Problem A Paris Company acquired on 2010 July 15, 400 shares of Rome Company USD 720 par value capital stock at USD 698.40 per share plus a broker's commission of USD 1,728. On 2010 August 1, Paris Company received a cash dividend of USD 8.64 per share. On 2010 November 3, it sold 200 of these shares at USD 756 per share less a broker's commission of USD 1,152. On 2010 December 1, Rome Company issued shares comprising a 100 percent stock dividend declared on its capital stock on November 18.

On 2010 December 31, the end of Paris Company's calendar-year accounting period, the market quotation for Rome Company's common stock was USD 331.20 per share. The decline was considered to be temporary.

a. Prepare journal entries to record all of these data assuming the securities are considered temporary investments classified as trading securities. Where should the accounts in the last entry appear in the financial statements?

b. Assume Rome Company has become a major customer so the shares are held for long-term affiliation purposes. Indicate how the investment should be shown in the balance sheet.

Problem B On 2010 October 17, Strong Company purchased the following common stocks (all trading securities) at the indicated per share prices that included commissions:

600 shares of X Company common stock @ \$216	\$129,600
1,000 shares of Y Company common stock @ \$144	144,000
1,600 shares of Z Company common stock @ \$72	115,200
	\$388,800

On 2010 December 31, the market prices per share of the above common stocks were X, USD 223.20; Y, USD 136.80; and Z, USD 54.

Summarized, the cash dividends per share received in 2011 were X, USD 14.40; Y, USD 7.20; and Z, USD 5.40.

On 2011 December 31, the per share market prices were X, USD 252.80; Y, USD 115.20; and Z, USD 72.

All of these changes in market prices are considered temporary.

Prepare journal entries for all of these transactions, including calendar year-end adjusting entries, assuming the shares of common stock acquired are considered trading securities.

If the securities acquired are considered available-for-sale securities, how would the entries differ?

For both parts a and b, give the descriptions (titles) and the dollar amounts of the items that would appear in the income statements for 2010 and 2011.

Problem C On 2010 January 1, Long Company acquired 80 percent of the outstanding voting common stock of Fall Company for USD 4,032,000 cash. Long Company uses the equity method. During 2010, Fall reported USD 672,000 of net

income and paid USD 288,000 in dividends. The stockholders' equity section of the 2009 December 31, balance sheet for Fall follows:

Stockholders' equity:	
Paid-in capital:	
Common stock - \$42 par	\$4,200,000
Retained earnings	840,000
Total stockholders' equity	\$5,040,000

a. Prepare the general journal entries to record the investment and the effect of Fall's income and dividends on Long Company's accounts.

b. Prepare the elimination entry that would be made on the work sheet for a consolidated balance sheet as of the date of acquisition.

Problem D Pearson Company acquired 75 percent of the outstanding voting common stock of Frost Company for USD 1,444,800 cash on 2010 January 1. The investment is accounted for under the equity method. During 2010, 2011, and 2012, Frost Company reported the following:

	Net income (loss)	Dividends Paid
2010	\$357,840	\$290,640
2011	(45,360)	-0-
2012	108,360	72,240

a. Prepare general journal entries to record the investment and the effect of the subsidiary's income, losses, and dividends on Pearson Company's accounts.

b. Compute the balance in the investment account on 2012 December 31.

Problem E Cord Company acquired 100 percent of the outstanding voting common stock of Thorpe Company on 2010 January 2, for USD 2,700,000. At the end of business on the date of acquisition, the balance sheets for the two companies were as follows:

	Cord Company	Thorpe Company
Assets		
Cash	\$ 315,000	\$ 180,000
Accounts receivable, net	234,000	144,000
Notes receivable	360,000	90,000
Merchandise inventory	495,000	234,000
Investment in Thorpe Company	2,700,000	
Equipment, net	648,000	450,000
Building, net	1,890,000	990,000
Land	765,000	405,000
Total assets	\$7,407,000	\$2,493,000
Liabilities and stockholders' equity		

Accounts payable	\$ 117,000	\$ 135,000
Notes payable	90,000	108,000
Common stock - \$45 par value	5,400,000	1,800,000
Retained earnings	1,800,000	450,000
Total liabilities and stockholders' equity	\$7,407,000	\$2,493,000

The excess of cost over book value is attributable to the above-average earnings prospects of Thorpe Company. On the date of acquisition, Thorpe Company borrowed USD 72,000 from Cord Company by giving a note.

a. Prepare a work sheet for a consolidated balance sheet as of the date of acquisition.

b. Prepare a consolidated balance sheet for 2010 January 2.

Problem F Refer to the previous problem, Cord Company uses the equity method. Assume the following are from the adjusted trial balances of Cord Company and Thorpe Company on 2010 December 31:

	Cord Company	Thorpe Company
Debit balance accounts		
Cash	\$ 351,000	\$ 315,000
Accounts receivable, net	378,000	180,000
Notes receivable	315,000	45,000
Merchandise inventory, December 31	495,000	287,100
Investment in Thorpe Company	2,790,000	
Equipment, net	615,000	427,500
Building, net	1,814,400	950,400
Land	765,000	405,000
Cost of goods sold	1,800,000	630,000
Expense (excluding depreciation and taxes)	720,000	270,900
Depreciation expense	108,000	62,100
Income tax expense	585,000	189,000
Dividends	540,000	108,000
Total of the accounts with debit balances	\$11,277,000	\$3,870,000
Credit balance accounts		
Accounts payable	\$ 135,000	\$ 180,000
Notes payable	144,000	90,000
Common stock - \$45 par value	5,400,000	1,800,000
Retained earnings - January 1	1,800,000	450,000
Revenue from sales	3,600,000	1,350,000
Income from Thorpe Company	198,000	
Total of the accounts with credit balances	\$11,277,000	\$3,870,000

There is no intercompany debt at the end of the year.

Prepare a work sheet for consolidated financial statements on 2010 December 31.

Problem G Using the work sheet from Problem F, prepare the following items:

a. Consolidated income statement for the year ended 2010 December 31.

b. Consolidated statement of retained earnings for the year ended 2010 December

31.

c. Consolidated balance sheet for 2010 December 31.

14.17 Alternate problems

Alternate problems A On 2010 September 1, Ramsey Company purchased the following relatively long-term investments classified as available-for-sale securities:

- Two thousand shares of Lacey Company capital stock at USD 439.20 plus broker's commission of USD 5,760.
- One thousand shares of Membrow Company capital stock at USD 705.60 plus broker's commission of USD 5,040.

Cash dividends of USD 18.00 per share on the Lacey capital stock and USD 14.40 per share on the Membrow capital stock were received on December 7 and December 10, respectively.

On 2010 December 31, per share market values are Lacey, USD 460.80; and Membrow, USD 655.20.

- Prepare journal entries to record these transactions.
- Prepare the necessary adjusting entry(ies) at 2010 December 31, to adjust the carrying values assuming that market price changes are believed to be temporary. Where would the accounts appear in the financial statements?

Alternate problem B Kress, Inc., purchased on 2010 July 2, 240 shares of Baker Company USD 180 par value common stock as a temporary investment at USD 288 per share, plus a broker's commission of USD 432.

On 2010 July 15, a cash dividend of USD 7.20 per share was received. On 2010 September 1, Baker Company split its USD 180 par value common shares two for one.

On 2010 November 2, Kress sold 200 shares of Baker common stock at USD 180, less a broker's commission of USD 288.

- Prepare journal entries to record all of the above transactions.
- How would you recommend that the remaining shares be classified in the 2010 December 31, balance sheet if still held at that date?
- Assume the remaining shares were considered current assets classified as trading securities at the end of 2010, at which time their market value was USD 128 per share. Prepare any necessary adjusting entries for the end of 2010.

Alternate problem C Prime Company acquired 90 percent of the outstanding voting common stock of Orr Company 2010 January 1, for USD 7,560,000 cash. Prime Company uses the equity method. During 2010 Orr reported USD 1,512,000 of net income and paid USD 504,000 in cash dividends. The stockholders' equity section of the 2009 December 31, balance sheet for Orr follows:

Stockholders' equity:		
Paid-in capital:		
Common stock, \$21.00 par		\$6,720,000
Retained earnings		1,680,000
Total stockholders' equity		\$8,400,000

a. Prepare general journal entries to record the investment and the effect of Orr's earnings and dividends on Prime Company's accounts.

b. Prepare the elimination entry that would be made on the work sheet for a consolidated balance sheet as of the date of acquisition.

Alternate problem D Codd Company acquired 70 percent of the outstanding voting common stock of Snow Company for USD 8,568,000 on 2010 January 1. The investment is accounted for under the equity method. During the years 2010-2012, Snow Company reported the following:

	Net Income Dividends	
	(loss)	Paid
2007	\$1,454,880	\$871,920
2008	372,960	223,440
2009	(23,520)	55,860

a. Prepare general journal entries to record the investment and the effect of the subsidiary's income, losses, and dividends on Codd Company's accounts.

b. Compute the investment account balance on 2011 December 31.

Alternate problem E Maple Company acquired all of the outstanding voting common stock of Dodd Company on 2010 January 2, for USD 4,320,000. On the date of acquisition, the balance sheets for the two companies were as follows:

	Maple Company	Dodd Company
Assets		
Cash	\$ 900,000	\$270,000
Accounts receivable, net	432,000	360,000
Notes receivable	180,000	108,000
Merchandise inventory	1,368,000	864,000
Investment in Dodd Company	4,320,000	
Equipment, net	1,224,000	738,000

Building, net	3,330,000	1,656,000
Land	1,404,000	450,000
Total assets	\$13,158,000	\$4,446,000
Liabilities and stockholders' equity		
Accounts payable	\$792,000	\$360,000
Notes payable	216,000	252,000
Common stock - \$120 par value	9,540,000	3,564,000
Retained earnings	2,610,000	270,000
Total liabilities and stockholders' equity	\$12,158,000	\$4,446,000

The management of Maple Company thinks that the Dodd Company's land is undervalued by USD 162,000. The remainder of the excess of cost over book value is due to superior earnings potential.

On the date of acquisition, Dodd Company borrowed USD 180,000 from Maple Company by giving a note.

a. Prepare a work sheet for a consolidated balance sheet as of the date of acquisition.

b. Prepare a consolidated balance sheet for 2010 January 2.

Alternate problem F Refer back to the previous problem. Maple Company uses the equity method. Assume the following amounts are taken from the adjusted trial balances of Maple Company and Dodd Company on 2010 December 31:

	Maple Company	Dodd Company
Debit balance accounts		
Cash	\$ 864,000	\$ 364,295
Accounts receivable, net	553,536	414,000
Notes receivable	342,000	90,000
Merchandise inventory, December 31	1,530,000	1,008,000
Investment in Dodd Company	4,519,356	
Equipment, net	1,147,500	691,860
Building, net	3,136,500	1,573,200
Land	1,404,000	450,000
Cost of goods sold	8,064,000	2,160,000
Expense (excluding depreciation and taxes)	2,160,000	810,000
Depreciation expense	243,000	128,940
Income tax expense	569,664	123,504
Dividends	477,000	178,200
Total of the accounts with debit balances	\$25,037,556	\$7,992,000
Credit balance accounts		
Accounts payable	\$ 720,000	\$ 378,000
Notes payable	270,000	180,000
Common stock - \$90 par value	9,540,000	3,564,000
Retained earnings	2,610,000	270,000
Revenue from sales	11,520,000	3,600,000
Income from Dodd Company	377,556	
Total of the accounts with credit balances	\$25,037,556	\$7,992,000

There is no intercompany debt at the end of the year.

Prepare a work sheet for consolidated financial statements on 2010 December 31.

Alternate problem G Using the work sheet from the previous problem, prepare the following items:

- a. Consolidated income statement for the year ended 2010 December 31.
- b. Consolidated statement of retained earnings for the year ended 2010 December 31.
- c. Consolidated balance sheet for 2010 December 31.

14.18 Beyond the numbers—Critical thinking

Business decision case A You are the CPA engaged to audit the records of Quigley Company. You find that your client has a portfolio of marketable equity securities that has a total market value of USD 300,000 less than the total cost of the portfolio. You ask the vice president for finance if the client expects to sell these securities in the coming year. He answers that he does not know. The securities will be sold if additional cash is needed to finance operations. When you ask for a cash forecast, you are told that a forecast has been prepared that covers the next year. It indicates no need to sell the marketable securities.

Write a brief statement in which you explain how you would classify the client's portfolio of marketable securities in the balance sheet. Does it really make any difference whether the securities are classified as trading securities or available-for-sale securities? Explain.

Business decision case B On 2010 January 2, Brown Company acquired 60 percent of the voting common stock of Cobb Company for USD 720,000 cash. The excess of cost over book value was due to above-average earnings prospects. Brown has hired you to help it prepare consolidated financial statements and has already collected the following information for both companies as of 2010 January 2:

	Brown Company	Cobb Company
Assets		
Cash	\$ 72,000	\$ 54,000
Accounts receivable, net	108,000	126,000
Merchandise inventory	288,000	216,000
Investment in Cobb Company	720,000	
Plant and equipment, net	936,000	738,000
Total assets	\$2,124,000	\$1,134,000
Liabilities and stockholders' equity		

Accounts payable	\$ 144,000	\$ 54,000
Common stock	1,440,000	720,000
Retained earnings	540,000	360,000
Total liabilities and stockholders' equity	\$2,124,000	\$1,134,000

a. Brown believes that consolidated financial statements can be prepared simply by adding together the amounts in the two individual columns. Is this correct? If not, why not?

b. Prepare a consolidated balance sheet for the date of acquisition without preparing a consolidated statement work sheet.

Business decision case C International Flavors & Fragrances, Inc., is the leading creator and manufacturer of flavors and fragrances used by others to impart or improve flavor or fragrance in a wide variety of consumer products.

Use the following excerpt from International Flavors & Fragrances Inc.'s 2000 annual report to calculate the dividend yield on common stock and the payout ratios. Then comment on the results.

	2000	1999	1998
Earnings per share	\$1.22	\$1.53	\$1.90
Dividends per share (\$)	1.29	1.52	1.48
Stock price per common share (\$)	20.31	37.63	44.19

Group project D In teams of two or three students, select three companies you believe may be profitable short-term investments. Determine the current market prices for those companies' stocks from today's newspaper and the market prices six months ago. Calculate the gain or loss that your team would have recorded if it had purchased 500 shares of each company's stock six months ago and sold all of the shares today. Write a short memo to your instructor describing why you selected those companies and why you believe the market prices of their stocks increased or decreased. Also, be prepared to describe your analysis to the class.

Group project E With one or two other students, go to the library and locate *Statement of Financial Standards No. 94*, "Consolidation of All Majority-Owned Subsidiaries", published by the Financial Accounting Standard Board. In a report to your instructor answer questions such as: What does the standard require? Why did the FASB act on this topic? Why are "nonhomogeneous" subsidiaries included in the consolidated group? Why did one of the Board members dissent from the statement? Describe some of the important background on this topic as given in the statement.

Group project F In a small group of students, locate the annual reports of three companies with investments in other companies. Compare the accounting and reporting for the investments by the three companies. For instance, by reading the notes to the financial statements, try to determine whether they account for the investments using the cost or equity methods. Is there goodwill on the balance sheets? What else can you determine about the investments? Write a report to your instructor summarizing your findings.

14.19 Using the Internet—A view of the real world

Visit the following website for General Electric Company:

<http://www.ge.com>

Pursue choices on the screen until you locate the consolidated statement of financial position. You will probably go down some "false paths" to get to this financial statement, but you can get there. This experience is all part of learning to use the Internet. Check to see if there is a minority interest listed on the consolidated statement of financial position. Check out the notes to the financial statements for further information. Browse around the site for any other interesting information concerning the company. Write a memo to your instructor summarizing your findings.

14.20 Answers to self-test

True-false

False. Under the cost method of accounting for stock investments, the Dividend Revenue account, rather than the investment account, is adjusted.

True. For long-term investments of less than 20 percent, the cost method should be used.

True. Revenue is not recognized when there is a stock split. The new number of shares is recorded, and the cost per share is reduced.

True. Trading securities should be considered separately from available-for-sale securities in applying the fair market value method.

True. Eliminating entries are not made on the accounting records of the parent and subsidiary. Only the work sheet is affected by elimination entries made during consolidation.

Multiple-choice

c. The Accounting Principles Board has said that investors must use the equity method when accounting for long-term investments of 20 percent to 50 percent.

a. Under the equity method, dividends received reduce the investment account; the other choices are not true.

d. If the market value of securities falls below their cost, an unrealized loss account is debited.

b. Under the equity method, the investment account always reflects the investor's interest in the net assets of the investee.

a. If cost is greater than the book value of an investment because of expected above-average earnings, the excess cost should be labeled goodwill.

15 Long-term financing: Bonds

15.1 Learning objectives

After studying this chapter, you should be able to:

- Describe the features of bonds and tell how bonds differ from shares of stock.
- List the advantages and disadvantages of financing with long-term debt and prepare examples showing how to employ financial leverage.
- Prepare journal entries for bonds issued at face value.
- Explain how interest rates affect bond prices and what causes a bond to sell at a premium or a discount.
- Apply the concept of present value to compute the price of a bond.
- Prepare journal entries for bonds issued at a discount or a premium.
- Prepare journal entries for bond redemptions and bond conversions.
- Describe the ratings used for bonds.
- Analyze and use the financial results—times interest earned ratio.

- Explain future value and present value concepts and make required calculations (Appendix).

15.2 The accountant's role in financial institutions

Companies that require funds to maintain existing operations and expand new operations frequently do not have the necessary cash available within the company. Therefore, these companies are required to obtain long-term financing from banks and other financial institutions. The operations of financial institutions are unique from those of the typical manufacturing or service company. As a result, the accounting measurement and disclosure practices followed by financial institutions can be quite different from those followed in other industries. In addition to the more traditional careers in accounting (auditing, professional services, financial reporting, cost accounting, and taxation), accounting majors with interests in finance may pursue a career in financial institutions.

Accountants in this industry commonly deal with issues related to marketable securities, derivatives, hedging, sale of receivables, foreign currency exchanges, and loan loss provisions and impairments. In addition, accountants in this area are being called upon to play an increasing role in the strategic operations of the financial institution. Not only are accountants needed to account for the institution's transactions, but they are being asked to recommend new opportunities for growth and to advise on financial risk as well. Some of these new areas include issues related to asset/liability management, interest rate risk, present value measurements, capital structure, and key ratio analysis.

Accountants also play a key role in one of the most important decisions of a financial institution—the decision of whether to lend money to a prospective borrower. The decision to lend money hinges on the ability of the prospective borrower to pay interest and repay debt. Since accountants have been trained in financial statement preparation and interpretation, accountants are some of the most sought after professionals for understanding the financial position and risk of a prospective borrower.

In previous chapters, you learned that corporations obtain cash for recurring business operations from stock issuances, profitable operations, and short-term

borrowing (current liabilities). However, when situations arise that require large amounts of cash, such as the purchase of a building, corporations also raise cash from long-term borrowing, that is, by issuing bonds. The issuing of bonds results in a Bonds Payable account.

15.3 Bonds payable

A **bond** is a long-term debt, or liability, owed by its issuer. Physical evidence of the debt lies in a negotiable bond certificate. In contrast to long-term notes, which usually mature in 10 years or less, bond maturities often run for 20 years or more.

Generally, a bond issue consists of a large number of USD 1,000 bonds rather than one large bond. For example, a company seeking to borrow USD 100,000 would issue one hundred USD 1,000 bonds rather than one USD 100,000 bond. This practice enables investors with less cash to invest to purchase some of the bonds.

Bonds derive their value primarily from two promises made by the borrower to the lender or bondholder. The borrower promises to pay (1) the **face value** or principal amount of the bond on a specific maturity date in the future and (2) periodic interest at a specified rate on face value at stated dates, usually semiannually, until the maturity date.

Large companies often have numerous long-term notes and bond issues outstanding at any one time. The various issues generally have different stated interest rates and mature at different points in the future. Companies present this information in the footnotes to their financial statements. Exhibit 41 shows a portion of the long-term borrowings footnote from Dow Chemical Company's 2000 annual report. Promissory notes, debenture bonds, and foreign bonds are shown, with their amounts, maturity dates, and interest rates.

Promissory notes and debentures at 2000 December 31

	Millions	
	2000	1999
6.95%, final maturity 2002	\$ 346	\$ ---
7.81%, final maturity 2002	---	
7.13%, final maturity 2003		
7.00%, final maturity 2005	300	---
7.70%, final maturity 2006	2,473	2,448
Subtotal	\$3,267	\$3,135
Foreign bonds at 2000 December 31	Millions	
	2000	1999
4.63%, final maturity 2000, Swiss Fran	\$--	\$ 95
6.38%, final maturity 2001, Japanese Yen	218	244
5.00%, final maturity 2003, Euro	139	151
Subtotal	\$357	\$490

Exhibit 41: Dow chemical company's long-term notes and bonds (in millions)

15.4 Comparison with stock

A bond differs from a share of stock in several ways:

- A bond is a debt or liability of the issuer, while a share of stock is a unit of ownership.
- A bond has a maturity date when it must be paid. A share of stock does not mature; stock remains outstanding indefinitely unless the company decides to retire it.
- Most bonds require stated periodic interest payments by the company. In contrast, dividends to stockholders are payable only when declared; even preferred dividends need not be paid in a particular period if the board of directors so decides.
- Bond interest is deductible by the issuer in computing both net income and taxable income, while dividends are not deductible in either computation.

15.5 Selling (issuing) bonds

A company seeking to borrow millions of dollars generally is not able to borrow from a single lender. By selling (issuing) bonds to the public, the company secures the necessary funds.

Usually companies sell their bond issues through an investment company or a banker called an **underwriter**. The underwriter performs many tasks for the bond issuer, such as advertising, selling, and delivering the bonds to the purchasers. Often

the underwriter guarantees the issuer a fixed price for the bonds, expecting to earn a profit by selling the bonds for more than the fixed price.

When a company sells bonds to the public, many purchasers buy the bonds. Rather than deal with each purchaser individually, the issuing company appoints a trustee to represent the bondholders. The **trustee** usually is a bank or trust company. The main duty of the trustee is to see that the borrower fulfills the provisions of the bond indenture. A **bond indenture** is the contract or loan agreement under which the bonds are issued. The indenture deals with matters such as the interest rate, maturity date and maturity amount, possible restrictions on dividends, repayment plans, and other provisions relating to the debt. An issuing company that does not adhere to the bond indenture provisions is in default. Then, the trustee takes action to force the issuer to comply with the indenture.

Bonds may differ in some respects; they may be secured or unsecured bonds, registered or unregistered (bearer) bonds, and term or serial bonds. We discuss these differences next.

Certain bond features are matters of legal necessity, such as how a company pays interest and transfers ownership. Such features usually do not affect the issue price of the bonds. Other features, such as convertibility into common stock, are sweeteners designed to make the bonds more attractive to potential purchasers. These sweeteners may increase the issue price of a bond.

Secured bonds A **secured bond** is a bond for which a company has pledged specific property to ensure its payment. Mortgage bonds are the most common secured bonds. A **mortgage** is a legal claim (lien) on specific property that gives the bondholder the right to possess the pledged property if the company fails to make required payments.

Unsecured bonds An **unsecured bond** is a **debenture bond**, or simply a debenture. A debenture is an unsecured bond backed only by the general creditworthiness of the issuer, not by a lien on any specific property. A financially sound company can issue debentures more easily than a company experiencing financial difficulty.

Registered bonds A **registered bond** is a bond with the owner's name on the bond certificate and in the register of bond owners kept by the bond issuer or its

agent, the registrar. Bonds may be registered as to principal (or face value of the bond) or as to both principal and interest. Most bonds in our economy are registered as to principal only. For a bond registered as to both principal and interest, the issuer pays the bond interest by check. To transfer ownership of registered bonds, the owner endorses the bond and registers it in the new owner's name. Therefore, owners can easily replace lost or stolen registered bonds.

Unregistered (bearer) bonds An **unregistered (bearer) bond** is the property of its holder or bearer because the owner's name does not appear on the bond certificate or in a separate record. Physical delivery of the bond transfers ownership.

Coupon bonds A **coupon bond** is a bond not registered as to interest. Coupon bonds carry detachable coupons for the interest they pay. At the end of each interest period, the owner clips the coupon for the period and presents it to a stated party, usually a bank, for collection.

Term bonds and serial bonds A **term bond** matures on the same date as all other bonds in a given bond issue. **Serial bonds** in a given bond issue have maturities spread over several dates. For instance, one-fourth of the bonds may mature on 2011 December 31, another one-fourth on 2012 December 31, and so on.

Callable bonds A **callable bond** contains a provision that gives the issuer the right to call (buy back) the bond before its maturity date. The provision is similar to the call provision of some preferred stocks. A company is likely to exercise this call right when its outstanding bonds bear interest at a much higher rate than the company would have to pay if it issued new but similar bonds. The exercise of the call provision normally requires the company to pay the bondholder a call premium of about USD 30 to USD 70 per USD 1,000 bond. A call premium is the price paid in excess of face value that the issuer of bonds must pay to redeem (call) bonds before their maturity date.

Convertible bonds A **convertible bond** is a bond that may be exchanged for shares of stock of the issuing corporation at the bondholder's option. A convertible bond has a stipulated conversion rate of some number of shares for each USD 1,000 bond. Although any type of bond may be convertible, issuers add this feature to make risky debenture bonds more attractive to investors.

Bonds with stock warrants A **stock warrant** allows the bondholder to purchase shares of common stock at a fixed price for a stated period. Warrants issued with long-term debt may be nondetachable or detachable. A bond with nondetachable warrants is virtually the same as a convertible bond; the holder must surrender the bond to acquire the common stock. Detachable warrants allow bondholders to keep their bonds and still purchase shares of stock through exercise of the warrants.

Junk bonds **Junk bonds** are high-interest rate, high-risk bonds. Many junk bonds issued in the 1980s financed corporate restructurings. These restructurings took the form of management buyouts (called leveraged buyouts or LBOs), hostile takeovers of companies by outside parties, or friendly takeovers of companies by outside parties. In the early 1990s, junk bonds lost favor because many issuers defaulted on their interest payments. Some issuers declared bankruptcy or sought relief from the bondholders by negotiating new debt terms.

Several advantages come from raising cash by issuing bonds rather than stock. First, the current stockholders do not have to dilute or surrender their control of the company when funds are obtained by borrowing rather than issuing more shares of stock. Second, it may be less expensive to issue debt rather than additional stock because the interest payments made to bondholders are tax deductible while dividends are not. Finally, probably the most important reason to issue bonds is that the use of debt may increase the earnings of stockholders through favorable financial leverage.

Favorable financial leverage A company has **favorable financial leverage** when it uses borrowed funds to increase earnings per share (EPS) of common stock. An increase in EPS usually results from earning a higher rate of return than the rate of interest paid for the borrowed money. For example, suppose a company borrowed money at 10 percent and earned a 15 percent rate of return. The 5 percent difference increases earnings.

Exhibit 42 provides a more comprehensive example of favorable financial leverage. The two companies in the illustration are identical in every respect except in the way they are financed. Company A issued only capital stock, while Company B issued equal amounts of 10 percent bonds and capital stock. Both companies have

USD 20,000,000 of assets, and both earned USD 4,000,000 of income from operations. If we divide income from operations by assets (USD 4,000,000/USD 20,000,000), we see that both companies earned 20 percent on assets employed. Yet B's stockholders fared far better than A's. The ratio of net income to stockholders' equity is 18 percent for B, while it is only 12 percent for A.

Assume that both companies issued their stock at the beginning of 2010 at USD 10 per share. B's USD 1.80 EPS are 50 percent greater than A's USD 1.20 EPS. This EPS difference probably would cause B's shares to sell at a substantially higher market price than A's shares. B's larger EPS would also allow a larger dividend on B's shares.

Company B in Exhibit 42 is employing financial leverage, or **trading on the equity**. The company is using its stockholders' equity as a basis for securing funds on which it pays a fixed return. Company B expects to earn more from the use of such funds than their fixed after-tax cost. As a result, Company B increases its rate of return on stockholders' equity and EPS.²⁰

**Companies A and B
Condensed Statements Balance Sheets
2010 December 31**

	Company A	Company B
Total assets	\$20,000,000	\$20,000,000
Bonds payable, 10%		\$10,000,000
Stockholders' equity (capital stock)	\$20,000,000	10,000,000
Total equities	\$20,000,000	\$20,000,000
Income statements		
For the year ended 2010 December 31		
Income from operations	\$4,000,000	\$4,000,000
Interest expense		1,000,000
Income before federal income taxes	\$4,000,000	\$3,000,000
Deduct: Federal income taxes (40%)	1,600,000	1,200,000
Net income	\$2,400,000	\$1,800,000
Number of common shares outstanding	2,000,000	1,000,000
Earnings per share (EPS) (Net income/Number of common shares outstanding)	\$1.20	\$1.80
Rate of return on assets employed (Income from Operations/Total assets; both companies \$4,000,000/\$20,000,000)	20%	20%
Rate of return on stockholders' equity (Net income/Stockholders' equity):		
Company A (\$2,400,000/\$20,000,000)	12%	
Company B (\$1,800,000/\$10,000,000)		18%

Exhibit 42: Favorable financial leverage

²⁰ Issuing bonds is only one method of using leverage. Other methods of using financial leverage include issuing preferred stock or long-term notes.

Several disadvantages accompany the use of debt financing. First, the borrower has a fixed interest payment that must be met each period to avoid default. Second, use of debt also reduces a company's ability to withstand a major loss. For example, assume that instead of having net income, both Company A and Company B in Exhibit 42 sustain a net loss in 2010 of USD 11,000,000. At the end of 2010, Company A will still have USD 9,000,000 of stockholders' equity and can continue operations with a chance of recovery. Company B, on the other hand, would have negative stockholders' equity of USD 1,000,000 and the bondholders could force the company to liquidate if B could not make interest payments as they came due. The result of sustaining the loss by the two companies is as follows:

Companies A and B		
Partial Balance Sheets		
2010 December 31		
	Company A	Company B
Stockholders' equity:		
Paid-in capital:		
Common stock	\$20,000,000	\$10,000,000
Retained earnings	(11,000,000)	(11,000,000)
Total stockholders' equity	\$ 9,000,000	\$ (1,000,000)

A third disadvantage of debt financing is that it also causes a company to experience unfavorable financial leverage when income from operations falls below a certain level. **Unfavorable financial leverage** results when the cost of borrowed funds exceeds the revenue they generate; it is the reverse of favorable financial leverage. In the previous example, if income from operations fell to USD 1,000,000, the rates of return on stockholders' equity would be 3 percent for A and zero for B, as shown in this schedule:

Companies A and B		
Income Statements For the year ended		
2010 December 31		
	Company A	Company B
Income from operations	\$1,000,000	\$1,000,000
Interest expense		1,000,000
Income before federal income taxes	\$1,000,000	\$ -0-
Deduct: Federal income taxes (40%)	400,000	-0-
Net income	600,000	\$ -0-
Rate of return on stockholders' equity:		
Company A (\$600,000/\$20,000,000)	3%	
Company B (\$0/\$10,000,000)		0%

The fourth disadvantage of issuing debt is that loan agreements often require maintaining a certain amount of working capital (Current assets - Current liabilities) and place limitations on dividends and additional borrowings.

When a company issues bonds, it incurs a long-term liability on which periodic interest payments must be made, usually twice a year. If interest dates fall on other than balance sheet dates, the company must accrue interest in the proper periods. The following examples illustrate the accounting for bonds issued at face value on an interest date and issued at face value between interest dates.

Bonds issued at face value on an interest date Valley Company's accounting year ends on December 31. On 2010 December 31, Valley issued 10-year, 12 percent bonds with a USD 100,000 face value, for USD 100,000. The bonds are dated 2010 December 31, call for semiannual interest payments on June 30 and December 31, and mature on 2020 December 31. Valley made the required interest and principal payments when due. The entries for the 10 years are as follows:

On 2010 December 31, the date of issuance, the entry is:

	2010				
Dec.	31	Cash (+A)	100,000		
		Bonds payable (+L)	100,000		
			0		
		To record bonds issued at face value.			

On each June 30 and December 31 for 10 years, beginning 2010 June 30 (ending 2020 June 30), the entry would be:

	Each year				
June	30				
And Dec.	31	Bond Interest Expense ($\$100,000 \times 0.12 \times 6,000$ $\frac{1}{2}$) (-SE)			
		Cash (-A)	6,000		
		To record periodic interest payment.			

On 2020 December 31, the maturity date, the entry would be:

	2020				
Dec.	31	Bond interest expense (-SE)	6,000		
		Bonds payable (-L)	100,000		
		Cash (-A)	106,000		
		To record final interest and bond redemption payment.			

Note that Valley does not need adjusting entries because the interest payment date falls on the last day of the accounting period. The income statement for each of the 10 years 2010-2018 would show Bond Interest Expense of USD 12,000 (USD 6,000 X 2); the balance sheet at the end of each of the years 2010-2018 would report bonds payable of USD 100,000 in long-term liabilities. At the end of 2019, Valley would reclassify the bonds as a current liability because they will be paid within the next year.

The real world is more complicated. For example, assume the Valley bonds were dated 2010 October 31, issued on that same date, and pay interest each April 30 and October 31. Valley must make an adjusting entry on December 31 to accrue interest for November and December. That entry would be:

2010			
Dec. 31	Bond interest expense ($\$100,000 \times 0.12 \times 2/12$) (-SE)	2,000	
	Bond interest payable (+L)		2,000
	To accrue two month's interest expense.		

The 2011 April 30, entry would be:

2011			
Apr. 30	Bond interest expense ($\$100,000 \times 0.12 \times 4/12$) (-SE)	4,000	
	Bond interest payable (-L)	2,000	
	Cash (-A)		6,000
	To record semiannual interest payment.		

The 2011 October 31, entry would be:

2011			
Oct. 31	Bond interest expense (-SE)	6,000	
	Cash (-A)		6,000
	To record semiannual interest payment.		

Each year Valley would make similar entries for the semiannual payments and the year-end accrued interest. The firm would report the USD 2,000 Bond Interest Payable as a current liability on the December 31 balance sheet for each year.

Bonds issued at face value between interest dates Companies do not always issue bonds on the date they start to bear interest. Regardless of when the bonds are physically issued, interest starts to accrue from the most recent interest date. Firms report bonds to be selling at a stated price "plus accrued interest". The issuer must pay holders of the bonds a full six months' interest at each interest date. Thus, investors purchasing bonds after the bonds begin to accrue interest must pay

the seller for the unearned interest accrued since the preceding interest date. The bondholders are reimbursed for this accrued interest when they receive their first six months' interest check.

Using the facts for the Valley bonds dated 2010 December 31, suppose Valley issued its bonds on 2011 May 31, instead of on 2010 December 31. The entry required is:

2011			
May 31	Cash (+A)	105,000	
	Bonds payable (+L)		100,000
	Bond interest payable ($\$100,000 \times 0.12 \times$		5,000
	(5/12)) (+L)		
	To record bonds issued at face value plus		
	accrued interest.		

This entry records the USD 5,000 received for the accrued interest as a debit to Cash and a credit to Bond Interest Payable.

The entry required on 2011 June 30, when the full six months' interest is paid, is:

2011			
June 30	Bond Interest Expense ($\$100,000 \times 0.12 \times$	1,000	
	(1/12)) (-SE)		
	Bond interest payable (-L)	5,000	
	Cash (-A)		6,000
	To record bond interest payment.		

This entry records USD 1,000 interest expense on the USD 100,000 of bonds that were outstanding for one month. Valley collected USD 5,000 from the bondholders on May 31 as accrued interest and is now returning it to them.

15.6 Bond prices and interest rates

The price of a bond issue often differs from its face value. The amount a bond sells for above face value is a **premium**. The amount a bond sells for below face value is a **discount**. A difference between face value and issue price exists whenever the market rate of interest for similar bonds differs from the contract rate of interest on the bonds. The **effective interest rate** (also called the yield) is the minimum rate of interest that investors accept on bonds of a particular risk category. The higher the risk category, the higher the minimum rate of interest that investors accept. The **contract rate of interest** is also called the stated, coupon, or nominal rate. Firms state this rate in the bond indenture, print it on the face of each bond, and use it to

determine the amount of cash paid each interest period. The market rate fluctuates from day to day, responding to factors such as the interest rate the Federal Reserve Board charges banks to borrow from it; government actions to finance the national debt; and the supply of, and demand for, money.

Market and contract rates of interest are likely to differ. Issuers must set the contract rate before the bonds are actually sold to allow time for such activities as printing the bonds. Assume, for instance, that the contract rate for a bond issue is set at 12 percent. If the market rate is equal to the contract rate, the bonds will sell at their face value. However, by the time the bonds are sold, the market rate could be higher or lower than the contract rate. As shown in Exhibit 43, if the market rate is lower than the contract rate, the bonds will sell for more than their face value. Thus, if the market rate is 10 percent and the contract rate is 12 percent, the bonds will sell at a premium as the result of investors bidding up their price. However, if the market rate is higher than the contract rate, the bonds will sell for less than their face value. Thus, if the market rate is 14 percent and the contract rate is 12 percent, the bonds will sell at a discount. Investors are not interested in bonds bearing a contract rate less than the market rate unless the price is reduced. Selling bonds at a premium or a discount allows the purchasers of the bonds to earn the market rate of interest on their investment.

Computing long-term bond prices involves finding **present values** using compound interest. The appendix to this chapter explains the concepts of future value and present value. If you do not understand the present value concept, read the appendix before continuing with this section.

Buyers and sellers negotiate a price that yields the going rate of interest for bonds of a particular risk class. The price investors pay for a given bond issue is equal to the present value of the bonds. To compute present value, we discount the promised cash flows from the bonds—principal and interest—using the market, or effective, rate. We use the market rate because the bonds must yield at least this rate or investors are attracted to alternative investments. The life of the bonds is stated in interest (compounding) periods. The interest rate is the effective rate per interest period, which is found by dividing the annual rate by the number of times interest is

paid per year. For example, if the annual rate is 12 percent, the semiannual rate would be 6 percent.

Issuers usually quote bond prices as percentages of face value—100 means 100 percent of face value, 97 means 97 percent of face value, and 103 means 103 percent of face value. For example, one hundred USD 1,000 face value bonds issued at 103 have a price of USD 103,000. Regardless of the issue price, at maturity the issuer of the bonds must pay the investor(s) the face value of the bonds.

	Market Rate	Contract Rate
Bonds sell at a <i>premium</i> if Market rate < Contract rate	10%	12%
Bonds sell at a <i>face value</i> if Market rate = Contract rate	12%	12%
Bonds sell at a <i>discount</i> if Market rate > Contract rate	14%	12%

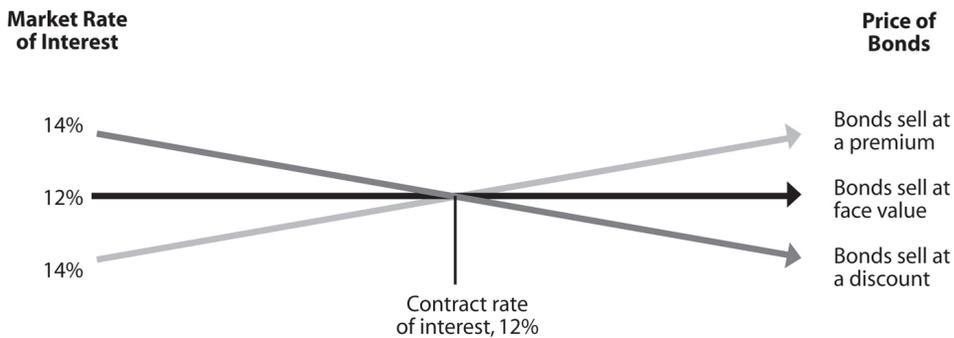


Exhibit 43: Bond premiums and discounts

Bonds issued at face value The following example illustrates the specific steps in computing the price of bonds. Assume Carr Company issues 12 percent bonds with a USD 100,000 face value to yield 12 percent. Dated and issued on 2010 June 30, the bonds call for semiannual interest payments on June 30 and December 31 and mature on 2013 June 30.²¹ The bonds would sell at face value because they offer 12 percent and investors seek 12 percent. Potential purchasers have no reason to

²¹ Bonds do not normally mature in such a short time; we use a three-year life for illustrative purposes only.

offer a premium or demand a discount. One way to prove the bonds would be sold at face value is by showing that their present value is USD 100,000:

	Cash Flow	X	Present value Factor	=Present value
Principal of \$100,000 due in six interest periods multiplied by present value factor for 6% from Table A.3 of the Appendix (end of text)	\$100,000	X	0.70496	=\$70,496
Interest of \$6,000 due at the end of six interest periods multiplied by present value factor for 6% from Table A.4 of the Appendix (end of text)	6,000	X	4.91732	=29,504
Total price (present value)				\$100,000

According to this schedule, investors who seek an effective rate of 6 percent per six-month period should pay USD 100,000 for these bonds. Notice that the same number of interest periods and semiannual interest rates occur in discounting both the principal and interest payments to their present values. The entry to record the sale of these bonds on 2010 June 30, debits Cash and credits Bonds Payable for USD 100,000.

An accounting perspective:

Business insight

Some persons estimate that Social Security will be broke by the year 2025 unless changes are made. Therefore, you may want to set aside funds during your working career to provide for retirement.

Over the last 60 years, the inflation rate has averaged about 3 percent per year, treasury bills have averaged a little under 4 percent per year, corporate bonds have averaged about a little over 5 percent per year, and stocks have averaged a little over 10 percent per year. Using the tables at the end of the text we can determine how much you would have at age 65 if you invested USD 2,000 each year for 45 years in treasury bills, corporate bonds, or stocks, beginning at age 20.

To do this calculation for treasury bills, for instance, we would first use Table A.2 to determine the future value of an annuity of USD 2,000 for 30 periods at 4 percent (USD 2,000 X 56.08494 = USD

112,170). (We would have used 45 periods, but the table only went up to 30 periods.) Then we would use Table A.1 to find the value of this lump sum of USD 112,170 for another 15 years at 4 percent (USD 112,170 X 1.80094 = USD 202,011). Then we cannot forget that we have another 15 years of USD 2,000 annuity to consider. Thus, we go back to Table A.2 and calculate the future value of an annuity of USD 2,000 for 15 periods at 4 percent (USD 2,000 X 20.02359 = USD 40,047). Then we add the USD 202,011 and the USD 40,047 to get the total future value of USD 242,058. (You would have invested USD 2,000 X 45 years = USD 90,000.) Would you be pleased? Not when you see what you could have had at age 65 if you invested in stocks. If you had invested in corporate bonds at 5 percent, you would have USD 319,401. However, if you had invested in stocks at 10 percent, you would have USD 1,437,810 at age 65. Can you use the tables in the back of the text to verify these amounts?

Bonds issued at a discount Assume the USD 100,000, 12 percent Carr bonds are sold to yield a current market rate of 14% annual interest, or 7 percent per semiannual period. Carr computes the present value (selling price) of the bonds as follows:

	Cash flow	X Present value factor	=Present value
Principal of \$100,000 due in six interest periods multiplied by present value factor for 7% from Table A.3 of the Appendix (end of text)	\$100,000	X0.66634	= \$66,634
Interest of \$6,000 due at the end of six interest periods multiplied by present value factor for 7% from Table A.4 of the Appendix (end of text)	6,000	X4.76654	=28,559
Total price (present value)			\$95,233

Note that in computing the present value of the bonds, Carr uses the actual USD 6,000 cash interest payment that will be made each period. The amount of cash the company pays as interest does not depend on the market interest rate. However, the market rate per semiannual period—7 percent—does change, and Carr uses this new rate to find interest factors in the tables.

The journal entry to record issuance of the bonds is:

2010			
June 30	Cash (+A)	95,233	
	Discount on bonds payable (-L; Contra-account)	4,767	
	Bonds payable (+L)		100,000
	To record bonds issued at a discount.		

In recording the bond issue, Carr credits Bonds Payable for the face value of the debt. The company debits the difference between face value and price received to Discount on Bonds Payable, a contra account to Bonds Payable. Carr reports the bonds payable and discount on bonds payable in the balance sheet as follows:

Long-term liabilities:		
Bonds payable, 12%, due 2009 June 30	\$100,000	
Less: Discount on bonds payable	4,767	\$95,233

The USD 95,233 is the carrying value, or net liability, of the bonds. Carrying value is the face value of the bonds minus any unamortized discount or plus any unamortized premium. The next section discusses unamortized premium on bonds payable.

Bonds issued at a premium Assume that Carr issued the USD 100,000 face value of 12 percent bonds to yield a current market rate of 10 percent. The bonds would sell at a premium calculated as follows:

	Cash Flow	X Present value Factor	=Present value
Principal of \$100,000 due in six interest periods multiplied by present value factor for 5% from Table A.3 of the Appendix (end of text)	\$100,00	X 0.74622	= \$74,622
Interest of \$6,000 due at the end of six interest periods multiplied by present value factor for 5% from Table A.4 of the Appendix (end of text)	6,000	X 5.07569	= 30,454
Total price (present value)			\$105,076

The journal entry to record the issuance of the bonds is:

2010			
June 30	Cash (+A)	105,076	
	Bonds payable (+L)		100,000
	Premium on bonds payable (+L)		5,076
	To record bonds issued at a premium.		

The **carrying value** of these bonds at issuance is USD 105,076, consisting of the face value of USD 100,000 and the premium of USD 5,076. The premium is an

adjunct account shown on the balance sheet as an addition to bonds payable as follows:

Long-term liabilities:		
Bonds payable, 12%, due 2009 June 30	\$100,000	
Add: Premium on bonds payable	5,076	\$105,076

When a company issues bonds at a premium or discount, the amount of bond interest expense recorded each period differs from bond interest payments. A discount increases and a premium decreases the amount of interest expense. For example, if Carr issues bonds with a face value of USD 100,000 for USD 95,233, the total interest cost of borrowing would be USD 40,767: USD 36,000 (which is six payments of USD 6,000) plus the discount of USD 4,767. If the bonds had been issued at USD 105,076, the total interest cost of borrowing would be USD 30,924: USD 36,000 less the premium of USD 5,076. The USD 4,767 discount or USD 5,076 premium must be allocated or charged to the six periods that benefit from the use of borrowed money. Two methods are available for amortizing a discount or premium on bonds—the straight-line method and the effective interest rate method.

The straight-line method records interest expense at a constant amount; the effective interest rate method records interest expense at a constant rate. *APB Opinion No. 21* states that the straight-line method may be used only when it does not differ materially from the effective interest rate method. In many cases, the differences are not material.

An accounting perspective:

Business insight

US government bonds have traditionally offered a fixed rate of interest. In early 1997, the US Treasury began offering inflation-indexed bonds. The amount of interest on these bonds is tied to the officially reported rate of inflation. The bonds pay interest every six months, and the interest is based on the inflation-adjusted value of the principal. These bonds are designed to protect purchasers against

purchasing power loss due to inflation. At that time, there was some concern by investors that the government had been considering calculating the official rate of inflation differently than in the past in such a way that it would lower the annual increase as compared to the then present method of calculation. This change in calculation, if adopted, would lower the amount of interest earned on these bonds. However, there were some assurances that for this purpose the official rate of inflation would be calculated the "old way".

The straight-line method The **straight-line method of amortization** allocates an equal amount of discount or premium to each month the bonds are outstanding. The issuer calculates the amount by dividing the discount or premium by the total number of months from the date of issuance to the maturity date. For example, if it sells USD 100,000 face value bonds for USD 95,233, Carr would charge the USD 4,767 discount to interest expense at a rate of USD 132.42 per month (equal to USD 4,767/36). Total discount amortization for six months would be USD 794.52, computed as follows: USD 132.42 X 6. Interest expense for each six-month period then would be USD 6,794.52, calculated as follows: USD 6,000 + (USD 132.42 X 6). The entry to record the expense on 2010 December 31, would be:

2010		
Dec. 31	Bond interest expense (-SE)	6,794.52
	Cash (-A)	6,000.00
	Discount on bonds payable (\$132.42 x	794.52
	6) (+L)	
	To record interest payment and discount	
	amortization.	

By the maturity date, all of the discount would have been amortized.

To illustrate the straight-line method applied to a premium, recall that earlier Carr sold its USD 100,000 face value bonds for USD 105,076. Carr would amortize the USD 5,076 premium on these bonds at a rate of USD 141 per month, equal to USD 5,076/36. The entry for the first period's semiannual interest expense on bonds sold at a premium is:

2010		
Dec. 31	Bond interest expense (-SE)	5,154

Premium on bonds payable ($\$141 \times 6$)	846
(-L)	
Cash (-A)	6,000
To record interest payable and premium amortization.	

By the maturity date, all of the premium would have been amortized.

The effective interest rate method *APB Opinion No. 21* recommends an amortization procedure called the **effective interest rate method**, or simply the **interest method**. Under the interest method, interest expense for any interest period is equal to the effective (market) rate of interest on the date of issuance times the carrying value of the bonds at the beginning of that interest period. Using the Carr example of 12 percent bonds with a face value of USD 100,000 sold to yield 14 percent, the carrying value at the beginning of the first interest period is the selling price of USD 95,233. Carr would record the interest expense for the first semiannual period as follows:

2010		
Dec. 31	Bond interest expense ($\$95,233 \times 0.14 \times \frac{1}{2}$) (-SE)	6,666
	Cash ($\$100,000 \times 0.12 \times \frac{1}{2}$) (-A)	6,000
	Discount on bonds payable (+L)	666
	To record discount amortization and interest payment.	

Note that interest expense is the carrying value times the effective interest rate. The cash payment is the face value times the contract rate. The discount amortized for the period is the difference between the two amounts.

After the preceding entry, the carrying value of the bonds is USD 95,899, or USD 95,233 + USD 666. Carr reduced the balance in the Discount on Bonds Payable account by USD 666 to USD 4,101, or USD 4,767 - USD 666. Assuming the accounting year ends on December 31, the entry to record the payment of interest for the second semiannual period on 2011 June 30 is:

2011		
June 30	Bond interest expense ($\$95,899 \times 0.14 \times \frac{1}{2}$) (-SE)	6,713
	Cash ($\$100,000 \times 0.12 \times \frac{1}{2}$) (-A)	6,000
	Discount on bonds payable (+L)	713
	To record discount amortization and interest payment.	

Carr can also apply the effective interest rate method to premium amortization. If the Carr bonds had been issued at USD 105,076 to yield 10 percent, the premium would be USD 5,076. The firm calculates interest expense in the same manner as for bonds sold at a discount. However, the entry would differ somewhat, showing a debit to the premium account. The entry for the first interest period is:

2010			
Dec. 31	Bond Interest Expense ($\$105,076 \times 0.10 \times \frac{1}{2}$) (-SE)	5,254	
	Premium on bonds payable (-L)	746	
	Cash ($\$100,000 \times 0.12 \times \frac{1}{2}$) (-A)		6,000
	To record interest payment and premium amortization.		

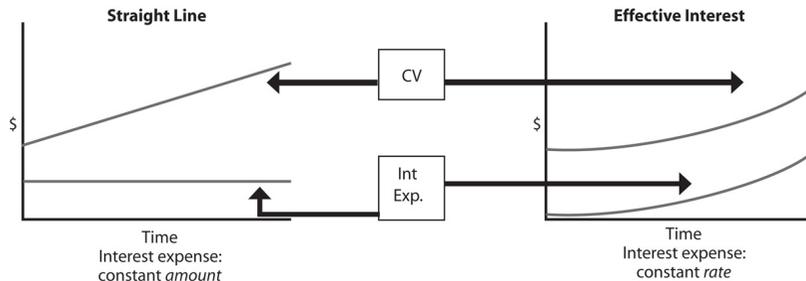
After the first entry, the carrying value of the bonds is USD 104,330, or USD 105,076 - USD 746. The premium account now carries a balance of USD 4,330, or USD 5,076 - USD 746. The entry for the second interest period is:

2011			
June 30	Bond interest expense ($\$104,330 \times 0.10 \times \frac{1}{2}$) (-SE)	5,216*	
	Premium on bonds payable (-L)	784	
	Cash ($\$100,000 \times 0.12 \times \frac{1}{2}$) (-A)		6,000
	To record interest payment and premium amortization.		

*Rounded down.

An Accounting Perspective

Business Insight The difference between the single-line method and effective interest method for amortizing a bond discount can be seen in the following graphic. The carrying values (CV) start at the same point and end at the same point under both methods. The total interest expense is the same under both methods. However, the interest expense and amortization of bond discount are at a constant amount each period under the straight-line method, and they are at a concentrate under the effective interest rate method.



Discount and premium amortization schedules A discount amortization schedule (Exhibit 44) and a premium amortization schedule (Exhibit 45) aid in preparing entries for interest expense. Usually, companies prepare such schedules when they first issue bonds, often using computer programs designed for this

purpose. The companies then refer to the schedules whenever they make journal entries to record interest. Note that in each period the amount of interest expense changes; interest expense gets larger when a discount is involved and smaller when a premium is involved. This fluctuation occurs because the carrying value to which a constant interest rate is applied changes each interest payment date. With a discount, carrying value increases; with a premium, it decreases. However, the actual cash paid as interest is always a constant amount determined by multiplying the bond's face value by the contract rate.

Recall that the issue price was USD 95,233 for the discount situation and USD 105,076 for the premium situation. The total interest expense of USD 40,767 for the discount situation in Exhibit 44 is equal to USD 36,000 (which is six USD 6,000 payments) plus the USD 4,767 discount. This amount agrees with the earlier computation of total interest expense. In Exhibit 45, total interest expense in the premium situation is USD 30,924, or USD 36,000 (which is six USD 6,000 payments) less the USD 5,076 premium. In both illustrations, at the maturity date the carrying value of the bonds is equal to the face value because the discount or premium has been fully amortized.

Adjusting entry for partial period Exhibit 44 and Exhibit 45 also would be helpful if Carr must accrue interest for a partial period. Instead of a calendar-year accounting period, assume the fiscal year of the bond issuer ends on August 31. Using the information provided in the premium amortization schedule (Exhibit 45), the adjusting entry needed on 2010 August 31 is:

2010			
Aug. 31	Bond interest expense ($\$5,254 \times (2/6)$)	1,751	
	Premium on bonds payable ($\$746 \times (2/6)$)	249	
	Bond interest payable ($\$6,000 \times (2/6)$)		2,000
	To record two months' accrued interest.		

(A) Interest Payment Date	(B) Bond Interest Expense Debit (E x 0.14 x 1/2)	(C) Cash credit (\$100,000 x 0.12 x 1/2)	(D) Discount on Bonds Payable Credit (B-C)	(E) Carrying value of Bonds Payable (previous balance in E+D)
Issued Price				\$ 95,233
2010/12/31	\$6,666	\$6,000	\$666	95,899
2011/6/30	6,713	6,000	713	96,612
2011/12/31	6,763	6,000	763	97,375
2012/6/30	6,816	6,000	816	98,191
2012/12/31	6,873	6,000	873	99,064
2013/6/30	6,936*	6,000	936	100,000
	\$40,767	\$36,000	\$4,767	

Exhibit 44: Discount amortization schedule for bonds payable

This entry records interest for two months, July and August, of the six-month interest period ending on 2010 December 31. The first line of Exhibit 45 shows the interest expense and premium amortization for the six months. Thus, the previous entry records two-sixths (or one-third) of the amounts for this six-month period. Carr would record the remaining four months' interest when making the first payment on 2010 December 31. That entry reads:

2010			
Dec. 31	Bond interest payable (-L)		2,000
	Bond interest expense (\$5,254 x (4/6)) (-SE)		3,503
	Premium on bonds payable (\$746 x 4/6) (-L)		497
	Cash (-A)		6,000
	To record four months' interest expense and semiannual interest payment.		

During the remaining life of the bonds, Carr would make similar entries for August 31 and December 31. The amounts would differ, however, because Carr uses the interest method of accounting for bond interest. The entry for each June 30 would be as indicated in Exhibit 45.

15.7 Redeeming bonds payable

Bonds may be (1) paid at maturity, (2) called, or (3) purchased in the market and retired. Bonds may also be retired by being converted into stock. Each action is either a redemption of bonds or the extinguishment of debt. A company that pays its bonds at maturity would have already amortized any related discount or premium and paid the last interest payment. The only entry required at maturity would debit Bonds Payable and credit Cash for the face amount of the bonds as follows:

2013
 June 30 Bond payable (-L) 100,000
 Cash (-A) 100,000
 To pay bonds on maturity date.

(A) Interest Payment	(B) Bond Interest Expense Debit (E x 0.10 x 1/2)	(C) Cash credit (\$100,000 x 0.12 x 1/2)	(D) Discount on bonds Payable credit (B- C)	(E) Carrying value of Bonds payable (previous balance in E-D)
Issue Price				\$105,076
2010/12/31	\$ 5,254	\$6,000	\$ 746	104,330
2011/6/30	5,216*	6,000	784	103,546
2011/12/31	5,177	6,000	823	102,723
2012/6/30	5,136	6,000	864	101,859
2012/12/31	5,093	6,000	907	100,952
2013/6/30	5,048	6,000	952	100,000
	\$30,924	\$36,000	\$5,076	

*Rounded down.

Exhibit 45: Premium amortization schedule for bonds payable

An issuer may redeem some or all of its outstanding bonds before maturity by calling them. The issuer may also purchase bonds in the market and retire them. In either case, the accounting is the same. Assume that on 2012 January 1, Carr calls bonds totaling USD 10,000 of the USD 100,000 face value bonds in Exhibit 45 at 103, or USD 10,300. Even though accrued interest would be added to the price, assume that the interest due on this date has been paid. A look at the last column on the line dated 2011/12/31 in Exhibit 45 reveals that the carrying value of the bonds is USD 102,723, which consists of Bonds Payable of USD 100,000 and Premium on Bonds Payable of USD 2,723. Since 10 percent of the bond issue is being redeemed, Carr must remove 10 percent from each of these two accounts. The firm incurs a loss for the excess of the price paid for the bonds, USD 10,300, over their carrying value, USD 10,272. The required entry is:

2012
 Jan. 1 Bond payable (-L) 10,000
 Premium on bonds payable (\$2,723/10) (-L) 272
 Loss on bond redemption 9\$10,272 - \$10,300) 28
 (-SE)
 Cash (-A) 10,300
 To record bonds redeemed.

According to *FASB Statement No. 4*, gains and losses from voluntary early retirement of bonds are extraordinary items, if material. We report such gains and losses in the income statement, net of their tax effects, as described in Chapter 13. The FASB is currently reconsidering the reporting of these gains and losses as extraordinary items.

To avoid the burden of redeeming an entire bond issue at one time, companies sometimes issue **serial bonds** that mature over several dates. Assume that on 2002 June 30, Jasper Company issued USD 100,000 face value, 12 percent serial bonds at 100. Interest is payable each year on June 30 and December 31. A total of USD 20,000 of the bonds mature each year starting on 2010 June 30. Jasper has a calendar-year accounting period. Entries required for 2010 for interest expense and maturing debt are:

2010				
June	30	Bond interest expense ($\$100,000 \times 0.12 \times \frac{1}{2}$) (-SE)	6,000	
		Cash (-A)		6,000
		To record interest payment.		
	30	Serial bonds payable (-L)	20,000	
		Cash (-A)		20,000
		To record retirement of serial debt.		
Dec.	31	Bond interest expense ($\$80,000 \times 0.12 \times \frac{1}{2}$) (-SE)	4,800	
		Cash (-A)		4,800
		To record payment of semiannual interest expense.		

Note that Jasper calculates the interest expense for the last six months of 2010 only on the remaining outstanding debt (USD 100,000 original issue less the USD 20,000 that matured on 2010 June 30). Each year after the bonds maturing that year are retired, interest expense decreases proportionately. Jasper reports the USD 20,000 amount maturing the next year as a current liability on each year-end balance sheet. The remaining debt is a long-term liability.

Naturally, bond investors are concerned about the safety of their investments. They fear the company may default on paying the entire principal at the maturity date. This concern has led to provisions in some bond indentures that require companies to make periodic payments to a **bond redemption fund**, often called a **sinking fund**. The fund trustee uses these payments to redeem a stated amount of bonds annually and pay the accrued bond interest. The trustee determines which

bonds to call and uses the cash deposited in the fund only to redeem these bonds and pay their accrued interest.

To illustrate, assume Hand Company has 12 percent coupon bonds outstanding that pay interest on March 31 and September 30 and were issued at face value. The bond indenture requires that Hand pay a trustee USD 53,000 each September 30. The entry for the payment to the trustee is:

Sept. 30	Sinking fund (+A)	53,000	
	Cash (-A)		53,000
	To record payment to trustee of required deposit.		

The trustee calls USD 50,000 of bonds, pays for the bonds and accrued interest, and notifies Hand. The trustee also bills Hand for its fee and expenses incurred of USD 325. Assuming no interest has been recorded on these bonds for the period ended September 30, the entries are:

Sept.30	Bonds Payable (-L)	50,000	
	Bond interest expense (-SE)	3,000	
	Sinking fund (-A)		53,000
	To record bond redemption and interest paid by trustee.		
30	Sinking fund expense (-SE)	325	
	Cash (-A)		325
	To record trustee fee and expenses.		

If a balance exists in the Sinking Fund account at year-end, Hand includes it in a category labeled Investments or Other Assets on the balance sheet. Hand would describe the USD 50,000 of bonds that must be retired during the coming year as "Current maturity of long-term debt" and report it as a current liability on the balance sheet.

The existence of a sinking fund does not necessarily mean that the company has created a retained earnings appropriation entitled "Appropriation for Bonded Indebtedness". A sinking fund usually is contractual (required by the bond indenture), and an appropriation of retained earnings is simply an announcement by the board of directors that dividend payments will be limited over the term of the bonds. The former requires cash to be paid in to a trustee, and the latter restricts retained earnings available for dividends to stockholders. Also, even if the indenture does not require a sinking fund, the corporation may decide to (1) pay into a sinking

fund and not appropriate retained earnings, (2) appropriate retained earnings and not pay into a sinking fund, (3) do neither, or (4) do both.

A company may add to the attractiveness of its bonds by giving the bondholders the option to convert the bonds to shares of the issuer's common stock. In accounting for the conversions of **convertible bonds**, a company treats the carrying value of bonds surrendered as the capital contributed for shares issued.

Suppose a company has USD 10,000 face value of bonds outstanding. Each USD 1,000 bond is convertible into 50 shares of the issuer's USD 10 par value common stock. On May 1, when the carrying value of the bonds was USD 9,800, investors presented all of the bonds for conversion. The entry required is:

May 1	Bond payable (-L)	10,000	
		0	
	Discount bonds payable (+L)		200
	Common stock (\$10,000/\$1,000 = 10 bonds; 10 bonds x 50 share x \$10 par) (+SE)		5,000
	Paid-in capital in excess of par value – common (+SE)		4,800
	To record bonds converted to common stock.		

The entry eliminates the USD 9,800 book value of the bonds from the accounts by debiting Bonds Payable for USD 10,000 and crediting Discount on Bonds Payable for USD 200. It credits Common Stock for the par value of the 500 shares issued (500 shares X USD 10 par). The excess amount (USD 4,800) is credited to Paid-In Capital in Excess of Par Value—Common.

An accounting perspective:

Business insight

The Securities and Exchange Commission took action to protect the public against abusive telemarketing calls from sellers of municipal bonds. The residence of any person can only be called between 8 am and 9 pm, without their prior consent. Callers must clearly disclose the purpose of the call. Also, a centralized "Do-not-call" list of people who do not wish to receive solicitations must be maintained and honored.

Source: "SEC Approves Rule Governing Calls From Muni-Bond Sellers to Investors," *The Wall Street Journal*, Friday, December 27, 1996, p. A2.

The two leading bond rating services are Moody's Investors Service and Standard & Poor's Corporation. The bonds are rated as to their riskiness. The ratings used by these services are:

	Moody's	Standard & Poor's
Highest quality to upper medium	Aaa Aa	AAA AA
	A	A
Medium to speculative	Baa Ba	BBB BB
	B	B
Poor to lowest quality	Caa Ca	CCC CC
	C	C
In default, value is questionable		DDD DD D

Normally, Moody's rates junk bonds at Ba or below and Standard & Poor's at BB or below. As a company's prospects change over time, the ratings of its outstanding bonds change because of the higher or lower probability that the company can pay the interest and principal on the bonds when due. A severe recession may cause many companies' bond ratings to decline.

Bond prices appear regularly in certain newspapers. For instance, *The Wall Street Journal* quoted IBM's bonds as follows:

Issue	Coupon	Maturity	Yield	Price	Change
IBM	7°	2013	6.6	113	-2

The bonds carry a coupon rate of 7° percent. The bonds mature in 2013. The current price is USD 113 per hundred, or USD 1,130.00 for a USD 1,000 bond. The price the preceding day was USD 115, since the change was -2. The current price yields a return to investors of 6.6 percent. As the market rate of interest changes from day to day, the market price of the bonds varies inversely. Thus, if the market rate of interest increases, the market price of bonds decreases, and vice versa.

An accounting perspective:

Business insight

Companies sometimes invest in the bonds of other companies. According to *FASB Statement No. 115* (covered in Chapter 14), investments in these bonds fall into three categories—trading securities, available-for-sale securities, or held-to-maturity securities. The bonds would be classified as trading securities if they were acquired principally for the purpose of selling them in the near future. If the bonds were to be held for a longer period of time, but not until maturity, they would be classified as available-for-sale securities. Bonds that will be held to maturity are classified as held-to-maturity securities. All trading securities are current assets. Available-for-sale securities are either current assets or long-term assets, depending on how long management intends to hold them. Discounts and premiums on bonds classified as trading and available-for-sale securities are not amortized because management does not know how long they will be held. Held-to-maturity securities are long-term assets. Discounts and premiums on bonds classified as held-to-maturity securities are amortized by the holder of the bonds in the same manner as for the issuer of the bonds. Further discussion of investments in bonds is reserved for an intermediate accounting course.

15.8 Analyzing and using the financial results—Times interest earned ratio

The **times interest earned ratio** (or interest coverage ratio) indicates the ability of a company to meet required interest payments when due. We calculate the ratio as follows:

$$\text{Time interest earned ratio} = \frac{\text{Income before interest also taxes (IBIT)}}{\text{Interest expense}}$$

Income before interest and taxes (IBIT), also called "earnings before interest and taxes (EBIT)", is the numerator because there would be no income taxes if interest expense is equal to or greater than IBIT. To find IBIT when the income statement is not complex, take net income and add back interest expense and taxes. However, in complex situations, when there are discontinued operations, changes in accounting principle, extraordinary items, interest revenue, and/or other similar items, analysts often use "operating income" to represent IBIT. The higher the ratio, the more comfortable creditors feel about receiving interest payments in the future.

An ethical perspective: Rawlings furniture company

The Rawlings brothers inherited 300,000 shares (30 percent) of the common stock of the Rawlings Furniture Company from their father, who had founded the company 55 years earlier. One brother served as president of the company, and the other two brothers served as vice presidents. The company, which produced a line of fine furniture sold nationwide, earned an average of USD 4 million per year. Located in Jamesville, New York, USA, the company had provided steady employment for approximately 10 percent of the city's population. The city had benefited from the revenues the company attracted to the area and from the generous gifts provided by the father.

The remainder of the common stock was widely held and was traded in the over-the-counter market. No other stockholder held more than 4 percent of the stock. The stock had recently traded at USD 30 per share. The company has USD 10 million of 10 percent bonds outstanding, which mature in 15 years.

The brothers enjoyed the money they received from the company, but did not enjoy the work. They also were frustrated by the fact that they did not own a controlling interest (more than 50 percent) of the company. If they had a controlling interest, they could make

important decisions without obtaining the agreement of the other stockholders.

With the assistance of a New York City brokerage house, the brothers decided to pursue a plan that could increase their wealth. The company would offer to buy back shares of common stock at USD 40 per share. These shares would then be canceled, and the Rawlings brothers would have a controlling interest. The stock buy-back would be financed by issuing 10-year, 14 percent, high-interest junk bonds. The brokerage house had located some financial institutions willing to buy the bonds. The interest payments on the junk bonds would be USD 3 million per year. The brothers thought the company could make these payments unless the country entered a recession. If need be, wage increases could be severely restricted or eliminated and the company's pension plan could be terminated. If the junk bonds could be paid at maturity, the brothers would own a controlling interest in what could be an extremely valuable company. If the interest payments could not be met or if the junk bonds were defaulted at maturity, the company could eventually be forced to liquidate. The risks are high, but so are the potential rewards. If another buyer entered the picture at this point and bid an even higher amount for the stock, the brothers could sell their shares and exit the company. Two of the brothers hoped that another buyer might bid as much as USD 50 per share so they could sell their shares and pursue other interests. The changes a new buyer might make are unpredictable at this point.

The times interest earned ratios in a recent year for several companies (described in footnotes to the table) were as follows:

Company	Earnings before Interest and Taxes (millions)	Interest Expense (Millions)	Times Interest Earned Ratio
Ford Mother Company ^a	\$19,136	\$10,902	1.76
Proctor & Gamble Company ^b	6,258	722	8.67
AMR Corporation ^c	1,754	467	3.76
Dell Computer Corporation ^d	3,241	47	68.96
Hewlett-Packard Company ^e	4,882	257	19.00

^A Ford Motor Company is the world's largest producer of trucks and the second largest producer of cars and trucks combined.

^B Procter and Gamble markets more than 300 brands to nearly five billion customers in over 140 countries.

^CAMR's principal subsidiary is America Airlines.

^DDell is the world's largest direct computer systems company.

^EHewlett-Packard Company designs, manufactures, and services products and systems for measurement, computation, and communications.

You can see from these data that a great deal of variability exists in the times interest earned ratios for real companies. To judge the ability of companies to pay bond interest when due, bondholders would carefully examine other financial data as well.

Some companies that issued high-interest junk bonds in the 1980s defaulted on their interest payments and had to declare Chapter 11 bankruptcy or renegotiate payment terms with bondholders in the 1990s. Other companies with high-interest bonds issued new low-interest bonds and used the proceeds to retire the high-interest bonds.

Chapter 16 discusses the fourth major financial statement—the statement of cash flows, which we mentioned in Chapter 1. This statement shows the cash inflows and outflows from operating, investing, and financing activities.

15.8.1 Understanding the learning objectives

- A bond is a liability (with a maturity date) that bears interest that is deductible in computing both net income and taxable income.
- A stock is a unit of ownership on which a dividend is paid only if declared, and dividends are not deductible in determining net income or taxable income.
- Bonds may be secured or unsecured, registered or unregistered, callable, and/or convertible.
- Advantages include stockholders retaining control of the company, tax deductibility of interest, and possible creation of favorable financial leverage.
- Disadvantages include having to make a fixed interest payment each period, reduction in a company's ability to withstand a major loss, possible limitations on dividends and future borrowings, and possible reduction in earnings per share caused by unfavorable financial leverage.
- If bonds are issued at face value on an interest date, no accrued interest is recorded.

- If bonds are issued between interest dates, accrued interest must be recorded.
- If the market rate is lower than the contract rate, bonds sell for more than their face value, and a premium is recorded.
 - If the market rate is higher than the contract rate, bonds sell for less than their face value, and a discount is recorded.
 - The present value of the principal plus the present value of the interest payments is equal to the price of the bond.
 - The contract rate of interest is used to determine the amount of future cash interest payments.
 - The effective rate of interest is used to discount the future payment of principal and of interest back to the present value.
 - When bonds are issued, Cash is debited, and Bonds Payable is credited. For bonds issued at a discount, Discount on Bonds Payable is also debited. For bonds issued at a premium, Premium on Bonds Payable is also credited. For bonds issued between interest dates, Bond Interest Payable is also credited.
 - Any premium or discount must be amortized over the period the bonds are outstanding.
 - Under the effective interest rate method, interest expense for any period is equal to the effective (market) rate of interest at date of issuance times the carrying value of the bond at the beginning of that interest period.
 - Under the straight-line method of amortization, an equal amount of discount or premium is allocated to each month the bonds are outstanding.
 - When bonds are redeemed before they mature, a loss or gain (an extraordinary item, if material) on bond redemption may occur.
 - A bond sinking fund might be required in the bond indenture.
 - Bonds may be convertible into shares of stock. The carrying value of the bonds is the capital contributed for shares of stock issued.
 - Bonds are rated as to their riskiness.
 - The two leading bond rating services are Moody's Investors Services and Standard & Poor's Corporation.
 - Each of these services has its own rating scale. For instance, the highest rating is Aaa (Moody's) and AAA (Standard & Poor's).

- The times interest earned ratio indicates a company's ability to meet interest payments when due.
- The ratio is equal to income before interest and taxes (IBIT) divided by interest expense.
- The future value of an investment is the amount to which a sum of money invested today will grow in a stated time period at a specified interest rate.
- Present value is the current worth of a future cash receipt and is the reciprocal of future value. To discount future receipts is to bring them back to their present values.

15.9 Appendix: Future value and present value

Managers apply the concepts of interest, future value, and present value in making business decisions. Therefore, accountants need to understand these concepts to properly record certain business transactions.

15.9.1 The time value of money

The concept of the time value of money stems from the logical reference for a dollar today rather than a dollar at any future date. Most individuals prefer having a dollar today rather than at some future date because (1) the risk exists that the future dollar will never be received; and (2) if the dollar is on hand now, it can be invested, resulting in an increase in total dollars possessed at that future date.

Most business decisions involve a comparison of cash flows in and out of the company. To be useful in decision making, such comparisons must be in dollars of the same point in time. That is, the dollars held now must be accumulated or rolled forward, or future dollars must be discounted or brought back to the present dollar value, before comparisons are valid. Such comparisons involve future value and present value concepts.

15.9.2 Future value

The **future value** or **worth** of any investment is the amount to which a sum of money invested today grows during a stated period of time at a specified interest rate. The interest involved may be simple interest or compound interest. **Simple**

interest is interest on principal only. For example, USD 1,000 invested today for two years at 12 percent simple interest grows to USD 1,240 since interest is USD 120 per year. The principal of USD 1,000, plus 2 X USD 120, is equal to USD 1,240.

Compound interest is interest on principal and on interest of prior periods. For example, USD 1,000 invested for two years at 12 percent compounded annually grows to USD 1,254.40 as follows:

Principal or present value	\$1,000.00
Interest, year 1 = $\$1,000 \times 0.12 =$	120.00
Value at end of year 1	\$1,120.00
Interest, year 2 = $\$1,120 \times 0.12 =$	134.40
Value at end of year 2 (future value)	\$1,254.40

In Exhibit 46, we graphically portray these computations of future worth and show how USD 1,000 grows to USD 1,254.40 with a 12 percent interest rate compounded annually. The effect of compounding is USD 14.40—the interest in the second year that was based on the interest computed for the first year, or $\text{USD } 120 \times 0.12 = \text{USD } 14.40$.

Interest tables ease the task of computing the future worth to which any invested amount will grow at a given rate for a stated period. An example is Table A.1 in the Appendix at the end of this text. To use the Appendix tables, first determine the number of compounding periods involved. A compounding period may be any length of time, such as a day, a month, a quarter, a half-year, or a year, but normally not more than a year. The number of compounding periods is equal to the number of years in the life of the investment times the number of compoundings per year. Five years compounded annually is five periods, five years compounded quarterly is 20 periods, and so on.

Second, determine the interest rate per compounding period. Interest rates are usually quoted in annual terms; in fact, federal law requires statement of the interest rate in annual terms in some situations. Divide the annual rate by the number of compounding periods per year to get the proper rate per period. Only with an annual compounding period will the annual rate be the rate per period. All other cases involve a lower rate. For example, if the annual rate is 12 percent and interest is compounded monthly, the rate per period (one month) will be 1 percent.

To use the tables, find the number of periods involved in the Period column. Move across the table to the right, stopping in the column headed by the Interest Rate per Period, which yields a number called a *factor*. The factor shows the amount to which an investment of USD 1 will grow for the periods and the rate involved. To compute the future worth of the investment, multiply the number of dollars in the given situation by this factor. For example, suppose your parents tell you that they will invest USD 8,000 at 12 percent for four years and give you the amount to which this investment grows if you graduate from college in four years. How much will you receive at the end of four years if the interest rate is 12 percent compounded annually? How much will you receive if the interest rate is 12 percent compounded quarterly?

To calculate these amounts, look at the end-of-text Appendix, Table A.1. In the intersection of the 4 period row and the 12 percent column, you find the factor 1.57352. Multiplying this factor by USD 8,000 yields USD 12,588.16, the answer to the first question. To answer the second question, look at the intersection of the 16 period row and the 3 percent column. The factor is 1.60471, and the value of your investment is USD 12,837.68. The more frequent compounding would add USD $12,837.68 - 12,588.16 = 249.52$ to the value of your investment. The reason for this difference in amounts is that 12 percent compounded quarterly is a higher rate than 12 percent compounded annually.

An **annuity** is a series of equal cash flows (often called rents) spaced equally in time. The semiannual interest payments received on a bond investment are a common example of an annuity. Assume that USD 100 will be received at the end of each of the next three semiannual periods. The interest rate is 6 percent per semiannual period. Using Table A.1 in the Appendix, we find the future value of each of the USD 100 receipts as follows:

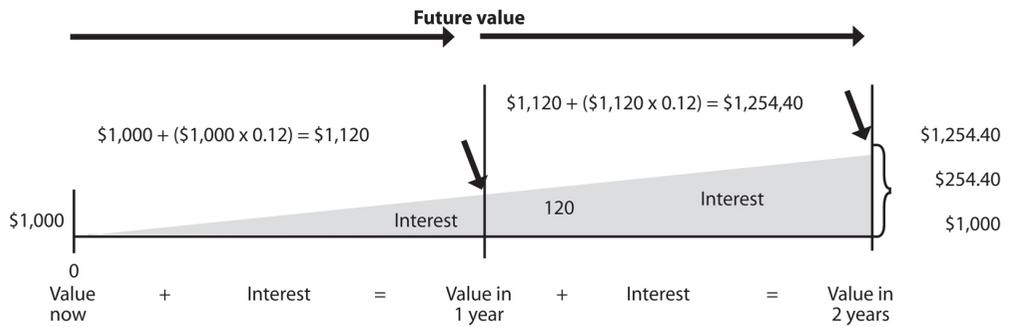


Exhibit 46: Compound interest and future value

Future value (after three periods) of \$100 received at the end of the -		
First period:	1.12360 x	\$112.36
	\$100 =	
Second period:	1.06000 x 100 =	106.00
Third period:	1.00000 x 100 =	100.00
Total future value		\$318.36

Such a procedure would become quite tedious if the annuity consisted of many receipts. Fortunately, tables are available to calculate the total future value directly. See the Appendix, Table A.2. For the annuity just described, you can identify one single factor by looking at the 3 period row and 6 percent column. The factor is 3.18360 (the sum of the three factors shown above), and when multiplied by USD 100, yields USD 318.36, which is the same answer. In Exhibit 47, we graphically present the future value of an annuity.

15.9.3 Present value

Present value is the current worth of a future cash receipt and is the reciprocal of future value. In future value, we calculate the future value of a sum of money possessed now. In present value, we calculate the current worth of rights to future cash receipts possessed now. We discount future receipts by bringing them back to their present values.

Assume that you have the right to receive USD 1,000 in one year. If the appropriate interest rate is 12 percent compounded annually, what is the present value of this USD 1,000 future cash receipt? You know that the present value is less than USD 1,000 because USD 1,000 due in one year is not worth USD 1,000 today.

You also know that the USD 1,000 due in one year is equal to some amount, P, plus interest on P at 12 percent for one year. Thus, $P + 0.12P = \text{USD } 1,000$, or $1.12P = \text{USD } 1,000$. Dividing USD 1,000 by 1.12, you get USD 892.86; this amount is the present value of your future USD 1,000. If the USD 1,000 was due in two years, you would find its present value by dividing USD 892.86 by 1.12, which equals USD 797.20. Portrayed graphically, present value looks similar to future value, except for the direction of the arrows (Exhibit 48).

Table A.3 (end-of-text Appendix) contains present value factors for combinations of a number of periods and interest rates. We use Table A.3 in the same manner as Table A.1. For example, the present value of USD 1,000 due in four years at 16 percent compounded annually is USD 552.29, computed as $\text{USD } 1,000 \times 0.55229$. The 0.55229 is the present value factor found in the intersection of the 4 period row and the 16 percent column.

Illustration 15.7 Future Value of an Annuity

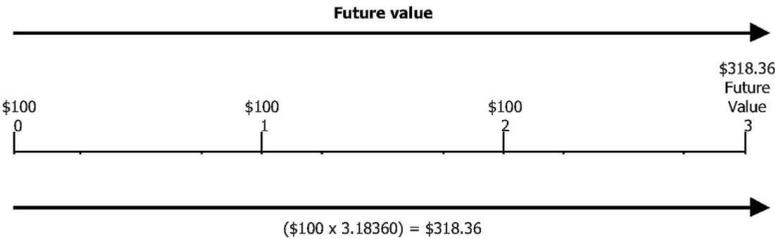


Exhibit 47: Future value of an annuity

Illustration 15.8 Compound Interest and Present Value

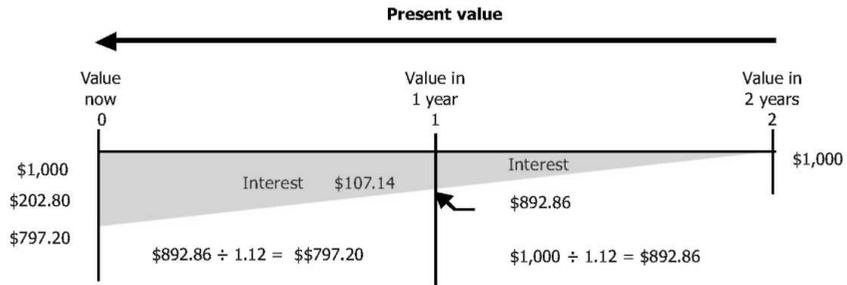


Exhibit 48: Compound interest and present value

As another example, suppose that you wish to have USD 4,000 in three years to pay for a vacation in Europe. If your investment increases at a 20 percent rate compounded quarterly, how much should you invest now? To find the amount, you would use the present value factor found in Table A.3, 12 period row, 5 percent column. This factor is 0.55684, which means that an investment of about 55 cents today would grow to USD 1 in 12 periods at 5 percent per period. To have USD 4,000 at the end of three years, you must invest 4,000 times this factor (0.55684), or USD 2,227.36.

The semiannual interest payments on a bond are a common example of an annuity. As an example of calculating the present value of an annuity, assume that USD 100 is received at the end of each of the next three semiannual periods. The interest rate is 6 percent per semiannual period. By using Table A.3 (Appendix), you can find the present value of each of the three USD 100 payments as follows:

Present value of \$100 due in:	
1 period:	$0.94340 \times \$100 = \94.34
2 period:	$0.89000 \times 100 = 89.00$
3 period:	$0.83962 \times 100 = 83.96$
Total present value	\$267.30

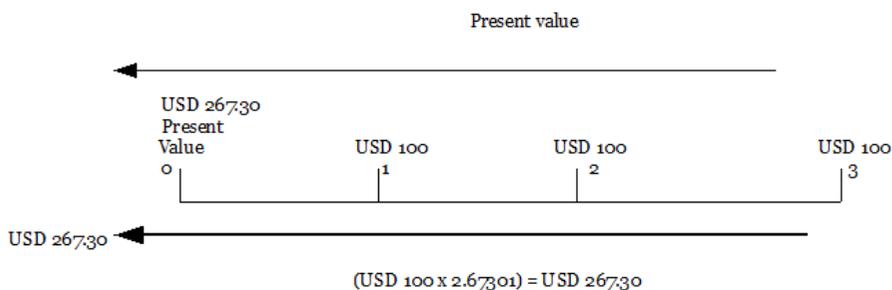


Exhibit 49: Present value of an annuity

Such a procedure could become quite tedious if the annuity consisted of a large number of payments. Fortunately, tables are also available showing the present values of an annuity of USD 1 per period for varying interest rates and periods. See the end-of-text Appendix, Table A.4. For the annuity just described, you can obtain a single factor from the table to represent the present value of an annuity of USD 1 per period for three (semiannual) periods at 6 percent per (semiannual) period. This factor is 2.67301; it is equal to the sum of the present value factors for USD 1 due in one period, USD 1 in two periods, and USD 1 in three periods found in the Appendix, Table A.3. When this factor is multiplied by USD 100, the number of dollars in each payment, it yields the present value of the annuity, USD 267.30. In Exhibit 49, we graphically present the present value of this annuity and show how to find the present value of the three USD 100 cash flows by multiplying the USD 100 by a present value of an annuity factor, 2.67301.

Suppose you won a lottery that awarded you a choice of receiving USD 10,000 at the end of each of the next five years or USD 35,000 cash today. You believe you can earn interest on invested cash at 15 percent per year. Which option should you choose? To answer the question, compute the present value of an annuity of USD 10,000 per period for five years at 15 percent. The present value is USD 33,521.60, or USD 10,000 X 3.35216. You should accept the immediate payment of USD 35,000 since it has the larger present value.

15.10 Demonstration problem

Jackson Company issued USD 100,000 face value of 15 percent, 20-year junk bonds on 2010 April 30. The bonds are dated 2010 April 30, call for semiannual interest payments on April 30 and October 31, and are issued to yield 16 percent (8 percent per period).

- Compute the amount received for the bonds.
- Prepare an amortization schedule. Enter data in the schedule for only the first two interest periods. Use the effective interest rate method.
- Prepare journal entries to record issuance of the bonds, the first six months' interest expense on the bonds, the adjustment needed on 2010 December 31 (assuming Jackson's accounting year ends on that date), and the second six months' interest expense on 2011 April 30.

15.11 Solution to demonstration problem

a.

Price received:

Present value of principal: $\$100,000 \times 0.04603$ (see Appendix, Table A.3, 40 period row, 8% column)	\$ 4,603
Present value of interest: $\$7,500 \times 11.92461$ (see Appendix, Table A.4, 40 period row, 8% column)	89,435
Total	\$94,038

b.

(A) Interest Payment Date	(B) Bond Interest Expense Debit ($E \times 0.16 \times \frac{1}{2}$)	(C) Cash Credit ($\$100,000 \times$ $0.15 \times \frac{1}{2}$)	(D) Discount on Bonds Payable Credit ($B - C$)	(E) Carrying Value of Bonds Payable (previous balance in E + D)
Issued price				\$94,038
2010/10/31	\$7,523	\$7,500	\$23	94,061
2011/4/30	7,525	7,500	25	94,086

c.

2010				
Apr. 30	Cash		94,038	
	Discount on bonds payable		5,962	
	Bonds payable			100,000
	Issued \$100,000 face value of 20-year, 15% bonds to yield 16%.			
Oct. 31	Bond interest expense		7,523	
	Discount on bonds payable		23	
	Cash			7,500
	Paid semiannual bond interest expense.			

Dec. 31	Bond interest expense ($\$7,525 \times (1/3)$)	2,508	
	Discount on bonds payable		8
	Bond interest payable ($\$7,500 \times (1/3)$)		2,500
	To record accrual of two months' interest expense.		
2011			
Apr. 30	Bond interest payable	2,500	
	Bond interest expense ($\$7,525 \times (2/3)$)	5,017	
	Discount on bonds payable		17
	cash		7,500
	Paid semiannual bond interest expense.		

15.12 Key terms

Annuity A series of equal cash flows spaced in time.

Bearer bond See unregistered bond.

Bond A long-term debt, or liability, owed by its issuer. A bond certificate, a negotiable instrument, is the formal, physical evidence of the debt owed.

Bond indenture The contract or loan agreement under which bonds are issued.

Bond redemption (or sinking) fund A fund used to bring about the gradual redemption of a bond issue.

Callable bond A bond that gives the issuer the right to call (buy back) the bond before its maturity date.

Call premium The price paid in excess of face value that the issuer of bonds must pay to redeem (call) bonds before their maturity date.

Carrying value (of bonds) The face value of bonds minus any unamortized discount or plus any unamortized premium. Sometimes referred to as net liability on the bonds.

Compound interest Interest calculated on the principal and on interest of prior periods.

Contract rate of interest The interest rate printed on the bond certificates and specified on the bond indenture; also called the stated, coupon, or nominal rate.

Convertible bond A bond that may be exchanged for shares of stock of the issuing corporation at the bondholders' option.

Coupon bond A bond not registered as to interest; it carries detachable coupons that are to be clipped and presented for payment of interest due.

Debenture bond An unsecured bond backed only by the general creditworthiness of its issuer.

Discount (on bonds) Amount a bond sells for below its face value.

Effective interest rate method (interest method) A procedure for calculating periodic interest expense (or revenue) in which the first period's interest is computed by multiplying the carrying value of bonds payable (bond investments) by the market rate of interest at the issue date. The difference

between computed interest expense (revenue) and the interest paid (received), based on the contract rate times face value, is the discount or premium amortized for the period. Computations for subsequent periods are based on the carrying value at the beginning of the period.

Face value Principal amount of a bond.

Favorable financial leverage An increase in EPS and the rate of return on stockholders' equity resulting from earning a higher rate of return on borrowed funds than the fixed cost of such funds. Unfavorable financial leverage results when the cost of borrowed funds exceeds the income they generate, resulting in decreased income to stockholders.

Future value or worth The amount to which a sum of money invested today will grow during a stated period of time at a specified interest rate.

Interest method See effective interest rate method.

Junk bonds High-interest rate, high-risk bonds; many were issued in the 1980s to finance corporate restructurings.

Market interest rate The minimum rate of interest investors will accept on bonds of a particular risk category. Also called effective rate or yield.

Mortgage A legal claim (lien) on specific property that gives the bondholder the right to possess the pledged property if the company fails to make required payments. A bond secured by a mortgage is called a mortgage bond.

Premium (on bonds) Amount a bond sells for above its face value.

Present value The current worth of a future cash receipt(s); computed by discounting future receipts at a stipulated interest rate.

Registered bond A bond with the owner's name on the bond certificate and in the register of bond owners kept by the bond issuer or its agent, the registrar.

Secured bond A bond for which a company has pledged specific property to ensure its payment.

Serial bonds Bonds in a given bond issue with maturities spread over several dates.

Simple interest Interest on principal only.

Sinking fund See Bond redemption fund.

Stock warrant A right that allows the bondholder to purchase shares of common stock at a fixed price for a stated period of time. Warrants issued with long-term debt may be detachable or nondetachable.

Straight-line method of amortization A procedure that, when applied to bond discount or premium, allocates an equal amount of discount or premium to each period in the life of a bond.

Term bond A bond that matures on the same date as all other bonds in a given bond issue.

Times interest earned ratio Income before interest and taxes (IBIT) divided by interest expense. In complex situations, "operating income" is often used to represent IBIT.

Trading on the equity A company using its stockholders' equity as a basis for securing funds on which it pays a fixed return.

Trustee Usually a bank or trust company appointed to represent the bondholders and to enforce the provisions of the bond indenture against the issuer.

Underwriter An investment company or a banker that performs many tasks for the bond issuer in issuing bonds; may also guarantee the issuer a fixed price for the bonds.

Unfavorable financial leverage Results when the cost of borrowed funds exceeds the revenue they generate; it is the reverse of favorable financial leverage.

Unregistered (bearer) bond Ownership transfers by physical delivery.

Unsecured bond A debenture bond, or simply a debenture.

15.13 Self-test

15.13.1 True-false

Indicate whether each of the following statements is true or false.

An unsecured bond is called a debenture bond.

Callable bonds may be called at the option of the holder of the bonds.

Favorable financial leverage results when borrowed funds are used to increase earnings per share of common stock.

If the market rate of interest exceeds the contract rate, the bonds are issued at a discount.

The straight-line method of amortization is the recommended method.

15.13.2 Multiple-choice

Select the best answer for each of the following questions.

Harner Company issued USD 100,000 of 12 percent bonds on 2010 March 1. The bonds are dated 2010 January 1, and were issued at 96 plus accrued interest. The entry to record the issuance would be:

- a.
- | | |
|---------------------------|--------|
| Cash | 98,000 |
| Discount on bonds payable | 4,000 |

	Bonds payable	100,000	
		0	
	Bonds interest payable	2,000	
b.	Cash	102,000	
	Bonds payable	100,000	
		0	
	Bond interest payable	2,000	
c.	Cash	96,000	
	Discount on bonds payable	4,000	
	Bonds payable	100,000	
		0	

d. None of the above.

If the bonds in the first question had been issued at 104, the entry to record the issuance would have been:

a.	Cash	104,000	
	Bonds payable	100,000	
	Premium on bonds payable	4,000	
b.	Cash	102,000	
	Bonds payable	100,000	
	Bonds interest payable	2,000	
c.	Cash	106,000	
	Bonds payable	100,000	
	Premium on bonds payable	4,000	
	Bonds interest payable	2,000	

d. None of the above.

On 2010 January 1, the Alvarez Company issued USD 400,000 face value of 8 percent, 10-year bonds for cash of USD 328,298, a price to yield 11 percent. The bonds pay interest semiannually and mature on 2020 January 1. Using the effective interest rate method, the bond interest expense for the first six months of 2010 would be:

- a. USD 36,113.
- b. USD 18,056.
- c. USD 32,000.
- d. USD 16,000.

If the straight-line amortization method had been used in the previous question, the interest expense for the first six months would have been:

- a. USD 39,170.

- b. USD 32,000.
- c. USD 18,000.
- d. USD 19,585.

Assume a company has net income of USD 100,000, income tax expense of USD 40,000, and interest expense of USD 20,000. The times interest earned ratio is:

- a. 5 times.
- b. 7 times.
- c. 8 times.
- d. 9 times.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

Questions

- What are the advantages of obtaining long-term funds by the issuance of bonds rather than additional shares of capital stock? What are the disadvantages?
- What is a bond indenture? What parties are usually associated with it? Explain why.
- Explain what is meant by the terms coupon, callable, convertible, and debenture.
- What is meant by the term trading on the equity?
- When bonds are issued between interest dates, why should the issuing corporation receive cash equal to the amount of accrued interest (accrued since the preceding interest date) in addition to the issue price of the bonds?
- Why might it be more accurate to describe a sinking fund as a bond redemption fund?
- Indicate how each of the following items should be classified in a balance sheet on 2009 December 31.
 - Cash balance in a sinking fund.
 - Accrued interest on bonds payable.
 - Debenture bonds payable due in 2019.
 - Premium on bonds payable.
 - First-mortgage bonds payable, due 2010 July 1.

- Discount on bonds payable.
- First National Bank—Interest account.
- Convertible bonds payable due in 2012.
- Why is the effective interest rate method of computing periodic interest expense considered theoretically preferable to the straight-line method?
- Why would an investor whose intent is to hold bonds to maturity pay more for the bonds than their face value?
- Of what use is the times interest earned ratio?

15.14 Exercises

Exercise A On 2010 September 30, Domingo's Construction Company issued USD 120,000 face value of 12 percent, 10-year bonds dated 2010 August 31, at 100, plus accrued interest. Interest is paid semiannually on February 28 and August 31. Domingo's accounting year ends on December 31. Prepare journal entries to record the issuance of these bonds, the accrual of interest at year-end, and the payment of the first interest coupon.

Exercise B On 2009 December 31, East Lansing Office Equipment Company issued USD 1,600,000 face value of 8 percent, 10-year bonds for cash of USD 1,400,605, a price to yield 10 percent. The bonds pay interest semiannually and mature on 2019 December 31.

- a. State which is higher, the market rate of interest or the contract rate.
- b. Compute the bond interest expense for the first six months of 2010, using the interest method.
- c. Show how the USD 1,400,605 price must have been determined.

Exercise C Compute the annual interest expense on the bonds in the previous exercise, assuming the bond discount is amortized using the straight-line method.

Exercise D After recording the payment of the interest coupon due on 2010 June 30, the accounts of Myrtle Beach Sailboat, Inc., showed Bonds Payable of USD 300,000 and Premium on Bonds Payable of USD 10,572. Interest is payable semiannually on June 30 and December 31. The five-year, 12 percent bonds have a face value of USD 300,000 and were originally issued to yield 10 percent. Prepare

the journal entry to record the payment of interest on 2010 December 31. Use the interest method. (Round all amounts to the nearest dollar.)

Exercise E On 2010 June 30 (a semiannual interest payment date), Holiday Rollerblade Company redeemed all of its USD 400,000 face value of 10 percent bonds outstanding by calling them at 106. The bonds were originally issued on 2006 June 30, at 100. Prepare the journal entry to record the payment of the interest and the redemption of the bonds on 2010 June 30.

Exercise F On 2009 August 31, as part of the provisions of its bond indenture, Caribbean Cruise Line, Inc., acquired USD 480,000 of its outstanding bonds on the open market at 96 plus accrued interest. These bonds were originally issued at face value and carry a 12 percent interest rate, payable semiannually. The bonds are dated 2002 November 30, and pay semiannual interest on May 31 and November 30. Prepare the journal entries required to record the accrual of the interest to the acquisition date on the bonds acquired and the acquisition of the bonds.

Exercise G Cleveland Heating Systems, Inc., is required to make a deposit of USD 18,000 plus semiannual interest expense of USD 540 on 2009 October 31, to the trustee of its sinking fund so that the trustee can redeem USD 18,000 of the company's bonds on that date. The bonds were issued at 100. Prepare the journal entries required on October 31 to record the sinking fund deposit, the bond retirement, payment of interest (due on that date), and payment of trustee expenses, assuming the latter is USD 100.

Exercise H After interest was paid on 2010 September 30, USD 60,000 face value of Miami Video Rentals, Inc., outstanding bonds were converted into 8,000 shares of the company's USD 5 par value common stock. Prepare the journal entry to record the conversion, assuming the bonds were issued at 100.

Exercise I A recent annual report of Wal-Mart Corporation showed the following amounts as of the dates indicated:

	Year	Ended	January 31
	2001	2000	1999
Earnings before interest (and taxes) (millions)	\$11,583	\$10,162	\$8,008
Interest expense (millions)	1,467	1,079	838

Calculate the times interest earned ratio for each year and comment on the results.

Exercise J What is the present value of a lump-sum payment of USD 20,000 due in five years if the market rate of interest is 10 percent per year (compounded annually) and the present value of USD 1 due in five periods at 10 percent is 0.62092?

Exercise K What is the present value of a series of semiannual payments of USD 10,000 due at the end of each six months for the next five years if the market rate of interest is 10 percent per year and the present value of an annuity of USD 1 for 10 periods at 5 percent is 7.72173?

Exercise L Joe Mordino bought a ticket in the Georgia lottery for USD 1, hoping to strike it rich. To his amazement, he won USD 4,000,000. Payment was to be received in equal amounts at the end of each of the next 20 years. Mordino heard from relatives and friends he had not heard from in years. They all wanted to renew their relationship with this new millionaire. Federal and state income taxes were going to be about 40 percent (36 percent for federal and 4 percent for state) on each year's income from the lottery check. The discount rate to use in all present value calculations is 12 percent.

- a. How much will Mordino actually receive after taxes each year?
- b. Is Mordino a multimillionaire according to the present value of his cash inflow after taxes?
- c. What is the present value of the net amount the state has to pay out? Remember that the state gets part of the money back in the form of taxes.

Exercise M After Joe Mordino won USD 4,000,000 in the Georgia lottery, he decided to purchase USD 10,000 of lottery tickets at the end of each year for the next 20 years. He was hoping to hit the lottery again, but he never did. If the state can earn 12 percent on ticket revenue received, how much will the annuity of USD 10,000 from Mordino grow to by the end of 20 years?

15.15 Problems

Problem A On 2009 June 1, Economy Auto Parts, Inc., issued USD 180,000 of 10-year, 16 percent bonds dated 2009 April 1, at 100. Interest on bonds is payable

semiannually on presentation of the appropriate coupon. All of the bonds are of USD 1,000 denomination. The company's accounting period ends on June 30, with semiannual statements prepared on December 31 and June 30. The interest payment dates are April 1 and October 1.

All of the first coupons on the bonds are presented to the company's bank and paid on 2009 October 2. All but two of the second coupons are similarly received and paid on 2010 April 1.

Prepare all necessary journal entries for these transactions through 2010 April 1, including the adjusting entry needed at 2009 June 30.

Problem B Ecological Water Filtration, Inc., is going to issue USD 400,000 face value of 10 percent, 15-year bonds. The bonds are dated 2009 June 30, call for semiannual interest payments, and mature on 2024 June 30.

a. Compute the price investors should offer if they seek a yield of 8 percent on these bonds. Also, compute the first six months' interest, assuming the bonds are issued at this price. Use the interest method and calculate all amounts to the nearest dollar.

b. Repeat part (a), assuming investors seek a yield of 12 percent.

Problem C On 2009 July 1, South Carolina Table Company issued USD 600,000 face value of 10 percent, 10-year bonds. The bonds call for semiannual interest payments and mature on 2019 July 1. The company received cash of USD 531,180, a price that yields 12 percent.

Assume that the company's fiscal year ends on March 31. Prepare journal entries (to the nearest dollar) to record the bond interest expense on 2010 January 1, and the adjustment needed on 2010 March 31, using the interest method. Calculate all amounts to the nearest dollar.

Problem D Storall Company issued USD 200,000 face value of 16 percent, 20-year junk bonds on 2010 July 1. The bonds are dated 2010 July 1, call for semiannual interest payments on July 1 and January 1, and were issued to yield 12 percent (6 percent per period).

a. Compute the amount received for the bonds.

b. Prepare an amortization schedule similar to that in Exhibit 45. Enter data in the schedule for only the first two interest periods. Use the interest method.

c. Prepare journal entries to record issuance of the bonds, the first six months' interest expense on the bonds, and the adjustment needed on 2011 May 31, assuming the company's fiscal year ends on that date.

Problem E Kelly Furniture Company issued USD 400,000 face value of 18 percent, 20-year junk bonds on 2009 October 1. The bonds are dated 2009 October 1, call for semiannual interest payments on April 1 and October 1, and are issued to yield 16 percent (8 percent per period).

a. Compute the amount received for the bonds.

b. Prepare an amortization schedule similar to that in Exhibit 45. Enter data in the schedule for only the first two interest periods. Use the interest method and make all calculations to the nearest dollar.

c. Prepare entries to record the issuance of the bonds, the first six months' interest on the bonds, and the adjustment needed on 2010 June 30, assuming the company's fiscal year ends on that date.

Problem F Houston Clothing Company issued USD 600,000 of 12 percent serial bonds on 2009 July 1, at face value. The bonds are dated 2009 July 1; call for semiannual interest payments on July 1 and January 1; and mature at the rate of USD 120,000 per year, with the first maturity date falling on 2010 July 1. The company's accounting period ends on September 30.

Prepare journal entries to record the interest payment of 2010 July 1; the maturing of USD 120,000 of bonds on 2010 July 1; and the adjusting entry needed on 2010 September 30. Also, show how the bonds would be presented in the company's balance sheet for 2010 September 30.

15.16 Alternate problems

Alternate problem A On 2009 December 1, New Jersey Waste Management Company issued USD 300,000 of 10-year, 9 percent bonds dated 2009 July 1, at 100. Interest on the bonds is payable semiannually on July 1 and January 1. All of the bonds are registered. The company's accounting period ends on March 31. Quarterly financial statements are prepared.

The company deposits a sum of money sufficient to pay the semiannual interest on the bonds in a special checking account in First National Bank and draws interest

payment checks on this account. The deposit is made the day before the checks are drawn.

Prepare journal entries to record the issuance of the bonds; the December 31 adjusting entry; the 2010 January 1, interest payment; and the adjusting entry needed on 2010 March 31, to prepare quarterly financial statements.

Alternate problem B Safe Toy Company is seeking to issue USD 800,000 face value of 10 percent, 20-year bonds. The bonds are dated 2009 June 30, call for semiannual interest payments, and mature on 2029 June 30.

a. Compute the price investors should offer if they seek a yield of 8 percent on these bonds. Also, compute the first six months' interest assuming the bonds are issued at that price. Use the interest method and calculate all amounts to the nearest dollar.

b. Repeat part (a) assuming investors seek a yield of 12 percent.

Alternate problem C On 2009 July 1, Tick-Tock Clock Company issued USD 100,000 face value of 8 percent, 10-year bonds. These bonds call for semiannual interest payments and mature on 2019 July 1. The company received cash of USD 87,538, a price that yields 10 percent.

Assume that the company's fiscal year ends on March 31. Prepare journal entries to record the bond interest expense on 2010 January 1, and the adjustment needed on 2010 March 31, using the interest method. Calculate all amounts to the nearest dollar.

Alternate problem D Creative Web Page issued USD 600,000 face value of 15 percent, 20-year bonds on 2010 October 1. The bonds are dated 2010 October 1, call for semiannual interest payments on April 1 and October 1, and are issued to yield 16 percent (8 percent per period).

a. Compute the amount received for the bonds.

b. Prepare an amortization schedule similar to that in Exhibit 44. Enter data in the schedule for only the first two interest periods. Use the interest method.

c. Prepare journal entries to record issuance of the bonds, the first six months' interest expense on the bonds, and the adjustment needed on 2011 May 31, assuming Creative Web Page's fiscal year ends on that date.

Alternate problem E Goodhew Software Systems, Inc., issued USD 100,000 face value of 10 percent, 20-year bonds on 2009 July 1. The bonds are dated 2009 July 1, call for semiannual interest payments on July 1 and January 1, and are issued to yield 12 percent (6 percent per period).

- a. Compute the amount received for the bonds.
- b. Prepare an amortization schedule similar to that in Exhibit 44. Enter data in the schedule for only the first two interest periods. Use the interest method and calculate all amounts to the nearest dollar.
- c. Prepare entries to record the issuance of the bonds, the first six months' interest on the bonds, and the adjustment needed on 2010 June 30, assuming Goodhew's fiscal year ends on that date.

Alternate problem F Western Solar Energy Company issued USD 400,000 of 12 percent bonds on 2009 July 1, at face value. The bonds are dated 2009 July 1, call for semiannual payments on July 1 and January 1, and mature at the rate of USD 40,000 per year on July 1, beginning in 2010. The company's accounting period ends on September 30.

- a. Prepare journal entries to record the interest expense and payment for the six months ending 2010 July 1; the maturing of the bonds on 2010 July 1; and the adjusting entries needed on 2010 September 30.
- b. Show how the bonds would be presented in the company's balance sheet for 2010 September 30.

15.17 Beyond the numbers—Critical thinking

Business decision case A A company is trying to decide whether to invest USD 2 million on plant expansion and USD 1 million to finance a related increase in inventories and accounts receivable. The USD 3 million expansion is expected to increase business volume substantially. Profit forecasts indicate that income from operations will rise from USD 1.6 million to USD 2.4 million. The income tax rate will be about 40 percent. Net income last year was USD 918,000. Interest expense on debt now outstanding is USD 70,000 per year. There are 200,000 shares of common stock currently outstanding. The USD 3 million needed can be obtained in two alternative ways:

- Finance entirely by issuing additional shares of common stock at an expected issue price of USD 75 per share.

- Finance two-thirds with bonds, one-third with additional stock. The bonds would have a 20-year life, bear interest at 10 percent, and sell at face value. The issue price of the stock would be USD 80 per share.

Should the investment be made? If so, explain which financing plan you would recommend. (Hint: Calculate earnings per share for last year and for future years under each of the alternatives.)

Business decision case B An annual report of a company contained the following paragraph in the notes to the financial statements:

The 9 7/8 percent Senior Subordinated Debentures are redeemable at the option of [the company] at 103.635 percent of the principal amount plus accrued interest if redeemed prior to [a certain date], and at decreasing prices thereafter. Mandatory sinking fund payments of USD 3,000,000 (which [the company] may increase to USD 6,000,000 annually)...and are intended to retire, at par plus accrued interest, 75 percent of the issue prior to maturity.

Answer the following questions:

- What does the term debentures mean?
- How much is the call premium initially? Does this premium decrease over time?
- Under what circumstances might the company want to increase the sinking fund payments?

Business decision case C *The Wall Street Journal* contained a table showing yield comparisons for groups of corporate bonds. The following data have been adapted from the table:

	4/28	Yield As of 4/27	Percentage 52-week High	Low
Risk category				
1-10 year maturities:				
High quality	7.08%	6.94%	7.16%	5.32%
Medium quality	7.41	7.26	7.49	5.76
Over 10 year maturities:				
High quality	7.91	7.81	8.06	6.93
Medium quality	8.36	8.25	8.49	7.29
High-yield bonds	10.45	10.48	10.53	9.25

Standard & Poor's ratings were:	
High quality	AAA to AA
Medium quality	A to BBB
High yield	BB to C

Prepare written answers to the following questions.

a. In each column of numbers, why do the yield rates increase from top to bottom?

b. For the high quality and medium quality bonds, what could account for the increase in the yield rates from 4/27 to 4/28? Take into consideration possible economic events.

c. Which risk class of bonds was closest to its 52-week high on 4/28? What could have been the cause?

Annual report analysis D Refer to the Annual report appendix and determine the times interest earned ratio for 2003 for The Limited. Use "operating income" to represent IBIT. Prepare written comments on the results of your analysis.

Annual report analysis E A recent annual report of Emhart Corporation contained the following paragraph in its notes to the financial statements:

The 6 3/4 percent convertible subordinated debentures may be converted into shares of common stock at a price of USD 26.50 per share at any time prior to maturity. They are redeemable at prices decreasing from 105 percent of face amount currently to 100 percent [at a certain future date].

Answer the following questions:

a. If you held one USD 1,000 bond, how many shares of stock would you receive if you converted the bond into shares of stock? (Hint: You can use the principal amount of the bond to buy shares of stock at the stated price.)

b. Assume you held one USD 1,000 bond and the bond was called by the company at a price of 105 percent of the face amount. If the current market price per share of the stock was USD 29, would you convert the bond into shares of stock or would you surrender the bond? Explain.

Ethics case – Writing experience F Refer to "An ethical perspective: Rawlings furniture company". Write out the answers to the following questions:

a. What motivates the brothers to pursue this new strategy?

b. Are the brothers the only ones assuming the risks?

c. How will workers, the city, the holders of the original bond issue, and the other present stockholders be affected if the junk bonds are issued and are then defaulted?

d. How might these parties (stakeholders) be affected if a new buyer outbids the management?

e. What ethical considerations are involved?

Group project G In groups of two or three students, write a two-page, double-spaced paper on one of the following topics:

The Use of Junk Bonds in the 1980s

Why Market Rates of Interest and Prices of Bonds Are Inversely Related

How a Company Can Force Conversion of Callable, Convertible Bonds

How Bond Sinking Funds Work

Do some library research on your topic and properly cite your sources. Make your analysis convincing. Your paper should be neat, contain no spelling or grammatical errors, and be the result of several drafts. Use a word processing program to prepare your paper if possible. Your paper should have a cover page with the title and the authors' names.

Group project H In a small group of students, locate *Accounting Principles Board Opinion No. 21* (from a faculty member or from the library) relating to the amortization of premiums and discounts on bonds. Investigate why the Board recommended the effective interest rate method over the straight-line method for amortizing bond premiums and discounts. Which method do you favor and why? Summarize the highlights of the APB Opinion and your own opinions in a written report to your instructor.

Group project I With one or two other students, locate the annual reports of three companies with bonds outstanding as part of their long-term debt. You should read the notes to the financial statements to determine the composition of the long-term debt. Identify the bonds (e.g. debentures, serial), their interest rates, and any other information pertaining to them. Compare the bonds outstanding for the three companies. Write a report to your instructor summarizing your findings.

15.18 Using the Internet—A view of the real world

Visit the following site for the Eastman Kodak Company:

<http://www.kodak.com>

By following the instructions on the screen, locate the notes to the financial statements and find the one pertaining to long-term debt. In your own words, write a short report to your instructor summarizing the types of long-term debt held by the company and some of the details of the arrangements with lenders.

Visit the following website for Eastman Chemical Company:

<http://www.eastman.com>

Pursue choices on the screen until you locate the financial information. Then investigate long-term borrowings. You will probably go down some "false paths" to get to this financial information, but you can get there. This experience is all part of learning to use the Internet. Check to determine the composition of the long-term borrowings. Check out the notes to the financial statements for further information. Browse around the site for any other interesting information concerning the company. Write a memo to your instructor summarizing your findings.

15.19 Answers to self-test

True-false

True. These unsecured bonds are called debenture bonds and are backed only by the general creditworthiness of the issuer.

False. Callable bonds may be called at the option of the issuer.

True. This statement is the definition of favorable financial leverage. However, unfavorable financial leverage can result when favorable financial leverage was planned. Unfavorable financial leverage will result if income before interest and taxes is much lower than anticipated. Then earnings per share for the common stockholders would be lower than they would have been without the borrowing.

True. Purchasers will not be willing to pay the face amount if the market rate of interest exceeds the contract rate. By paying less than the face value, purchasers can earn the market rate of interest on the bonds.

False. The effective interest rate method is the recommended method. The straight-line method may be used only when the results are not materially different from the interest method.

Multiple-choice

a. The discount of USD 4,000 must be recorded. Also, the accrued interest must be recognized ($\text{USD } 100,000 \times 12 \text{ percent} \times 2/12 = \text{USD } 2,000$).

c. The premium is USD 4,000, and the accrued interest is USD 2,000. Both must be recognized.

b. The interest is ($\text{USD } 328,298 \times 0.11 \times 1/2$) = USD 18,056.

d. The interest would have been ($\text{USD } 400,000 \times 0.04$) + ($\text{USD } 71,702/20$) = USD 19,585.

c. Income before interest and taxes is ($\text{USD } 100,000 + \text{USD } 40,000 + \text{USD } 20,000$) = USD 160,000. This total of USD 160,000 divided by interest of USD 20,000 = 8 times.

16 Analysis using the statement of cash flows

16.1 Learning objectives

After studying this chapter, you should be able to:

- Explain the purposes and uses of the statement of cash flows.
- Describe the content of the statement of cash flows and where certain items would appear on the statement.
- Describe how to calculate cash flows from operating activities under both the direct and indirect methods.
- Prepare a statement of cash flows, under both the direct and indirect methods, showing cash flows from operating activities, investing activities, and financing activities.
- Analyze a statement of cash flows of a real company.
- Analyze and use the financial results—cash flow per share of common stock, cash flow margin, and cash flow liquidity ratios.
- Use working paper to prepare a statement of cash flows (appendix).

16.2 A career in external auditing

In 1929 the Dow Jones Industrial Average fell 40 percent over the period from September 3rd to October 29th. The Dow bottomed out in July 1932, after losing 89 percent of its value. Some blamed accounting for the run-up in prices and the

subsequent crash. Stocks may have been overpriced because companies engaged in "window dressing" to enhance their reported income. At the time, accounting practices and reporting procedures were not well-established. As investors began to understand this, confidence fell. Investors panicked and sold stocks in a frenzy. This action contributed to the Great Depression of the 1930s. The Dow did not reach pre-crash levels again until 1954.

In response to the financial crisis, the Securities and Exchange Commission (SEC) was established in 1934 to regulate the filing requirements of firms listed on US stock exchanges. The SEC requires all listed firms in each year to prepare financial statements in accordance with generally accepted accounting principles (GAAP) and to have those financial statements audited by an independent party. This independent verification was meant to restore investor confidence and provide ongoing integrity in the capital market system. If a company fails to follow GAAP, it can be delisted from the stock exchange.

For many reasons, managers have incentives to manipulate income to enhance reported performance. It is the job of auditors to use their understanding of accounting principles and business practices to provide reasonable assurance that financial statements are free from such manipulation. One possible indication of income manipulation occurs when accrual earnings are high relative to cash flows from operating activities, sometimes referred to as "cash earnings". Accrual earnings are typically easier to manipulate because they employ estimates, whereas cash earnings are tied to actual cash receipts and payments from operations. Accrual earnings can be managed upward by recognizing earnings prematurely (or falsely) or by underestimating expenses such as depreciation expense or bad debts expense.

In addition to the challenges of verifying the accuracy of financial statements, a career in auditing provides a variety of options. Students can work for global auditing firms or small local firms, choose to travel frequently or on a limited basis, and decide to live in any geographic area around the world. A career in auditing also provides an excellent springboard for future opportunities. Companies realize that their auditors can be a valuable part of the management team. Auditors have expertise about the firm, its industry, and its accounting practices. Auditors commonly leave the auditing profession to work for one of their many clients.

The income statement, statement of stockholders' equity (or statement of retained earnings), and the balance sheet do not answer all the questions raised by users of financial statements. Such questions include: How much cash was generated by the company's operations? How can the Cash account be overdrawn when my accountant said the business was profitable? Why is such a profitable company able to pay only small dividends? How much was spent for new plant and equipment, and where did the company get the cash for the expenditures? How was the company able to pay a dividend when it incurred a net loss for the year?

In this chapter, you will learn about the statement of cash flows, which answers these questions. The statement of cash flows is another major required financial statement; it shows important information not shown directly in the other financial statements.

16.3 Purposes of the statement of cash flows

In November 1987, the Financial Accounting Standards Board issued *Statement of Financial Accounting Standards No. 95*, "Statement of Cash Flows".²² The Statement became effective for annual financial statements for fiscal years ending after 1988 July 15. Thus, the statement of cash flows is now one of the major financial statements issued by a company. The statement of cash flows replaced the statement of changes in financial position, on which funds were generally defined as working capital. **Working capital** is equal to current assets minus current liabilities.

The main purpose of the statement of cash flows is to report on the cash receipts and cash disbursements of an entity during an accounting period. Broadly defined, cash includes both cash and cash equivalents, such as short-term investments in Treasury bills, commercial paper, and money market funds. Another purpose of this statement is to report on the entity's investing and financing activities for the period. As shown in Exhibit 50, the statement of cash flows reports the effects on cash

²² FASB, *Statement of Financial Accounting Standards No. 95*, "Statement of Cash Flows" (Stamford, Conn., 1987). Copyright by the Financial Accounting Standards Board, High Ridge Park, Stamford, Connecticut 06905. U.S.A. Quoted (or excerpted) with permission. Copies of the complete document are available from the FASB.

during a period of a company's operating, investing, and financing activities. Firms show the effects of significant investing and financing activities that do not affect cash in a schedule separate from the statement of cash flows.

16.4 Uses of the statement of cash flows

The **statement of cash flows** summarizes the effects on cash of the operating, investing, and financing activities of a company during an accounting period; it reports on past management decisions on such matters as issuance of capital stock or the sale of long-term bonds. This information is available only in bits and pieces from the other financial statements. Since cash flows are vital to a company's financial health, the statement of cash flows provides useful information to management, investors, creditors, and other interested parties.

The statement of cash flows presents the effects on cash of all significant operating, investing, and financing activities. By reviewing the statement, management can see the effects of its past major policy decisions in quantitative form. The statement may show a flow of cash from operating activities large enough to finance all projected capital needs internally rather than having to incur long-term debt or issue additional stock. Alternatively, if the company has been experiencing cash shortages, management can use the statement to determine why such shortages are occurring. Using the statement of cash flows, management may also recommend to the board of directors a reduction in dividends to conserve cash.

The information in a statement of cash flows assists investors, creditors, and others in assessing the following:

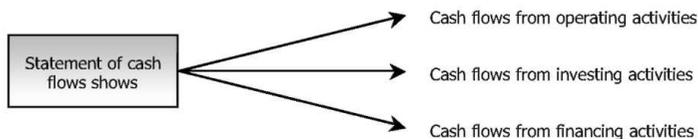
- Enterprise's ability to generate positive future net cash flows.
- Enterprise's ability to meet its obligations.
- Enterprise's ability to pay dividends.
- Enterprise's need for external financing.
- Reasons for differences between net income and associated cash receipts and payments.
- Effects on an enterprise's financial position of both its cash and noncash investing and financing transactions during the period (disclosed in a separate schedule).

16.5 Information in the statement of cash flows

The statement of cash flows classifies cash receipts and disbursements as operating, investing, and financing cash flows. Both inflows and outflows are included within each category. Look at Exhibit 51 to see how activities can be classified to prepare a statement of cash flows.

Operating activities generally include the cash effects (inflows and outflows) of transactions and other events that enter into the determination of net income. Cash inflows from operating activities affect items that appear on the income statement and include: (1) cash receipts from sales of goods or services; (2) interest received from making loans; (3) dividends received from investments in equity securities; (4) cash received from the sale of trading securities; and (5) other cash receipts that do not arise from transactions defined as investing or financing activities, such as amounts received to settle lawsuits, proceeds of certain insurance settlements, and cash refunds from suppliers.

Illustration 16.1 Statement of Cash Flows—Basic Content



Investing and financing activities that do not affect cash are shown in a separate schedule.

Exhibit 50: Statement of cash flows—Basic content

Operating activities Cash effect of transactions and other events that enter into the determination of net income Cash outflows for:

<p>Cash inflows from:</p> <ul style="list-style-type: none"> Sales of goods or services Interest Dividends Sale of trading securities <p>Other sources not related to investing or financing activities (e.g. insurance settlements)</p>	<p>Cash outflows for:</p> <ul style="list-style-type: none"> Merchandise Inventory Salaries and wages Interest Purchase of trading securities Other items not related to investing or financing activities (e.g. contributions to charities)
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Investing activities Transactions involving the acquisition or disposal of noncurrent assets

Cash outflows for:
Purchase of property, plant, and equipment

Sale of property, plant, and

Sale of available-for-sale and held-to-maturity securities

Purchase of available-for-sale and held-to-maturity securities
Making of loans

Financing activities Transactions with creditors and owners

Cash inflows from:

Issuing capital stock
Issuing debt (bonds, mortgages, notes, and other short- or long-term borrowing of cash)

Purchase of treasury stock
Cash dividends

Exhibit 51: Rules for classifying activities in the statement of cash flows

Cash outflows for operating activities affect items that appear on the income statement and include payments: (1) to acquire inventory; (2) to other suppliers and employees for other goods or services; (3) to lenders and other creditors for interest; (4) for purchases of trading securities; and (5) all other cash payments that do not arise from transactions defined as investing or financing activities, such as taxes and payments to settle lawsuits, cash contributions to charities, and cash refunds to customers.

Investing activities generally include transactions involving the acquisition or disposal of noncurrent assets. Thus, cash inflows from investing activities include cash received from: (1) the sale of property, plant, and equipment; (2) the sale of available-for-sale and held-to-maturity securities; and (3) the collection of long-term loans made to others. Cash outflows for investing activities include cash paid: (1) to purchase property, plant, and equipment; (2) to purchase available-for-sale and held-to-maturity securities; and (3) to make long-term loans to others.

Financing activities generally include the cash effects (inflows and outflows) of transactions and other events involving creditors and owners. Cash inflows from financing activities include cash received from issuing capital stock and bonds,

mortgages, and notes, and from other short- or long-term borrowing. Cash outflows for financing activities include payments of cash dividends or other distributions to owners (including cash paid to purchase treasury stock) and repayments of amounts borrowed. Payment of interest is not included because interest expense appears on the income statement and is, therefore, included in operating activities. Cash payments to settle accounts payable, wages payable, and income taxes payable are not financing activities. These payments are included in the operating activities section.

Information about all material investing and financing activities of an enterprise that do not result in cash receipts or disbursements during the period appear in a separate schedule, rather than in the statement of cash flows. The disclosure may be in narrative form. For instance, assume a company issued a mortgage note to acquire land and buildings. A separate schedule might appear as follows:

Schedule of noncash financing also investing activities: \$35,000
Mortgage note issued for acquiring land also buildings

An accounting perspective:

Business insight

In a supplemental schedule of noncash investing and financing activities, Johnson & Johnson reported one item as follows:

Treasury stock issued for employee compensation and stock option plans, net of cash proceeds USD 252 million

The company included the cash proceeds amount from the exercise of stock options (USD 149 million) in the cash flows from financing activities section of the statement of cash flows.

16.6 Cash flows from operating activities

Cash flows from operating activities show the net amount of cash received or disbursed during a given period for items that normally appear on the income statement. You can calculate these cash flows using either the direct or indirect

method. The **direct method** deducts from cash sales only those operating expenses that consumed cash. This method converts each item on the income statement directly to a cash basis. Alternatively, the **indirect (addback) method** starts with accrual basis net income and indirectly adjusts net income for items that affected reported net income but did not involve cash.

The *Statement of Financial Accounting Standards No. 95* encourages use of the direct method but permits use of the indirect method. Whenever given a choice between the indirect and direct methods in similar situations, accountants choose the indirect method almost exclusively. The American Institute of Certified Public Accountants reports that approximately 98 percent of all companies choose the indirect method of cash flows.

The direct method converts each item on the income statement to a cash basis. For instance, assume that sales are stated at USD 100,000 on an accrual basis. If accounts receivable increased by USD 5,000, cash collections from customers would be USD 95,000, calculated as USD 100,000 - USD 5,000. The direct method also converts all remaining items on the income statement to a cash basis, as we will illustrate later.

The indirect method adjusts net income (rather than adjusting individual items in the income statement) for (1) changes in current assets (other than cash) and current liabilities, and (2) items that were included in net income but did not affect cash.

The most common example of an operating expense that does not affect cash is depreciation expense. The journal entry to record depreciation debits an expense account and credits an accumulated depreciation account. This transaction has no effect on cash and, therefore, should not be included when measuring cash from operations. Because accountants deduct depreciation in computing net income, net income understates cash from operations. Under the indirect method, since net income is a starting point in measuring cash flows from operating activities, depreciation expense must be added back to net income.

Consider the following example. Company A had net income for the year of USD 20,000 after deducting depreciation of USD 10,000, yielding USD 30,000 of positive cash flows. Thus, Company A had USD 30,000 of positive cash flows from operating activities. Company B had a net loss for the year of USD 4,000 after deducting USD

10,000 of depreciation. Although Company B experienced a loss, it had USD 6,000 of positive cash flows from operating activities, as shown here:

	Company A	Company B
Net income (loss)	\$20,000	\$(4,000)
Add depreciation expense (which did not require use of cash)	10,000	10,000
Positive cash flows from operating activities	\$30,000	\$ 6,000

Company B's loss would have had to exceed USD 10,000 to generate negative cash flows from operating activities.

Companies add other expenses and losses back to net income because they do not actually use company cash; they call these addbacks **noncash charges or expenses**. Besides depreciation, the items added back include amounts of depletion that were expensed, amortization of intangible assets such as patents and goodwill, amortization of discount on bonds payable, and losses from disposals of noncurrent assets.

An accounting perspective:

Business insight

Business Insight PSINet, Inc., an Internet-access provider, said it would have a positive cash flow from operations for the first time in early 1997. The company was the first to provide unlimited access to the Internet to consumers at a flat rate of USD 19.95 per month. However, it was costing about USD 22 per month per customer to provide the service. The company decided to abandon this market and sell only to the more profitable corporate market. Corporate clients can be charged about USD 200 per month for dial-up access.

Source: "PSINet Sees Positive Cash Flow in '97; Likely Financial Boost Lifts Shares 24 percent," The Wall Street Journal, Friday, December 27, 1996, p. B11.

To illustrate the addback of losses from disposals of noncurrent assets, assume that Quick Company sold a piece of equipment for USD 6,000. The equipment had cost USD 10,000 and had accumulated depreciation of USD 3,000. The journal entry to record the sale is:

Cash (+A)	6,000	
Accumulated depreciation	3,000	
Loss on sale of equipment (-SE)	1,000	
Equipment (-A)		10,000
To record disposal of equipment at a loss.		

Quick would show the USD 6,000 inflow from the sale of the equipment as a cash inflow from investing activities on its statement of cash flows. Although Quick deducted the loss of USD 1,000 in calculating net income, it recognized the total USD 6,000 effect on cash (which reflects the USD 1,000 loss) as resulting from an investing activity. Thus, Quick must add the loss back to net income in converting net income to cash flows from operating activities to avoid double-counting the loss.

Certain revenues and gains included in arriving at net income do not provide cash; these items are **noncash credits or revenues**. Quick should deduct these revenues and gains from net income to compute cash flows from operating activities. Such items include gains from disposals of noncurrent assets, income from investments carried under the equity method, and amortization of premiums on bonds payable.

To illustrate why we deduct the gain on the disposal of a noncurrent asset from net income, assume that Quick sold the equipment just mentioned for USD 9,000. The journal entry to record the sale is:

Cash (+A)	9,000	
Accumulated depreciation	3,000	
Equipment (-A)		10,000
Gain on sale of equipment (+SE)	2,000	
To record disposal of equipment at a gain.		

Quick shows the USD 9,000 inflow from the sale of the equipment on its statement of cash flows as a cash inflow from investing activities. Thus, it has already recognized the total USD 9,000 effect on cash (including the USD 2,000 gain) as resulting from an investing activity. Since the USD 2,000 gain is also included in

calculating net income, Quick must deduct the gain in converting net income to cash flows from operating activities to avoid double-counting the gain.

16.7 Steps in preparing statement of cash flows

Accountants follow specific procedures when preparing a statement of cash flows. We show these procedures using the financial statements and additional data for Welby Company in Exhibit 52.

After determining the change in cash, the first step in preparing the statement of cash flows is to calculate the cash flows from operating activities, using either the direct or indirect method. The second step is to analyze all of the noncurrent accounts and additional data for changes resulting from investing and financing activities. The third step is to arrange the information gathered in steps 1 and 2 into the proper format for the statement of cash flows.

The direct method converts the income statement from the accrual basis to the cash basis. Accountants must consider changes in balance sheet accounts that are related to items on the income statement. The accounts involved are all current assets or current liabilities. The following schedule shows which balance sheet accounts are related to the items on Welby's income statement:

Income statement Items	Related balance sheet items	Cash flows from Operating activities
Sales	Accounts receivable	Cash received from customers
Cost of goods sold	Accounts payable and merchandise inventory	Cash paid for merchandise
Operating expenses and taxes	Accrued liabilities and prepaid expenses	Cash paid for operating expenses

For other income statement items, the relationship is often obvious. For instance, salaries payable relates to salaries expense, federal income tax payable relates to federal income tax expense, prepaid rent relates to rent expense, and so on.

The table below shows how income statement items are affected by balance sheet accounts:

Accrual Basis

**Cash basis
(cash flows from**

Sales	+ Decrease or – Increase in Accounts Receivable	operating activities) =Cash received from customers
Cost of goods sold	+ Increase or – Decrease in Merchandise Inventory and + Decrease or – Increase in Accounts Payable	=Cash paid for merchandise
Operating expenses	Decrease or – Increase in related accrued liability And Increase or – Decrease in related prepaid expense	=Cash paid for operating expense

Noncash operating expenses (such as depreciation expense and amortization expense), revenues, gains, and losses are reduced to zero in the cash basis income statement.

Welby Company
Comparative balance sheet
2010 December 31 and 2009

	2010	2009	Increase/ (Decrease)
Assets			
Cash	\$21,000	\$ 10,000	\$11,000
Accounts receivable	30,000	20,000	10,000
Merchandise inventory	26,000	30,000	(4,000)
Equipment	70,000	50,000	20,000
Accumulated depreciation – Equipment	(10,000)	(5,000)	(5,000)
Total assets	\$137,000	\$105,000	\$32,000
Liabilities and stockholders' equity			
Accounts payable	\$9,000	\$ 15,000	\$(6,000)
Accrued liabilities payable	2,000	-0-	2,000
Common stock (\$10 par value)	90,000	60,000	30,000
Retained earnings	36,000	30,000	6,000
Total liabilities and stockholders' equity	\$137,000	\$105,000	\$32,000

Welby Company
Income statement
For the year ended 2010 December 31

Sales		\$140,000
Cost of goods sold		100,000
Gross margin		\$ 40,000
Operating expenses (other than \$25,000 depreciation)		
Depreciation expense	5,000	30,000
Net income		\$ 10,000

Additional data

1. Equipment purchased for cash during 2010 amounted to \$20,000.
2. Common stock with a par value of \$30,000 was issued at par for cash.
3. Cash dividends declared and paid in 2010 totaled \$4,000.

Exhibit 52: Financial statements and other data

Welby Company
Working paper to convert income statement from accrual basis to cash basis
For the year ended 2010 December 31

	Accrual Basis	Add	Deduct	Cash Basis (Cash activities)	Flows from operating
Sales	\$140,000		\$10,000*		\$130,000
Cost of goods sold	\$100,000	\$6,000†	4,000‡	\$102,000	
Operating expenses	25,000		2,000§	23,000	
Depreciation expense	5,000		5,000		
	—————			-0-	
Net income	\$130,000				125,000
* Increase in Accounts Receivable.	\$10,000				\$ 5,000
† Decrease in Accounts Payable.					
‡ Decrease in Merchandise Inventory.					
§ Increase in Accrued Liabilities Payable.					

Exhibit 53: Working paper to convert income statement from accrual basis to cash basis

As a general rule, an increase in a current asset (other than cash) decreases cash inflow or increases cash outflow. Thus, when accounts receivable increases, sales revenue on a cash basis decreases (some customers who bought merchandise have not yet paid for it). When inventory increases, cost of goods sold on a cash basis increases (increasing cash outflow). When a prepaid expense increases, the related operating expense on a cash basis increases. (For example, a company not only paid for insurance expense but also paid cash to increase prepaid insurance.) The effect on cash flows is just the opposite for decreases in these other current assets.

An increase in a current liability increases cash inflow or decreases cash outflow. Thus, when accounts payable increases, cost of goods sold on a cash basis decreases (instead of paying cash, the purchase was made on credit). When an accrued liability (such as salaries payable) increases, the related operating expense (salaries expense) on a cash basis decreases. (For example, the company incurred more salaries than it paid.) Decreases in current liabilities have just the opposite effect on cash flows.

Welby Company had no prepaid expenses. The current assets and current liabilities affecting the income statement items changed as follows:

	Increase	Decrease
Accounts receivable	\$10,000	
Merchandise inventory		\$4,000
Accounts payable		6,000
Accrued liabilities payable	2,000	

Thus, Welby converted its income statement to a cash basis as shown in Exhibit 53.

The indirect method makes certain adjustments to convert net income to cash flows from operating activities. Welby must analyze the effects of changes in current accounts (other than cash) on cash. The firm should also take into account noncash items such as depreciation that affected net income but not cash. Welby had only one such item—depreciation expense of USD 5,000. Applying these adjustments to Welby's financial statements and other data in Exhibit 52 yields the following schedule:

Cash flow from operating activities:		
Net income	\$10,000	
Adjustments to reconcile net income to net cash provided by operating activities:		
Increase in accounts receivable	(10,000)	
Decrease in merchandise inventory	4,000	
Decrease in accounts payable	(6,000)	
Increase in accrued liabilities payable	2,000	
Depreciation expense	5,000	
Net cash provided by operating activities		\$5,000

Notice that both the direct and indirect methods result in USD 5,000 net cash provided by operating activities.

You can use the following table to make the adjustments to net income for the changes in current assets and current liabilities:

For changes in these current assets and current liabilities:	Make these adjustments to convert accrual basis net income to cash basis net income:	
	Add	Deduct
Accounts receivable	Decrease	Increase
Merchandise inventory	Decrease	Increase
Prepaid expenses	Decrease	Increase
Accounts payable	Increase	Decrease
Accrued liabilities payable	Increase	Decrease

Note that you would handle all changes in current asset accounts in a similar manner. All changes in current liability accounts require the opposite treatment of the current asset changes. Use this table in making these adjustments:

For changes in-	Add the changes to net income	Deduct the changes from net income
Current assets	Decreases	Increases
Current liabilities	Increases	Decreases

In applying the rules in this table, add a decrease in a current asset to net income, and deduct an increase in a current asset from net income. For current liabilities, add increases to net income, and deduct decreases from net income.

Under the indirect method, the amount of cash flows from operating activities is calculated as follows:

Accrual basis net income
 + or - Changes in noncash current asset and current liability accounts
 + Expenses and losses not affecting cash
 - Revenues and gains not affecting cash
 = Cash flows from operating activities

After analyzing the changes in current accounts for their effect on cash, we examine the noncurrent accounts and additional data. Remember that a change in a noncurrent account usually comes about because cash is received or disbursed.

In the Welby example, we must analyze four noncurrent accounts: Retained Earnings, Equipment, Accumulated Depreciation—Equipment, and Common Stock.

- The analysis of the noncurrent accounts can begin with any of the noncurrent accounts; we begin by reviewing the Retained Earnings account. Retained Earnings is the account to which net income or loss for the period was closed. The USD 6,000 increase in this account consists of USD 10,000 of net income less USD 4,000 of dividends paid.

Retained earnings			
		Beg. Bal.	30,000
Dividends	4,000	Net income	10,000
		End bal.	36,000

The net income amount is in the income statement. We enter both net income and dividends on the statement of cash flows in Exhibit 54, Part B. The USD 10,000 net income is the starting figure in determining cash flows from operating activities.

Thus, we enter the net income of USD 10,000 on the statement in the cash flows from operating activities section. The dividends are shown as a deduction in the cash flow from financing activities section.

- The Equipment account increased by USD 20,000. The dividends are shown as a deduction in the cash flow from financing activities section. The additional data indicate that USD 20,000 of equipment was purchased during the period. A purchase of equipment is a deduction in the cash flows from investing activities section.

- The USD 5,000 increase in the Accumulated Depreciation—Equipment account equals the amount of depreciation expense in the income statement for the period. As shown earlier, because depreciation does not affect cash, under the indirect (addback) method we add it back to net income on the statement of cash flows to convert accrual net income to a cash basis.

- The USD 30,000 increase in common stock resulted from the issuance of stock at par value, as disclosed in the additional data (item 2) in Exhibit 52. An issuance of stock in the statement of cash flows is a positive amount in the cash flows from financing activities section.

After we have analyzed the noncurrent accounts, we can prepare the statement of cash flows from the information generated. Part A of Exhibit 54 presents the statement of cash flows for Welby using the direct method. Part B shows the statement of cash flows for Welby using the indirect method. The appendix to this chapter shows how a working paper can be used to assist in preparing a statement of cash flows for the Welby Company under the indirect method. However, we believe you will gain a greater conceptual understanding by not using a working paper.

The statement of cash flows has three major sections: cash flows from operating activities, cash flows from investing activities, and cash flows from financing activities. The format in the operating activities section differs for the direct and indirect methods. The direct method adjusts each item in the income statement to a cash basis. The indirect method makes these same adjustments but to net income rather than to each item in the income statement. Both methods eliminate not only the effects of noncash items, such as depreciation, but also gains and losses on sales of plant assets.

The only item in the cash flows from investing activities section is the cash outflow of USD 20,000 for the purchase of equipment. In a more complex situation, other items could be included in this category.

Two items are under the cash flows from financing activities section: The issuance of common stock resulted in a cash inflow of USD 30,000 and the payment of dividends resulted in a cash outflow of USD 4,000.

The last line of the statement is the USD 11,000 increase in cash for the year. Other examples could result in a decrease in cash for the year.

If the direct method is used, the reconciliation of net income to net cash flows from operating activities (the indirect method) must be shown in a separate schedule. However, if the indirect method is used and the reconciliation is shown in the statement of cash flows, no such separate schedule is required. Possibly this is one of the reasons why so many companies use the indirect method.

However, if the indirect method is used, the amount of interest and income taxes paid must be provided in related disclosures, usually immediately below the statement of cash flows. For instance, if Welby Company had paid interest of USD 200 and income taxes of USD 8,000, these facts would be reported as follows:

A. Direct Method

**Welby Company
Statement of cash flows For the year ended
2010 December 31**

Cash flows from operating activities:		
Cash received from customers	\$130,000	
Cash paid for merchandise	(102,000)	
Cash paid for operating expenses	(23,000)	
Net cash provided by operating activities		\$5,000
Cash flows from investing activities:		
Purchase of equipment		(20,000)
Cash flows from financing activities:		
Proceeds from issuing common stock	\$ 30,000	
Paid cash dividends	(4,000)	
Net cash provided by financing activities		26,000
Net increase (decrease) in cash		\$11,000

B. Direct Method

**Welby Company
Statement of cash flows For the year ended
2010 December 31**

Cash flows from operating activities:	
Net income	\$10,000
Adjustments to reconcile net income to net cash	
Provided by operating activities:	
Increase in accounts receivable	(10,000)
Decrease in merchandise inventory	4,000
Decrease in accounts payable	(6,000)
Increase in accrued liabilities payable	2,000
Depreciation expense	5,000
Net cash provided by operating activities	\$ 5,000
Cash flows from investing activities:	
Purchase of equipment	(20,000)
)
Cash flows from financing activities:	
Proceeds from issuing common stock	\$ 30,000
Paid cash dividends	(4,000)
Net cash provided by financing activities	26,000
Net increase (decrease) in cash	\$11,000
	0

Exhibit 54: Statement of cash flows-Welby company

Supplemental cash flow information:	
Interest paid	\$ 200
Income taxes paid	8,000

16.8 Analysis of the statement of cash flows

Business students will benefit throughout their careers from knowing how to analyze a statement of cash flows. We will use the consolidated statement of cash flows from Synotech, Inc. to illustrate the analysis. This company will be used in the next chapter to illustrate the complete analysis and interpretation of all the financial statements. The example is adapted from a real USA company's recent annual report.

Exhibit 55 shows the consolidated statements of cash flows for the years 2010, 2009, and 2008 for Synotech, Inc. We also include portions of Management's Discussion and Analysis of the 2010 statement of cash flows. We will then discuss the statement further, explaining various items and illustrating how the information might be used for decision making.

16.9 Liquidity and capital resources

Net cash provided by operations increased 13 percent to USD 1,101.0 in 2010 compared with USD 972.3 in 2009 and USD 995.3 in 2008. The increase in cash generated by operating activities in 2010 reflects the Company's improved

profitability and working capital management. Cash generated from operations was used to fund capital spending, reduce debt levels and increase dividends.

During 2010, long-term debt decreased from USD 3,634.8 to USD 3,476.6. The Company continued to focus on enhancing its debt portfolio, resulting in the refinancing of a substantial portion of commercial paper and other short-term borrowings to longer term instruments. In 2010, the Company entered into a USD 595.6 loan agreement and obtained a USD 487.2 term loan with foreign commercial banks.

As of 2010 December 31, USD 410.3 of domestic and foreign commercial paper was outstanding. These borrowings carry a Standard & Poor's rating of A1. The commercial paper as well as other short-term borrowings are classified as long-term debt at 2010 December 31, as it is the Company's intent and ability to refinance such obligations on a long-term basis. The Company has additional sources of liquidity available in the form of lines of credit maintained with various banks. At 2010 December 31, such unused lines of credit amounted to USD 2,142.8.

The ratio of net debt to total capitalization (defined as the ratio of the book values of debt less cash and marketable securities ["net debt"] to net debt plus equity) decreased to 58 percent during 2010 from 64 percent in 2009. The decrease is primarily the result of higher Company earnings in 2010 as well as effective working capital management and lower acquisitions than in prior years. The ratio of market debt to market capitalization (defined as above using fair market values) decreased to 17 percent during 2010 from 23 percent in 2009. The Company primarily uses market value analyses to evaluate its optimal capitalization.

Capital expenditures were 5.2 percent of net sales in both 2010 and 2009 and were 5.3 percent of net sales in 2008. Capital spending continues to be focused primarily on projects that yield high aftertax returns, thereby reducing the Company's cost structure. Capital expenditures for 2008 are expected to continue at the current rate of approximately 5 percent of net sales.

Other investing activities in 2010, 2009 and 2008 included strategic acquisitions and equity investments worldwide. The aggregate purchase price of all 2010, 2009 and 2008 acquisitions was USD 46.2, USD 1,586.3 and USD 179.8, respectively.

During 2008, the Company repurchased a significant amount of common shares in the open market and private transactions to provide for employee benefit plans and to maintain its targeted capital structure. Aggregate repurchases for the year approximated 6.9 million shares with a total purchase price of USD 493.3.

(USD millions)	2010	2009	2008
Operating activities			
Net income	\$762.0	\$ 206.4	\$ 696.2
Adjustments to reconcile net income to net cash provided by operations:			
Restructured operations, net	(126.7)	509.9	(46.9)
Depreciation and amortization	379.6	360.4	282.2
Deferred income taxes and other, net	(27.6)	(75.5)	77.6
Cash effects of changes in:			
Receivables	(18.5)	(52.9)	(60.1)
Inventories	(1.4)	(31.3)	(53.4)
Other current assets	-0-	(50.9)	(9.4)
Payables and accruals	133.6	106.2	109.1
Net cash provided by operations	\$ 1,101.0	\$ 972.3	\$ 995.3
Investing activities			
Capital expenditures	\$ (550.8)	\$ (518.2)	\$ (481.0)
Payment for acquisitions, net of cash acquired	(71.2)	(1,560.5)	(175.7)
Sale of marketable securities and other investments	31.6	7.4	70.1
Other, net	(14.4)	(20.6)	37.3
Net cash used for investing activities	\$ (604.8)	\$ (2,091.9)	\$ (549.3)
Financing activities			
Principal payments on debt	\$ (1,397.5)	\$ (20.5)	\$ (106.0)
Proceeds from issuance of debt, net	1,292.9	1,464.0	379.7
Proceeds from outside investors	10.3	36.6	18.2
Dividends paid	(355.5)	(331.8)	(296.3)
Purchase of common stock	(32.9)	(10.8)	(429.5)
Proceeds from exercise of stock options and other, net	36.8	33.9	22.2
Net cash (used for) provided by financing activities	\$ (445.9)	\$ 1,171.4	\$ (411.7)
Effect of exchange rate changes on cash and cash equivalents	\$ (2.8)	\$ (5.2)	\$ (3.3)
Net increase in cash and cash equivalents	\$ 47.5	\$ 46.6	\$ 31.0
Cash and cash equivalents at beginning of year	250.5	203.9	172.9
Cash and cash equivalents at end of year	\$ 298.0	\$ 250.5	\$ 203.9
Supplemental cash flow information			
Income taxes paid	\$ 304.4	\$ 351.0	\$ 313.3
Interest paid	274.9	274.3	116.3
Non-cash consideration in payment for acquisitions	-0-	58.7	9.6
Principal payments on ESOP debt, guaranteed by the Company	(6.0)	(5.3)	(4.8)

Exhibit 55: Consolidated statements of cash flows for Synotech, Inc. - Indirect method

Dividend payments were USD 355.5 in 2010, up from USD 331.8 in 2009 and USD 296.3 in 2008.

Internally generated cash flows appear to be adequate to support currently planned business operations, acquisitions and capital expenditures. Significant acquisitions would require external financing.

The Company is a party to various superfund and other environmental matters and is contingently liable with respect to lawsuits, taxes and other matters arising out of the normal course of business. Management proactively reviews and manages its exposure to, and the impact of, environmental matters. While it is possible that the Company's cash flows and results of operations in particular quarterly or annual periods could be affected by the one-time impacts of the resolution of such contingencies, it is the opinion of management that the ultimate disposition of these matters, to the extent not previously provided for, will not have a material impact on the Company's financial condition or ongoing cash flows and results of operations.

Refer to Exhibit 55. First we will discuss the items in the operating activities section of the statement of cash flows, then we will discuss investing activities and financing activities.

Operating activities The company used the indirect method of calculating net cash provided by operations. Various adjustments were made to convert accrual based net income to cash basis net income.

The "restructured operations, net" item resulted from the fact that many companies restructured their operations by closing plants and significantly reducing their work forces. Some companies recognized a net loss from restructuring and others recognized a net gain. Apparently, the company recognized a net gain in 2010 because it deducted the item from net income on the statement of cash flows. The actual cash flows from restructuring will occur in a later period.

"Depreciation and amortization" includes depreciation on plant assets and amortization of intangible assets. Depreciation and amortization are noncash charges against revenues and must be added back to net income.

The "deferred income taxes and other, net" item deduction from net income results primarily from the fact that income tax expense on the income statement was lower than the actual income taxes paid in 2010. This phenomenon occurs because of using a different method for tax and accounting purposes for such items as depreciation.

Receivables and inventories increased (causing cash to decrease), while other current assets remained about the same. Payables and accruals increased (causing cash to increase). These changes are net of any amounts related to acquisitions, dispositions, or amounts that are included elsewhere, such as in "restructured operations, net". The changes described may differ from the amounts derived from only analyzing the balance sheets for the last two years because of certain technical "adjustments" that are beyond the scope of this text.

Investing activities "Capital expenditures" include the purchase of plant assets, such as new machinery and equipment, to modernize production facilities. Companies normally select those capital expenditures with the highest rate of return. For instance, if funds are limited (and they normally are) and two capital investments (a machine and a mainframe computer) are being considered, one yielding a 20 percent return and the other yielding a 25 percent return, the company will normally select the one with the 25 percent return.

"Payment for acquisitions, net of cash acquired" shows the amount spent in acquiring other companies and segments of other companies, net of the amount of cash held by those companies and obtained as a part of the acquisition.

The company sold "marketable securities and other investments". These securities normally consist of stocks, bonds, and other instruments of other companies. For fiscal years beginning after 1993 December 15, marketable securities must be identified as trading securities, available-for-sale securities, or held-to-maturity securities. Trading securities and available-for-sale securities were discussed in some detail in Chapter 14. Held-to-maturity securities were mentioned briefly in Chapter 15. These held-to-maturity securities are debt securities (such as bonds of other companies) that the company has purchased and has both the intent and ability to hold to maturity. As mentioned earlier, the proceeds from sales and purchases of trading securities must be shown as cash flows from operating activities, and the proceeds from sales and purchases of available-for-sale and held-to-maturity securities must be shown as cash flows from investing activities.

Financing activities The company paid off some old debt (USD 1,397.5 million) and incurred new debt (USD 1,292.9 million). Recently many companies are

substituting new debt with a low interest rate for old debt with a high interest rate, just as homeowners refinance their homes to lower their interest rate.

The "proceeds from outside investors" resulted from the other participants in the formation of certain businesses in which the company holds more than a 50 percent share.

"Dividends paid" is an item that should be familiar to you. Dividends paid increased each year for the period 2008 through 2010.

The company bought back some of its own stock (treasury stock). Companies often buy back their own shares because they (1) need the shares to issue to employees or officers under stock option plans, (2) want to bolster the market price of the stock, or (3) hope to later sell the stock at a substantially higher price.

"Proceeds from exercise of stock options and other, net" represents the proceeds received from employees and officers who exercised their stock options. Stock options are usually granted to employees to encourage them to work efficiently to increase profitability, which should increase the market price of the stock. Stock options made available to officers are for the same purpose or to attract or retain a talented executive. Normally, an option gives the recipient the right to buy a certain number of shares at a stated price within a given time frame. For instance, the president of a company may be granted an option to buy 10,000 shares at USD 40 per share any time after two years from that date and before six years from that date. Assume that the current market price is USD 38. If the market price of the stock rises to USD 80 at some time during the option period, the president could buy the shares at USD 40 and then hold them or sell them at the higher market price. Executives of companies have become multimillionaires by exercising their stock options. The employees and executives of Synotech, Inc., paid the company between USD 22.2 million and USD 36.8 million per year to exercise their stock options during the three-year period. The company re-issued some of its treasury stock as a result of the exercise of the stock options.

We will discuss some examples of the ways that the information in the statement of cash flows can be used by management, stockholders, and creditors to make decisions. Each of these parties would use more than the statement of cash flows to perform an analysis of the company's performance, but we will restrict ourselves to

the statement of cash flows. The next chapter shows a more complete analysis of the company's performance.

Management Management is the first to see the information contained in the statement of cash flows. You have already read portions of "Management's Discussion and Analysis" concerning the information contained in that statement. Management concluded that the amount of internally generated cash flows (net cash provided by operations) appears adequate to support currently planned business operations, acquisitions, and capital expenditures. Thus, unless the company engages in a significant acquisition it will not have to sell more stock or borrow more funds in the foreseeable future. Also, the company apparently replaced some of its high interest rate debt (USD 1,397.5 million) with lower interest rate debt (USD 1,292.9 million). Many companies are doing this same thing recently to take advantage of the low interest rates available.

Stockholders Stockholders can see that dividend payments (USD 355.5 million) are comfortably covered by net cash provided by operations (USD 1,101.0 million). Stockholders are undoubtedly pleased that the per share dividend rate has increased each year during 2008 through 2010. The company continues to invest in its future by making capital expenditures (USD 550.8 million) to modernize its productive facilities. The repurchase of its own stock (USD 32.9 million) decreases the number of shares outstanding, although some of the stock will undoubtedly be reissued in the future as employees and executives exercise their stock options. Any net reduction in the number of shares outstanding will tend to increase earnings per share and help to increase the market price per share in the future. Also, the company may decide to increase dividends per share in the future. These favorable factors might induce present stockholders to retain their stock or even increase their holdings. Potential stockholders might also be attracted to the stock.

A broader perspective:

Johnson & Johnson

Johnson & Johnson and Subsidiaries
Consolidated statements of cash flows For the years ended
2000 June 30, 1999, and 1998
(USD millions)

Cash flows from operating activities	2000	1999	1998
Net earnings	\$ 4,800	4,167	3,003
Adjustments to reconcile net earnings to cash flows:			
Depreciation and amortization of property and intangibles	1,515	1,444	1,285
Purchased in-process research and development	54		298
Increase in deferred taxes	(167)	(7)	(297)
Accounts receivable reserves	33	11	24
Changes in assets and liabilities, net of effects from acquisition of businesses:			
Increase in accounts receivable	(451)	(671)	(163)
Decrease (increase) in inventories	125	(333)	(100)
Increase in accounts payable and accrued liabilities	57	242	646
Decrease in other current and non-current assets	143	457	142
Increase in other current and non-current liabilities	454	450	153
Net cash flows from operating activities	\$ 6,563	\$ 5,760	\$ 4,991
Cash flows from investing activities			
Additions to property, plant and equipment	\$(1,646)	\$(1,728)	\$(1,545)
Proceeds from the disposal of assets	161	35	108
Acquisitions of businesses, net of cash acquired	(68)	(271)	(3,818)
Purchases of investments	(5,383)	(3,538)	(1,005)
Sales of investments	4,670	2,817	400
Other	(102)	(257)	(205)
Net cash used by investing activities	\$ (2,368)	\$ (2,942)	\$ (6,065)
Cash flows from financing activities			
Dividends to shareowners	\$(1,724)	\$(1,479)	\$(1,305)
Repurchase of common stock	(973)	(840)	(930)
Proceeds from short-term debt	814	3,208	2,424
Retirement from short-term debt	(1,485)	(4,063)	(226)
Proceeds from long-term debt	4	793	535
Retirement from long-term debt	(28)	(176)	(471)
Proceeds from the exercise of stock options	292	180	178
Net cash (used by) provided by financing activities	\$(3,100)	\$(2,377)	\$205
Effect of exchange rate changes on cash and cash equivalents	(47)	(72)	24
Increase (decrease) in cash and cash equivalents	1,048	369	(845)
Cash and equivalents, beginning of year	2,363	1,994	2,839
Cash and cash equivalents, end of year	\$3,411	\$2,363	\$ 1,994

Creditors An encouraging factor is the increasing amount of net cash provided by operations in 2010. Also comforting to creditors is the information in Management's Discussion and Analysis that the company has access to USD 2,142.8 million in lines of credit.

The preceding discussions are merely examples of how the information contained in the statement of cash flows might be analyzed to make decisions. The next section describes three ratios that can provide further analyses of cash flows.

16.10 Analyzing and using the financial results—Cash flow per share of common stock, cash flow margin, and cash flow liquidity ratios

The information in the statement of cash flows provides a basis for analyzing financial results. However, further analysis is possible through the use of three ratios relating to cash flow: the cash flow per share of common stock, cash flow margin, and cash flow liquidity ratios. The ratios shown below are results for Synotech, Inc. and recent results for other companies. All dollar amounts are rounded to the nearest million.

The **cash flow per share of common stock ratio** is equal to the net cash provided by operations divided by the average number of shares of common stock outstanding. This ratio indicates the company's ability to pay dividends and liabilities. The higher the ratio, the greater the ability to pay. The cash flow per share of common stock ratios for the companies were:

Company	Net cash provided by operating activities (millions)	Average shares of common stock outstanding* (millions)	Cash flow per share
Synotech, Inc.	\$1,101	147	\$7.49
J.C. Penney, Inc.	1,598	262	6.10
The Walt Disney Company	6,434	2,092	3.08
General Electric Company	22,690	9,893	2.29

*To determine the average number of shares, add the beginning and ending numbers outstanding and divide by two.

The **cash flow margin ratio** is equal to net cash provided by operating activities divided by net sales. This ratio is a measure of a company's ability to turn sales revenue into cash. The higher the ratio, the better. The cash flow margin ratios for the companies were:

Company	Net Cash provided	Net sales	Cash
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	by operating activities (millions)	(millions)	flow Margin
Synotech, Inc.	\$1,101	10,499	10.49%
J.C. Penney, Inc.	1,598	31,846	5.02%
The Walt Disney Company	6,434	25,402	25.33%
General Electric Company	22,690	128,051	17.72%

The **cash flow liquidity ratio** is equal to the total of cash, marketable securities, and net cash provided by operating activities divided by current liabilities. This ratio is a test of a company's short-term, debt-paying ability. The higher the ratio, the better. The cash flow liquidity ratios for the companies were:

Company	Cash, marketable securities, and net cash provided by operating activities (millions)	Current liabilities (millions)	Cash flow liquidity ratio
Synotech, Inc.	\$1,470	\$2,285	.64 times
J.C. Penney, Inc.	2,542	4,235	.60 times
The Walt Disney Company	7,276	8,402	.87 times
General Electric Company	35,913	156,116	.23 times

On the first of these measures, Synotech, Inc., seems to be in the strongest position, although all of the companies are financially sound. On the second measure, Walt Disney and General Electric have the highest cash flow margin ratios. On the third measure, Walt Disney seems to be in the strongest position. However, a more valid comparison on each of these measures would be made if each of these companies was compared with other companies in its industry. Dun & Bradstreet's Industry Norms and key business ratios can be used for this purpose. (This source could also be used for comparisons of ratios in the next chapter.) A complete analysis using the techniques described in the next chapter would provide additional information about the strengths and weaknesses of each of these companies.

16.10.1 Understanding the learning objectives

- The statement of cash flows summarizes the effects on cash of the operating, financing, and investing activities of a company during an accounting period.
- Management can see the effects of its past major policy decisions in quantitative form.

- Investors and creditors can assess the entity's ability to generate positive future net cash flows, to meet its obligations, and to pay dividends, and can assess the need for external financing.
- Operating activities generally include the cash effects (inflows and outflows) of transactions and other events that enter into the determination of net income. The cash flows from operating activities can be measured in two ways. The direct method deducts from cash sales only those operating expenses that consumed cash. The indirect method starts with net income and adjusts net income for items that affected reported net income but did not involve cash.
- Investing activities generally include transactions involving the acquisition or disposal of noncurrent assets.
- Financing activities generally include the cash effects (inflows and outflows) of transactions and other events involving creditors and owners.
- The direct method deducts from cash sales only those operating expenses that consumed cash. The FASB recommends use of the direct method. The indirect method starts with accrual basis net income and indirectly adjusts net income for items that affected reported net income but did not involve cash. A large majority of companies use the indirect method.
- The first step is to determine the cash flows from operating activities. Either the direct or indirect method may be used.
- The second step is to analyze all the noncurrent accounts for changes in cash resulting from investing and financing activities.
- The third step is to arrange the information gathered in steps 1 and 2 into the format required for the statement of cash flows.
- Business students will benefit throughout their careers from knowing how to analyze a statement of cash flows.
- "Management's Discussion and Analysis" in the annual report provides part of the analysis.
- Inspection of the statement of cash flows together with "Management's Discussion and Analysis" will provide the most insight as to the cash flow situation.

- The cash flow per share of common stock ratio tests a company's ability to pay dividends and liabilities and is equal to net cash provided by operating activities divided by the average number of shares of common stock outstanding.
- The cash flow margin ratio measures a company's ability to turn sales revenue into cash and is equal to net cash provided by operating activities divided by net sales.
- The cash flow liquidity ratio tests a company's short-term, debt-paying ability and is equal to the total of cash, marketable securities, and net cash provided by operating activities divided by current liabilities.
- A work sheet can be used to assist in preparing a statement of cash flows.
- A company's comparative balance sheets, income statement, and additional data are used to prepare the work sheet.
- The work sheet technique makes the recording of the effects of transactions on cash flows almost a mechanical process.

16.11 Appendix: Use of a working paper to prepare a statement of cash flows

This appendix shows how a work sheet could be used to assist in preparing a statement of cash flows. We use the comparative balance sheets, income statement, and additional data for the Welby Company, shown on Exhibit 53, as the basis for this example.

Look at the working paper in Exhibit 56 for Welby Company, which we use to analyze the transactions and prepare the statement of cash flows. While discussing the steps in preparing the working paper, we describe the items and trace their effects in the entries.

- Enter the beginning account balances of all balance sheet accounts in the first column and the ending account balances in the fourth column. Notice that the debit items precede the credit items.
- Total the debits and credits in the first and fourth columns to make sure that debits equal credits in each column.
- Write "Cash Flows from Operating Activities" immediately below the total of the credit items. Skip sufficient lines for recording adjustments to convert

accrual net income to cash flows from operating activities. Then write "Cash Flows from Investing Activities" and allow enough space for those items. Finally, write "Cash Flows from Financing Activities" and allow enough space for those items.

- Enter entries for analyzing transactions in the second and third columns. The entries serve two functions: (a) they explain the change in each account; and (b) they classify the changes into operating, investing, and financing activities. We discuss these entries individually in the next section.

- Total the debits and credits in the second and third columns; they should be equal. You will have one pair of totals for the balance sheet items and another pair for the bottom portion of the working paper. We use the bottom portion of the working paper to prepare the statement of cash flows.

To complete the working paper in Exhibit 56, we must analyze the change in each noncash balance sheet account. The focus of this working paper is on cash, and every change in cash means a change in a noncash balance sheet account. After we have made the proper entries to analyze all changes in noncash balance sheet accounts, the working paper shows all activities affecting cash flows. The following explanations are keyed to the entry numbers on the working paper:

Entry 0 In comparing the beginning and ending cash balances, we determine the change in the Cash account during the year is an USD 11,000 increase. An entry on the working paper debits Cash for USD 11,000 and credits Increase in Cash for Year near the bottom of the schedule. This 0 entry does not explain the change in cash but is the "target" of the analysis. The entry sets out the change in cash that the statement seeks to explain. No further attention need be paid to cash in completing the working paper.

We now direct our attention toward changes in other balance sheet accounts. These accounts can be dealt with in any order; first, we record the net income for the period and analyze the current assets (other than cash) and the current liabilities. Second, we analyze the changes in the noncurrent accounts.

Entry 1 The income statement shows a net income for 2010 of USD 10,000. Entry 1 records the USD 10,000 as the starting point in measuring cash flows from

operating activities and credits Retained Earnings as a partial explanation of the change in that account.

The next task is to analyze changes in current accounts other than Cash. The current accounts of Welby Company are closely related to operations, and their changes are included in converting net income to cash flows from operating activities.

Entry 2 We deduct the USD 10,000 increase in accounts receivable from net income when converting it to cash flows from operating activities. If accounts receivable increased, sales to customers exceeded cash received from customers. To convert net income to a cash basis, we must deduct the USD 10,000.

The working paper technique makes the recording of these effects almost mechanical. By debiting Accounts Receivable for USD 10,000, we increase it from USD 20,000 to USD 30,000. If Accounts Receivable is debited, we must credit an item that can be entitled "Increase in Accounts Receivable". We deduct the increase from net income in converting it to cash flows from operating activities.

Entry 3 is virtually a duplicate of entry 2, except it involves merchandise inventory rather than receivables and is a decrease rather than an increase.

Entry 4 records the effect of a decrease in accounts payable on net income in converting it to cash flows from operating activities.

Entry 5 records the effect of an increase in accrued liabilities payable in converting net income to cash flows from operating activities.

Next, we analyze the changes in the noncurrent balance sheet accounts.

Entry 6 We add the USD 5,000 depreciation back to net income and credit the respective accumulated depreciation account. You can find the depreciation expense (1) on the income statement, or (2) by solving for the credit needed to balance the accumulated depreciation account on the balance sheet.

Welby Company
Working paper for Statement of Cash Flows For the Year Ending
2010 December 31

	Account Balances	Analysis of transactions for 2010		Account balances
	2009/12/31	Debit	Credit	2010/12/31
Debits				
Cash	10,000	(0) 11,000		21,000
Accounts receivable, net	20,000	(2) 10,000		30,000
Merchandise inventory	30,000		(3) 4,000	26,000
Equipment	50,000	(7) 20,000		70,000
Totals	110,000			147,000
Credits				
Accumulated depreciation – equipment	5,000		(6) 5,000	10,000
Accounts payable	15,000	(4) 6,000		9,000
Accrued liabilities payable	-0-		(5) 2,000	2,000
Common stock (\$10 par value)	60,000		(8) 30,000	90,000
Retained earnings	30,000	(9) 4,000	(1) 10,000	36,000
Totals	110,000	51,000	51,000	147,000
Cash flows from operating activities				
Net income		(1) 10,000		
Increase in accounts receivable			(2) 10,000	
Decrease in merchandise inventory		(3) 4,000		
Decrease in accounts payable			(4) 6,000	
Increase in accrued liabilities payable		(5) 2,000		
Depreciation expense		(6) 5,000		
Cash flows from investing activities:				
Purchase of equipment			(7) 20,000	
Cash flows from financing activities:				
Proceeds from issuing common stock		(8) 30,000		
Payment of cash dividends			(9) 4,000	
Increase in cash for year			(0) 11,000	
		51,000	51,000	

Accumulated Depreciation - Equipment

Beg. Bal.	5,000
(6)	5,000
End. Bal.	10,000

Exhibit 56: Working paper for statement of cash flows

Entry 7 We debit the Equipment account and credit "Purchase of Equipment" in the investing activities section for the USD 20,000 cash spent to acquire new plant assets (equipment).

Entry 8 We show the USD 30,000 cash received from sale of common stock as a financing activity. The entry also explains the change in the Common Stock account. If stock had been sold for more than its stated value of USD 50 per share, we would record the excess in a separate Paid-In Capital in Excess of Stated Value account. However, we would report the total amount of cash received from the issuance of common stock as a single figure on the statement of cash flows. Only this total amount received is significant to creditors and other users of the financial statements trying to judge the solvency of the company.

Entry 9 We debit Retained Earnings and credit Payment of Cash Dividends for the USD 4,000 dividends declared and paid. The entry also completes the following explanation of the change in Retained Earnings. Notice that on the statement of cash flows, the dividends must be paid to be included as a cash outflow from financing activities.

Retained earnings

	Beg.	30,000	Bal.	
(9)	4,000	(1)	10,000	
		End.	36,000	Bal.

Using the data in the lower section of the working paper, we would prepare the statement of cash flows under the indirect method shown in Exhibit 54 (Part B).

Demonstration problem

The following comparative balance sheets are for Dells Corporation as of 2010 June 30, and 2009 June 30. Also provided is the statement of income and retained earnings for the year ended 2010 June 30, with additional data.

Dells Company
Comparative balance sheet
2010 June 30 and 2009

	2010	2009	Increase (Decrease)
Assets			
Current assets:			
Cash	\$ 30,000	\$ 80,000	\$ (50,000)
Accounts receivable, net	160,000	100,000	60,000
Merchandise inventory	100,000	70,000	30,000
Prepaid rent	20,000	10,000	10,000
Total current assets	\$310,000	\$260,000	\$ 50,000
Property, plant, and equipment:			
Equipment	\$400,000	\$200,000	\$200,000
Accumulated depreciation – equipment	(60,000)	(50,000)	(10,000)
Total property, plant, and equipment	\$340,000	\$150,000	\$190,000
Liabilities and stockholders' equity			
Current liabilities:			
Accounts payable	\$ 50,000	\$ 40,000	\$ 10,000
Notes payable – bank	-0-	50,000	(50,000)
Salaries payable	10,000	20,000	(10,000)
Federal income taxes payable	30,000	20,000	10,000
Total current liabilities	\$ 90,000	\$130,000	\$ (40,000)
Stockholders' equity:			
Common stock, \$10 par	\$300,000	\$100,000	\$200,000
Paid-in capital in excess of par	50,000	-0-	50,000
Retained earnings	210,000	180,000	30,000
Total stockholders' equity	\$560,000	\$280,000	\$280,000
Total liabilities and stockholders' equity	\$650,000	\$410,000	\$240,000

Dells Corporation
Statement of income and retained earnings For the year ended
2010 June 30

Sales		\$1,000,000
Cost of goods sold	\$600,000	
Salaries and wages expense	200,000	
Rent expense	40,000	
Depreciation expense	20,000	
Interest expense	3,000	
Loss on sale of equipment	7,000	870,000
Income before federal income taxes		\$ 130,000
Deduct: Federal income taxes		60,000
Net income		\$ 70,000
Retained earnings, 2009 July 1		180,000
		\$ 250,000
Deduct: Dividends		40,000
Retained earnings, 2010 June 30		\$210,000

Equipment with a cost of USD 20,000, on which USD 10,000 of depreciation had been recorded, was sold for USD 3,000 cash. Additional equipment was purchased for USD 220,000.

Stock was issued for USD 250,000 cash.

The USD 50,000 bank note was paid.

Using the data given for Dells Corporation:

- a. Prepare a statement of cash flows—indirect method.
- b. Prepare a working paper to convert net income from an accrual basis to a cash basis. Then prepare a partial statement of cash flows—direct method, showing only the cash flows from operating activities section.

Solution to demonstration problem

a.

**Dells Company
Statement of cash flows For the year ended
2010 June 30**

Cash flows from operating activities:		
Net income	\$ 70,000	
Adjustments to reconcile net income to net cash provided by operating activities:		
Increase in accounts receivable	(60,000)	
Increase in merchandise inventory	(30,000)	
Increase in prepaid rent	(10,000)	
Increase in accounts payable	10,000	
Decrease in salaries payable	(10,000)	
Increase in federal income taxes payable	10,000	
Loss on sale of equipment	7,000	
Depreciation expense	20,000	
Net cash provided by operating activities		\$7,000
Cash flows from investing activities:		
Proceeds from sale of equipment	\$ 3,000	
Purchase of equipment	(220,000)	
Net cash used by investing activities		(217,000)
Cash flows from financing activities:		
Proceeds from issuing common stock	\$250,000	
Repayment of bank note	(50,000)	
Dividends paid	(40,000)	
Net cash provided by financing activities		160,000
Net increase (decrease) in cash		\$(50,000)

b.

**Dells Corporation
Working paper to convert income statement from accrual basis to cash basis
For the year ended 2010 June 30**

Accrual basis	Add	Deduct	Cash basis (Cash flows)	From operating activities)
---------------	-----	--------	----------------------------	----------------------------

Sales		\$1,000,000		\$60,000 ^a		\$940,000
Cost of goods sold	\$600,000		\$30,000 ^b	10,000 ^c	\$620,000	
Salaries and wages expense	200,000		10,000 ^d		210,000	
Rent expense	40,000		10,000 ^e		50,000	
Depreciation expense	20,000			20,000	-0-	
Interest expense	3,000				3,000	
Loss on sale of equipment	7,000			7,000	-0-	
Federal income taxes	60,000			10,000 ^f	50,000	
		930,000				933,000
Net income		\$70,000				\$ 7,000

^a Increase in accounts receivable.

^b Increase in merchandise inventory.

^c Increase in accounts payable.

^d Decrease in salaries payable.

^e Increase in prepaid rent.

^f Increase in Federal Income Taxes Payable.

Dells Corporation
Partial Statement of cash flows- Direct Method For the Year Ended
2010 June 30

Cash flows from operating activities:	
Cash received from customers	\$ 940,000
Cash paid for merchandise	(620,000)
Salaries and wages paid	(210,000)
Rent paid	(50,000)
Interest paid	(3,000)
Federal income taxes paid	(50,000)
Net cash provided by operating activities	\$ 7,000

16.12 Key terms

Cash flow liquidity ratio Cash and marketable securities plus net cash provided by operating activities divided by current liabilities.

Cash flow margin ratio Net cash provided by operating activities divided by net sales.

Cash flow per share of common stock ratio Net cash provided by operating activities divided by the average number of shares of common stock outstanding.

Cash flows from operating activities The net amount of cash received or disbursed during a given period on items that normally appear on the income statement.

Direct method Deducts from cash sales only those operating expenses that consumed cash.

Financing activities Generally include the cash effects of transactions and other events involving creditors and owners. Cash payments made to settle current liabilities such as accounts payable, wages payable, and income taxes payable are not financing activities. These payments are operating activities.

Indirect method A method of determining cash flows from operating activities that starts with net income and indirectly adjusts net income for items that do not involve cash. Also called the **addback** method.

Investing activities Generally include transactions involving the acquisition or disposal of noncurrent assets. Examples include cash received or paid from the sale or purchase of property, plant, and equipment; available-for-sale and held-to-maturity securities; and loans made to others.

Noncash charges or expenses Expenses and losses that are added back to net income because they do not actually use cash of the company. The items added back include amounts of depreciation on plant assets, depletion that was expensed, amortization of intangible assets such as patents and goodwill, amortization of discount on bonds payable, and losses from disposals of noncurrent assets.

Noncash credits or revenues Revenues and gains included in arriving at net income that do not provide cash; examples include gains from disposals of noncurrent assets, income from investments carried under the equity method, and amortization of premium on bonds payable.

Operating activities Generally include the cash effects of transactions and other events that enter into the determination of net income.

Statement of cash flows A statement that summarizes the effects on cash of the operating, investing, and financing activities of a company during an accounting period. Both inflows and outflows are included in each category. The statement of cash flows must be prepared each time an income statement is prepared.

Working capital Equal to current assets minus current liabilities.

16.13 Self-test

16.13.1 True-false

Indicate whether each of the following statements is true or false.

The requirement for a statement of cash flows was preceded by the requirement for the statement of changes in financial position.

The statement of cash flows is one of the major financial statements.

Investing activities are transactions with creditors and owners.

The direct method of calculating cash flows from operations is encouraged by the FASB and is the predominant method used.

Issuance of capital stock and the subsequent reacquisition of some of those shares would both be financing activities.

16.13.2 Multiple-choice

Select the best answer for each of the following questions.

Which of the following statements is true?

- a. The direct method of calculating cash flows from operations starts with net income and adjusts for noncash revenues and expenses and changes in current assets and current liabilities.
- b. The indirect method of calculating cash flows from operations adjusts each item in the income statement to a cash basis.
- c. The descriptions in (a) and (b) should be reversed.
- d. The direct method is easier to use than the indirect method.

Investing activities include all of the following except:

- a. Payment of debt.
- b. Collection of loans.
- c. Making of loans.
- d. Sale of available-for-sale and held-to-maturity securities.

If sales on an accrual basis are USD 500,000 and accounts receivable increased by USD 30,000, the cash received from customers would be:

- a. USD 500,000.
- b. USD 470,000.
- c. USD 530,000.
- d. Cannot be determined.

Assume cost of goods sold on an accrual basis is USD 300,000, accounts payable increased by USD 20,000, and inventory increased by USD 50,000. Cash paid for merchandise is:

- a. USD 370,000.
- b. USD 230,000.
- c. USD 270,000.
- d. USD 330,000.

Assume net income was USD 200,000, depreciation expense was USD 10,000, accounts receivable increased by USD 15,000, and accounts payable increased by USD 5,000. The amount of cash flows from operating activities is:

- a. USD 200,000.
- b. USD 180,000.
- c. USD 210,000.
- d. USD 190,000.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

16.14 Questions

- What are the purposes of the statement of cash flows?
- What are some of the uses of the statement of cash flows?
- What information is contained in the statement of cash flows?
- Which activities are generally included in operating activities?
- Which activities are included in investing activities?
- Which activities are included in financing activities?
- Where should significant investing and financing activities that do not involve cash flows be reported?
- Explain the difference between the direct and indirect methods for computing cash flows from operating activities.
- What are noncash expenses? How are they treated in computing cash flows from operating activities?
- Describe the treatment of a gain on the sale of equipment in preparing a statement of cash flows under the indirect method.
- Depreciation is sometimes referred to as a source of cash. Is it a source of cash? Explain.
- Why is it unlikely that cash flows from operating activities will be equal to net income for the same period?
- If the net income for a given period is USD 25,000, does this mean there is an increase in cash of the same amount? Why or why not?
- Why might a company have positive cash flows from operating activities even though operating at a net loss?

- Indicate the type of activity each of the following transactions represents (operating, investing, or financing) and whether it is an inflow or an outflow.
 - Sold goods.
 - Purchased building.
 - Issued capital stock.
 - Received cash dividends.
 - Paid cash dividends.
 - Purchased treasury stock.
 - Sold available-for-sale securities.
 - Made a loan.
 - Paid interest on loan.
 - Paid bond principal.
 - Received proceeds of insurance settlement.
 - Made contribution to charity.
- Refer to "A broader perspective: Johnson & Johnson". Answer the following questions:
 - What was the major investing activity in 2003?
 - Was there a net negative or positive cash flow from investing activities?
 - Was the positive cash flow from operating activities large enough to pay the cash dividends?
- **Real world question** Refer to The Limited in the Annual report appendix. Does it use the direct method or indirect method of reporting cash flows from operating activities?

16.15 Exercises

Exercise A Indicate how the following data should be reported in a statement of cash flows. A company paid USD 500,000 cash for land. A building was acquired for USD 2,500,000 by assuming a mortgage on the building.

Exercise B Cost of goods sold in the income statement for the year ended 2010 was USD 260,000. The balances in Merchandise Inventory and Accounts Payable were:

	2010 January 1	2010 December 31
Merchandise inventory	\$160,000	\$180,000
Accounts payable	44,000	36,000

Calculate the amount of cash paid for merchandise for 2010.

Exercise C Fill in the following chart, showing how increases and decreases in these accounts affect the conversion of accrual basis income to cash basis income:

	Add	Deduct
Accounts receivable		
Merchandise inventory		
Prepaid expenses		
Accounts payable		
Accrued liabilities payable		

Exercise D The income statement of a company shows net income of USD 200,000; merchandise inventory on January 1 was USD 76,500 and on December 31 was USD 94,500; accounts payable for merchandise purchases were USD 57,000 on January 1 and USD 68,000 on December 31. Compute the cash flows from operating activities under the indirect method.

Exercise E The operating expenses and taxes (including USD 80,000 of depreciation) of a company for a given year were USD 600,000. Net income was USD 350,000. Prepaid insurance decreased from USD 18,000 to USD 14,000 during the year, while wages payable increased from USD 22,000 to USD 36,000 during the year. Compute the cash flows from operating activities under the indirect method.

Exercise F Dividends payable increased by USD 20,000 during a year in which total dividends declared were USD 120,000. What amount appears for dividends paid in the statement of cash flows?

Exercise G Following are balance sheet data for Quality Merchandise, Inc.:

	December 31	
	2011	2010
Cash	\$ 47,000	\$ 26,000
Accounts receivable, net	141,000	134,000
Merchandise inventory	83,000	102,000
Prepaid expenses	9,000	11,000
Plant assets (net of accumulated depreciation)	235,000	230,000

Accounts payable	122,000	127,000
Accrued liabilities payable	40,000	41,000
Capital stock	300,000	300,000
Retained earnings	53,000	35,000

Assume that the depreciation recorded in 2011 was USD 15,000. Compute the cash spent to purchase plant assets, assuming no assets were sold or scrapped in 2011.

Exercise H Use the data in the previous exercise. Assume the net income for 2011 was USD 24,000, depreciation was USD 15,000, and dividends declared and paid were USD 6,000. The company paid interest of USD 2,000 and income taxes of USD 14,000. Prepare a statement of cash flows—indirect method. Also prepare any necessary supplemental schedule(s).

Exercise I The following data are from a company's Automobile and the Accumulated Depreciation—Automobile accounts:

Date	Automobile	Debit	Credit	Balance
Jan. 1	Balance brought forward			16,000
July 1	Traded for new auto		16,000	-0-
	New auto	31,000		
	Accumulated depreciation - Automobile			
Jan. 1	Balance brought forward			12,000
July 1	One-half year's depreciation		2,000	14,000
	Auto traded	14,000		-0-
Dec. 31	One-half year's depreciation		4,000	4,000

The old auto was traded for a new one, with the difference in values paid in cash. The income statement for the year shows a loss on the exchange of autos of USD 1,200.

Indicate the dollar amounts, the descriptions of these amounts, and their exact locations in a statement of cash flows—indirect method.

16.16 Problems

Problem A The income statement and other data of Dunbar Carpet Outlet, Inc., follow:

Dunbar Carpet Outlet, Inc.
Income statement For the Year Ended
2010 December 31

Sales	\$920,000
Cost of goods sold	380,000
Gross margin	\$540,000
Operating expenses (other than depreciation)	\$140,000

Depreciation expense	40,000	180,000
Net income		\$360,000

Changes in current assets (other than cash) and current liabilities during the year were:

	Increase	Decrease
Accounts receivable		\$20,000
Merchandise inventory	\$16,000	
Prepaid insurance	8,000	
Accounts payable	28,000	
Accrued liabilities payable	4,000	

Depreciation was the only noncash item affecting net income.

a. Prepare a working paper to calculate cash flows from operating activities under the direct method.

b. Prepare the cash flows from operating activities section of the statement of cash flows under the direct method.

c. Prove that the same cash flows amount will be obtained under the indirect method by preparing the cash flows from operating activities section of the statement of cash flows under the indirect method. You need not prepare a working paper.

Problem B The following comparative balance sheets and other data are for Cellular Telephone Sales, Inc.:

**Cellular Telephone Sales, Inc. Comparative balance sheets
2011 December 31 and 2010**

	2011	2010
Assets		
Cash	\$76,105	\$51,000
Accounts receivable, net	26,075	24,250
Merchandise inventory	30,000	35,000
Supplies on hand	1,750	2,550
Prepaid expenses	1,400	1,200
Land	180,000	142,500
Equipment	270,000	300,000
Accumulated depreciation – equipment	(75,000)	(67,500)
Total assets	\$510,330	\$489,000
Liabilities and stockholders' equity		
Accounts payable	\$ 45,330	\$ 76,300
Salaries payable	4,000	2,000
Accrued liabilities payable	2,000	8,250
Long-term note payable	150,000	150,000
Common stock (\$5 par)	185,000	165,000
Paid-in capital in excess of par	32,500	-0-
Retained earnings	91,500	87,450
Total liabilities and stockholders' equity	\$510,330	\$489,000

Land was bought for USD 37,500 cash. The company intends to build a building on the land. Currently the company leases a building for its operations.

Equipment costing USD 50,000 with accumulated depreciation of USD 30,000 was sold for USD 23,500 (a gain of USD 3,500), and equipment costing USD 20,000 was purchased for cash.

Depreciation expense for the year was USD 37,500.

Common stock was issued for USD 52,500 cash.

Dividends declared and paid in 2011 totaled USD 32,950.

Net income was USD 37,000.

The company paid interest of USD 3,000 and income taxes of USD 17,000.

Prepare a statement of cash flows under the indirect method. Also prepare any necessary supplemental schedule(s).

Problem C Computer Associates International, Inc., is leading business software company. The company was founded in 1977 with four employees and has grown to 18,200 employees and about 4.2 billion in revenues.

The company's statements of cash flows for the years 2002 through 2004 follow. Then the relevant portion of Management's Discussion and Analysis of the statement of cash flows is provided.

Consolidated statements of cash flows

Operating activities:	Year Ended	March 31	
	2004	2003	2002
		(In millions)	
Net (loss) income	\$ (591)	\$ 696	\$ 626
Adjustments to reconcile net (loss) income to net cash provided by operating activities:			
Depreciation and amortization	1,110	594	325
Provision for deferred income taxes (benefit)	(350)	412	107
Charge for purchased research and development	---	795	---
Compensation (gain) expense related to stock pension plans	(146)	30	778
Decrease (increase) in noncurrent installment accounts receivable, net	956	(1,039)	(422)
Decrease (increase) in deferred maintenance revenue	(3)	113	43
Foreign currency transaction loss – before taxes	14	5	11
Charge for investment write-off	---	50	---
Gain on sale of property and equipment	---	(5)	(14)
Changes in other operating assets and liabilities, net of effects of acquisitions:			
Decrease (increase) in trade and installment receivables	418	83	(169)
Other changes in operating assets and	(25)	(168)	(18)

liabilities			
Net cash provided by operating activities	\$ 1,383	\$ 1,566	\$ 1,267
Investing activities:			
Acquisitions, primarily purchased software, marketing rights and intangibles, net of cash acquired	\$ (174)	\$ (3,049)	\$ (610)
Settlements of purchases accounting liabilities	(367)	(429)	(57)
Purchases of property and equipment	(89)	(198)	(222)
Proceeds from sale of property and equipment	5	12	38
Disposition of businesses	158	---	---
Purchases of marketable securities	(48)	(95)	(2,703)
Sales of marketable securities	40	189	2,639
Increase in capitalized development costs and other	(49)	(36)	(29)
Net cash used in investing activities	\$ (524)	\$ (3,606)	\$ (944)
Financing activities:			
Dividends	\$ (47)	\$ (43)	\$ (44)
Purchases of treasury stock	(449)	---	(1,090)
Proceeds from borrowings	1,049	3,672	2,141
Repayment of borrowings	(1,981)	(776)	(1,216)
Exercise of common stock options and other	50	96	38
Net cash provided by (used in) financing activities	\$ (1,378)	\$ 2,949	\$ (171)
(Decrease) Increase in cash and cash equivalents before effect of exchange rate changes on cash	\$ (519)	\$ 909	\$ 152
Effect of exchange rate changes on cash	(25)	(1)	(4)
(Decrease) Increase in cash and cash equivalents	\$ (544)	\$ 908	\$ 148
Cash and cash equivalents – Beginning of year	1,307	399	251
Cash and cash equivalents – End of the year	\$ 763	\$ 1,307	\$ 399

Management's discussion and analysis

Liquidity and capital resources

Cash, cash equivalents and marketable securities totaled USD 850 million at 2004 March 31, a decrease of USD 537 million from the 2003 March 31 balance of USD 1,387 million. During fiscal year 2004, the Company used cash on hand to repay over USD 900 million in debt and repurchase approximately USD 450 million in treasury stock. Cash generated from operations for fiscal year 2001 was USD 1,383 million, a decrease of USD 183 million from the prior year's cash from operations of USD 1,566 million. Cash from operations was unfavorably impacted this current fiscal year due to higher costs associated with increased headcount and other expenses related to the Sterling acquisition.

The Company's bank credit facilities consist of a USD 1 billion four-year revolving credit facility, a USD 2 billion four-year term loan, and a 75 million British Pound Sterling denominated 364-day term loan. During the year, the Company repaid all

outstanding amounts under both its USD 1.3 billion 364-day and four-year revolving credit agreements. As a reflection of its continued reduced need for bank borrowings, emphasis on debt reduction, and overall expected ability to generate cash from operations, the Company did not renew its USD 1.3 billion 364-day revolving credit facility when it expired in May 2004.

As of 2004 March 31, USD 2 billion remained outstanding under the four-year term loan and approximately USD 124 million was outstanding under the pound sterling term loan at various interest rates. There are no drawings under the Company's USD 1 billion four-year revolving credit facility. The interest rates on such debt are determined based on a ratings grid, which applies a margin to the prevailing London InterBank Offered Rate ("LIBOR"). In addition, the Company established a USD 1 billion US Commercial Paper ("CP") program in the first quarter of this year to refinance some of its debt at more attractive interest levels. As of 2004 March 31, USD 340 million was outstanding under the CP program.

The Company also utilizes other financial markets in order to maintain its broad sources of liquidity. In fiscal 2002, USD 1.75 billion of unsecured Senior Notes were issued in a transaction governed by Rule 144A of the Securities Act of 1933. Amounts borrowed, rates and maturities for each issue were USD 575 million at 6.25 percent due 2006 April 15, USD 825 million at 6.375 percent due 2008 April 15 and USD 350 million at 6.5 percent due 2011 April 15. As of 2004 March 31, USD 192 million was outstanding under the Company's 6.77 percent Senior Notes. These Notes call for annual repayment of USD 64 million each April until final maturity in 2006.

Unsecured and uncommitted multicurrency lines of credit are available to meet any short-term working capital needs for subsidiaries operating outside the US. These lines total USD 56 million, of which USD 14 million was drawn as of 2004 March 31.

Debt ratings for the Company's senior unsecured notes and its bank credit facilities are BBB+ and Baa1 from Standard & Poor's and Moody's Investor Services, respectively. The Company's Commercial Paper program is rated A-2 from Standard & Poor's and P-2 from Moody's. Peak borrowings under all debt facilities during fiscal year 2004 totaled approximately USD 5.4 billion with a weighted-average interest rate of 7.2 percent.

As of 2004 March 31, the cumulative number of shares purchased under the Company's various open market Common Stock repurchase programs, including almost 16 million shares purchased in the current fiscal year, was 166 million. The remaining number of shares authorized for repurchase is approximately 34 million.

Capital resource requirements as of 2004 March 31 consisted of lease obligations for office space, computer equipment, mortgage or loan obligations and amounts due as a result of product and company acquisitions. It is expected that existing cash, cash equivalents, marketable securities, the availability of borrowings under credit lines and cash provided from operations will be sufficient to meet ongoing cash requirements.

The Company expects its long-standing history of providing extended payment terms to customers to continue under the new business model and thus does not expect a change to its future cash flow, since customers are expected to continue to finance their purchases over the contract period.

- a. Explain how the company could have a net loss in 2004 and yet have a positive net cash provided by operating activities.
- b. What was the reason given by management for repaying all outstanding amounts under revolving credit agreements.
- c. What is the interest rate on borrowings?
- d. What information would normally appear immediately below the statement of cash flows that seems to be missing?
- e. Does the amount of cash provided by operating activities seem large enough to continue the present dividend payments?
- f. Given the following data, calculate the cash flow per share of common stock ratio, the cash flow margin ratio, and cash flow liquidity ratio.

	(in millions)
Average number of shares of common stock outstanding	583
Net sales	4,198
Cash and marketable securities	850
Current liabilities	2,286

Problem D Mechan Company develops, manufactures, markets, installs and supports a wide range of standards-based LAN and WAN connectivity hardware and software products. The company's statements of cash flow for the years 2008-2010

follow. Then the relevant portion of Management's Discussion and Analysis of the statement of cash flows is provided.

Consolidated statements of cash flows
Years ended 2010 February 29, and 2009 February 28 and 2008
(In thousands)

	2010	2009	2008
Cash flows from operating activities:			
Net income	\$ 164,418	\$ 161,974	\$ 119,218
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	32,061	26,832	17,335
Provision for losses on accounts receivable	356	72	1,734
Loss on disposals of property, plant and equipment	93	174	113
Deferred taxes	(38,766)	(4,434)	(6,151)
Changes in assets and liabilities:			
Accounts receivables	(55,101)	(27,698)	(17,707)
Inventories	(50,483)	(23,080)	(8,758)
Prepaid expenses and other assets	(18,844)	(3,123)	1,211
Accounts payable and accrued expenses	62,908	11,336	22,003
Income taxes payable	3,705	10,476	(3,924)
Net cash provided by operating activities	\$100,347	\$152,529	\$125,074
Cash flows from investing activities:			
Capital expenditures	\$ (65,035)	\$ (63,091)	\$ (39,399)
Purchase of available-for-sale securities	(79,427)	(71,598)	(30,097)
Purchase of held-to-maturity securities	(205,852)	(282,712)	(258,517)
Materials of marketable securities	208,922	323,682	197,406
Net cash used in investing activities	\$(141,392)	\$ (93,719)	\$(130,607)
Cash flows from financing activities:			
Repayment of notes receivable from stockholders	\$ 174	\$ 131	\$ 66
Repurchase of common stock	(1,173)	(13,070)	---
Tax benefit of options exercised	7,215	5,712	6,980
Common stock issued to employee stock purchase plan	3,323	2,287	1,637
Proceeds from stock option exercise	16,021	4,887	7,185
Net cash provided by (used for) financing activities	\$ 25,560	\$ (53)	\$ 15,868
Effect of exchange rate changes on cash	\$ 166	\$ 712	\$ 161
Net increase (decrease) in cash and cash equivalents	\$ (15,319)	\$ 59,469	\$ 10,469
Cash and cash equivalents, beginning of year	114,032	54,563	44,067
Cash and cash equivalents, end of year	\$ 98,713	\$ 114,032	\$ 54,563
Cash paid during the year for:			
Income taxes	\$ 105,233	\$ 68,420	\$ 67,263

Management's discussion and analysis

Net cash provided by operating activities was USD 100.3 million in fiscal 2010, compared to USD 152.5 million in fiscal 2009 and USD 125.1 million in fiscal 2008.

Capital investment for fiscal 2010 of USD 65.0 million included USD 9.8 million for building costs of which USD 3.4 was for the purchase of an engineering building, USD 21.4 million for engineering computer and computer related software and equipment, USD 5.5 million for manufacturing and related equipment and USD 19.0 million for expanding global sales operations. During fiscal 2009, capital expenditures of USD 63.1 million included approximately USD 8.2 million for building costs related to expanding manufacturing and distribution capacities and enlarging worldwide sales operations, USD 12.5 million for manufacturing and manufacturing support equipment and USD 15.0 million for engineering computer and computer related equipment. Another USD 15.0 million was spent in support of expanded global sales activities. During fiscal 2008, capital expenditures of USD 39.4 million included USD 3.9 million on buildings, USD 10.1 million on engineering equipment, USD 7.8 million on manufacturing capacity expansions and USD 2.0 million to equip new sales offices.

Cash, cash equivalents and marketable securities increased during fiscal 2010 to USD 407.0 million, from USD 345.9 million in the prior fiscal year. State and local municipal bonds of approximately USD 264.2 million, maturing in approximately 1.5 years, were being held by the Company at 2010 February 29.

At 2010 February 29, the Company did not have any short or long term borrowing or any significant financial commitments outstanding, other than those required in the normal course of business.

In the opinion of management, internally generated funds from operations and existing cash, cash equivalents and marketable securities will be adequate to support the Company's working capital and capital expenditures requirements for both short and long term needs.

a. Which method did the company use in arriving at net cash flows from operating activities?

b. Did current assets other than cash increase or decrease during the year ended 2010 February 29?

c. Did current liabilities increase or decrease during the year ended 2010 February 29?

d. What were the main investing activities during this three-year period?

e. What was the main source of cash from financing activities during the three-year period?

f. Did the company pay any interest expense during the year ended 2010 February 19?

g. Given the following data, calculate the cash flow per share of common stock ratio, the cash flow margin ratio, and the cash flow liquidity ratio. How do these ratios compare with the ratios shown for other companies in the chapter?

(in thousands)

Average number of shares of common stock outstanding	71,839
Net sales	\$ 1,069,715
Cash and marketable securities	253,540
Current liabilities	164,352

Problem E The following comparative balance sheets and other data are for Dayton Tent & Awning Sales, Inc.:

**Dayton Tent & Awning Sales, Inc.
Comparative Balance Sheets 2011 June 30 and 2010**

	2011	2010
Assets		
Cash	\$ 441,800	\$ 332,600
Accounts receivable, net	750,750	432,900
Merchandise inventory	819,000	850,200
Prepaid insurance	3,900	5,850
Land	312,000	351,000
Buildings	2,184,000	1,209,000
Machinery and tools	858,000	468,000
Accumulated depreciation – machinery and tools	(809,250)	(510,900)
Total assets	\$ 4,560,200	\$ 3,138,650
Liabilities and stockholders' equity		
Accounts payable	\$ 226,750	\$ 275,500
Accrued liabilities payable	185,800	111,700
Bank loans (due in 2009)	56,550	66,300
Mortgage bonds payable	382,200	185,250
Common stock - \$100 par	1,755,000	585,000
Paid-in capital in excess of par	58,500	-0-
Retained earnings	1,895,400	1,914,900
Total liabilities and stockholders' equity	\$ 4,560,200	\$ 3,138,650

Net income for the year was USD 128,000.

Depreciation for the year was USD 356,850.

There was a gain of USD 7,800 on the sale of land. The land was sold for USD 46,800.

The additional mortgage bonds were issued at face value as partial payment for a building valued at USD 975,000. The amount of cash paid was USD 778,050.

Machinery and tools were purchased for USD 448,500 cash.

Fully depreciated machinery with a cost of USD 58,500 was scrapped and written off.

Additional common stock was issued at USD 105 per share. The total proceeds were USD 1,228,500.

Dividends declared and paid were USD 147,500.

A payment was made on the bank loan, USD 9,750.

The company paid interest of USD 9,000 and income taxes of USD 75,000.

a. Prepare a working paper for a statement of cash flows.

b. Prepare a statement of cash flows under the indirect method. Also prepare any necessary supplemental schedule(s).

16.17 Alternate problems

Alternate problem A The following income statement and other data are for Kennesaw Auto Glass Specialists, Inc..

Kennesaw auto glass specialists, Inc.
Income Statement For the year ended 2010 December 31

Sales		\$450,000
Cost of goods sold		125,000
Gross margin		\$325,000
Operating expenses (other than depreciation)	\$60,000	
Depreciation expense	20,000	80,000
Net income		\$245,000

Changes in current assets (other than cash) and current liabilities during the year were:

	Increase	Decrease
Accounts receivable	\$15,000	
Merchandise inventory		\$25,000
Prepaid insurance	8,000	
Accounts payable		15,000
Accrued liabilities payable	4,000	

Depreciation was the only noncash item affecting net income.

a. Prepare a working paper to calculate cash flows from operating activities under the direct method.

b. Prepare the cash flows from operating activities section of the statement of cash flows under the direct method.

c. Prove that the same cash flows amount is obtained under the indirect method by preparing the cash flows from operating activities section of the statement of cash flows under the indirect method. You need not prepare a working paper.

Alternate problem B The following information relates to Dunwoody Nursery & Garden Center, Inc. The company leases a building adjacent to its land.

Dunwoody Nursery & Garden Center, Inc.
Comparative Balance Sheets 2011 December 31 and 2010

	2011	2010
Assets		
Cash	\$44,500	\$ 52,000
Accounts receivable, net	59,000	60,000
Merchandise inventory	175,000	120,000
Equipment	412,500	315,000
Accumulated depreciation – equipment	(120,000)	(105,000)
Land	75,000	15,000
Total assets	\$646,000	\$457,000
Liabilities and stockholders' equity		
Accounts payable	\$ 43,750	\$40,750
Accrued liabilities payable	2,250	3,750
Capital stock – common - \$10 par	375,000	300,000
Paid-in capital in excess of par	150,000	75,000
Retained earnings	75,000	37,500
Total liabilities and stockholders' equity	\$646,000	\$457,000

Net income was USD 97,500 for the year.

Fully depreciated equipment costing USD 15,000 was sold for USD 3,750 (a gain of USD 3,750), and equipment costing USD 112,500 was purchased for cash.

Depreciation expense for the year was USD 30,000.

Land was purchased, USD 60,000.

An additional 7,500 shares of common stock were issued for cash at USD 20 per share (total proceeds, USD 150,000).

Cash dividends of USD 60,000 were declared and paid.

The company paid interest of USD 6,000 and income taxes of USD 65,000. Prepare a statement of cash flows under the indirect method. Also prepare any necessary supplemental schedule(s).

Alternate problem C Drexler, Inc., is an independent service organization that markets and services electronic credit card authorization and payment systems to small retail, wholesale, and professional businesses located throughout the United

States. Prior to installing the company's electronic system, most of these businesses have used manual, paper-based systems to process credit card transactions or have not accepted credit cards at all. As the use of credit cards has significantly expanded, electronic processing has proven more convenient by accelerating customer purchases, lowering processing expenses, and reducing losses from fraudulent cards.

The company's account portfolio has grown through the purchase of account portfolios as well as through the internal development of accounts using telemarketing and field sales. With approximately 90,000 accounts at 2010 July 31, the company is one of the largest independent service organizations in the country.

The company's statements of cash flows for the years 2008-2010 follow. Then the relevant portion of Management's Discussion and Analysis of the statement of cash flows is provided.

Consolidated statement of cash flows

	Year ended		
	July 31,		
	2008	2009	2010
Cash flows from operating activities:			
Net cash received from merchants	\$ 19,657,697	\$ 34,353,326	\$ 67,313,124
Cash paid to vendors and employees	(14,758,040)	(28,467,472)	(49,128,150)
Interest received	22,262	310,136	1,672,714
Interest paid	(268,586)	(198,485)	(505,856)
Income taxes paid	(994,969)	(1,600,405)	(5,630,881)
Net cash provided by operating activities	\$ 3,658,354	\$ 4,397,100	\$ 13,720,951
Cash flows from investing activities:			
Purchase of merchant portfolios	\$ (8,415,055)	\$(24,576,426)	\$(31,787,725)
Purchase of property and equipment	(1,465,984)	(1,917,395)	(1,777,955)
Net cash used in investing activities	\$(9,881,039)	\$(26,493,821)	\$(33,565,680)
Cash flows from financing activities:			
Proceeds from issuance of long-term debt	\$ 7,650,000	\$ 16,450,000	\$ 305,000
Payments on long-term debt	(1,163,170)	(12,828,503)	(16,545,500)
Proceeds from issuance of common stock	---	17,098,894	140,963,115
Payments to repurchase treasury stock	(45,000)	(32,500)	(12,000)
Proceeds from minority shareholder contribution	---	---	120,000
Net cash provided by financing activities	\$6,441,830	\$ 20,687,891	\$124,830,615
Net increase (decrease) in cash and cash equivalents	\$ 219,145	\$ (1,408,830)	\$(104,985,886)
Cash and cash equivalents at beginning of year	1,664,830	1,883,975	475,145
Cash and cash equivalents at end of year	\$ 1,883,975	\$ 475,145	\$105,461,031

Supplemental schedule of noncash activities:

In connection with the purchase of merchant portfolios in fiscal years 2008 and 2009, the Company issued promissory notes totaling USD 5,061,804 and USD 80,500, respectively.

The company recognized a tax benefit of USD 318,517 for the year ended 2010 July 31, for the excess of the fair market value at the exercise date over that at the award date for stock options exercised.

In connection with the purchase of merchant portfolio in March 2008, the Company issued 312,500 shares of common stock.

In connection with an agreement between the Company and a processing back entered into simultaneously with the purchase of a merchant portfolio in March 2008, the Company issued warrants to purchase 120,000 shares of common stock.

Reconciliation of net income to net cash provided by operating activities:			
Net income	\$2,592,444	\$3,640,155	\$ 8,625,376
Martin Howe fiscal year conversion	---	---	(356,914)
Adjustments:			
Depreciation and amortization expense	1,648,023	3,517,852	7,509,630
Provision for merchant losses	484,993	483,245	654,705
Stock award compensation and other	239,659	241,477	120,395
Deferred income taxes	(453,658)	35,982	(761,705)
Changes in assets and liabilities:			
Accounts receivable	(1,562,961)	(1,459,799)	(2,125,510)
Inventory	(50,235)	(157,087)	(186,289)
Other assets	(1,716,464)	(1,895,097)	(501,353)
Accounts payable	1,557,611	44,106	587,784
Accrued liabilities	975,065	(223,411)	210,064
Deferred revenues	(56,123)	169,677	(55,232)
Net cash provided by operating activities	\$ 3,658,354	\$ 4,397,100	\$ 13,720,951

16.18 Management's discussion and analysis - Capital

Capital expenditures and investing activities

Capital expenditures were approximately USD 1.8 million for fiscal year 2010 as compared to USD 1.9 million for fiscal year 2009 and USD 1.5 million for fiscal year 2008. The increase in capital expenditures was primarily the result of additional expenditures related to the Company's management information system, the purchase of additional credit card terminals, the Company's relocation of its office facilities and the purchase of peripheral equipment for lease to merchants. In addition to the increase in capital expenditures, the Company used USD 8.4 million, USD 24.6 million and USD 31.8 million for the purchase of merchant portfolios in

fiscal years 2008, 2009 and 2010, respectively. The Company purchased five merchant portfolios in fiscal 2008, nine merchant portfolios in fiscal year 2009 and five in fiscal year 2010.

Financing activities

The significant increase in cash provided by financing activities for fiscal year 2009 resulted from the consummation of the Company's initial public offering in August 2008. Cash provided by financing activities for fiscal year 2009 was USD 20.7 million which reflects the net proceeds of the initial public offering after retirement of the Company's outstanding indebtedness. Additionally, the Company issued USD 15.3 million of long-term debt in connection with three of the nine merchant portfolios purchased in fiscal year 2009.

The cash provided by financing activities for fiscal 2010 reflects the Company's consummation of its second and third public offerings in October 2009 and April 2010, respectively. Net cash provided by financing activities was USD 124.8 million in fiscal 2010 which reflects the net proceeds from the offerings after retirement of the Company's outstanding bank indebtedness.

Future capital needs

Management believes that significant expenditures for the purchase of additional merchant portfolios may be required for the Company to sustain its growth in the future. Management expects to fund such purchases primarily through cash generated from operations and additional bank borrowings. Management believes the combination of these sources will be sufficient to meet the Company's anticipated liquidity needs and its growth plans through fiscal year 2008. The Company, however, may pursue additional expansion opportunities, including purchases of additional merchant portfolios, which may require additional capital, and the Company may incur, from time to time, additional short-term and long-term indebtedness or issue, in public or private transactions, equity or debt securities, the availability and terms of which will depend upon then prevailing market and other conditions.

The Company's revolving credit facility was amended and restated during fiscal year 2009 to increase the line of credit to USD 17.5 million. The Company repaid all outstanding debt related to this credit facility with the proceeds from its second

public offering during fiscal year 2010. The amended agreement expires 2010 November 1, with all amounts then outstanding under the agreement due on 2010 November 1, unless the agreement is extended or the outstanding amounts have been converted to a term loan requiring equal monthly payments for 48 months.

Borrowings under the amended revolving credit facility are used to finance purchases of merchant portfolios and equipment and for working capital purposes. Borrowings are secured by substantially all the Company's assets and life insurance policies on the lives of two of the Company's executive officers.

- a. Which method is the company using to determine net cash provided by operating activities?
- b. Why does the company show the indirect method below the statement of cash flows?
- c. What is the trend of net cash provided by operating activities over the three years?
- d. How has the company increased its merchant portfolios?
- e. What items of property and equipment were acquired during the three-year period?
- f. What was the major source of the huge increase in cash and cash equivalents over the three-year period? How were the proceeds used?
- g. How does the company expect to finance future expenditures to acquire additional merchant portfolios?
- h. How are amounts secured that are borrowed under the line of credit?
- i. Given the following data, calculate the cash flow per share of common stock ratio, the cash flow margin ratio, and the cash flow liquidity ratio. (Round the net cash provided from operating activities to the nearest thousand before you calculate the ratios.) How do the ratios compare with the ones for companies illustrated in the chapter?

	(in thousands)
Average number of shares of common stock outstanding	28,539
Net sales	\$149,840
Cash and marketable securities	105,461
Current liabilities	6,862

Alternate problem D Founded in 1901, The Gillette Company is the world leader in male grooming products, a category that includes blades and razors, shaving preparations and electric shavers. Gillette also holds the number one position worldwide in selected female grooming products, such as wet shaving products and hair epilation devices. The Company is the world's top seller of writing instruments and correction products, toothbrushes and oral care appliances. In addition, the Company is the world leader in alkaline batteries.

Gillette manufacturing operations are conducted at 38 facilities in 19 countries, and products are distributed through wholesalers, retailers, and agents in over 200 countries and territories.

The company's statements of cash flows for the years 2001-2003 follow. Then the relevant portion of Management's Discussion and Analysis of the statement of cash flows is provided.

Consolidated statement of cash flows (millions of dollars)

Years ended 2003, 2002, 2001	December 31 2003	2002	2001
Operating activities			
Income from continuing operations	\$ 832	\$1,248	\$1,073
Adjustments to reconcile net income to net cash provided by operating activities:			
Provision of restructuring and asset impairment	572	---	440
Depreciation and amortization	535	464	421
Other	5	(7)	(46)
Changes in assets and liabilities, excluding effects from acquisition and divestitures:			
Accounts receivable	(100)	(48)	(442)
Inventories	149	(140)	(62)
Accounts payable and accrued liabilities	(45)	65	72
Other working capital items	(136)	97	(104)
Other noncurrent assets and liabilities	(197)	(252)	(142)
Funding German pension plans	---	---	(252)
Net cash provided by operating activities	\$ 1,604	\$1,427	\$ 958
Investing activities			
Additions to property, plant and equipment	\$ (793)	\$ (889)	\$ (952)
Disposals of property, plant and equipment	41	124	65
Acquisitions of businesses, less cash acquired	---	---	(91)
Sale of businesses	539	---	200
Other	(1)	2	5
Net cash used in investing act	\$(214)	\$(763)	\$(773)
Financing activities			
Purchase of treasury stock	\$ (944)	\$(2,021)	\$(1,066)
Proceeds from sale of put options	23	72	56
Proceeds from exercise of stock options and purchase plans	36	149	126
Proceeds from long-term debt	494	1,105	500
Repayment of long-term debt	(365)	---	(12)
Increase (decrease) in loans payable	(385)	484	708
Dividends paid	(671)	(626)	(552)
Settlements of debt-related derivative contracts	279	42	9
Net cash used in financing activities	\$(1,553)	\$(795)	\$(231)
Effect of exchange rate changes on cash	\$ (5)	\$ (2)	\$ (2)
Net cash provided by discontinued operations	130	111	45
Decrease in cash and cash equivalents	\$ (18)	\$ (22)	\$ (3)
Cash and cash equivalents at beginning of year	80	102	105
Cash and cash equivalents at end of year	\$ 62	\$ 80	\$ 102
Supplemental disclosure of cash paid for:			
Interest	\$ 243	\$ 126	\$ 120
Income taxes	\$ 480	\$ 457	\$ 473
Noncash investing and financing activities:			
Acquisition of businesses			
Fair value of assets acquired	\$---	\$---	\$ 100
Cash paid	---	---	91
Liabilities assumed	\$ ---	\$ ----	\$ 9

16.19 Management's discussion and analysis - Financial*

Financial condition

The Company's financial condition continued to be strong in 2003. Net debt (total debt net of associated swaps, less cash and cash equivalents) decreased USD 82 million during 2003, despite additional spending under the Company's share repurchase program, due to improved cash flow from operations, proceeds from the sale of the Stationery Products business and the favorable exchange impact on foreign currency debt. Net debt at 2003 December 31, amounted to USD 4.45 billion, compared with USD 4.53 billion and USD 3.18 billion at 2002 December 31 and 2001, respectively. The market value of Gillette equity was USD 38 billion at the end of 2003, compared with USD 43 billion at the end of 2002. The Company's book equity position amounted to USD 1.92 billion at the end of 2003, compared with USD 3.06 billion at the end of 2002 and USD 4.54 billion at the end of 2001. The decreases in book equity in 2003 and 2002 were due primarily to the Gillette share repurchase program, as well as to the effect of foreign currency translation.

Net cash provided by operating activities in 2003 was USD 1.60 billion, compared with USD 1.43 billion in 2002 and USD .96 billion in 2001. The current ratio of the Company was .86 for 2003, compared with ratios of 1.39 for 2002 and 1.40 for 2001. The decrease in the 2003 current ratio was primarily attributable to the Company's reclassification of all commercial paper borrowings to short-term debt, due to the Company's credit facility agreements expiring within 2001. Capital spending in 2003 amounted to USD 793 million, compared with USD 889 million in 2002 and USD 952 million in 2001. Spending in all three years reflected substantial investments in the blade and razor, Duracell and Braun Products segments.

In 2003, the Company sold the Stationery Products business for USD 528 million. In 2001, the Company made acquisitions in the Duracell Products segment for USD 100 million and sold the Jafra business for USD 200 million.

Share repurchase funding in 2003, net of proceeds received from the sale of put options on Company stock, amounted to USD 921 million, compared with USD 1,949 million in 2002 and USD 1,010 million in 2001.

Strong cash inflows from operations, proceeds from the sale of the Stationery Products business and alternate financing sources enabled the Company to reduce its USD 2.0 billion revolving credit facility in 2003 to USD 1.4 billion, expiring October 2004, and its USD 1.1 billion credit facility, expiring December 2004, to USD 550

million in January 2004. Both facilities are used by the Company to complement its commercial paper program.

In order to increase flexibility in sourcing short-term borrowing, the Company launched a USD 1 billion Euro commercial paper program in 2003. At year-end 2003, there was USD 586 million outstanding under this program and USD 1.45 billion outstanding under the US program, compared with USD 2.41 billion at the end of 2002 and USD 1.66 billion at the end of 2001.

During 2003, the Company issued Euro-denominated notes for USD 228 million, due December 2005, and entered into a USD 264 million Euro-denominated debt obligation, with redemption rights in December 2004. During 2002, the Company issued Euro-denominated notes for USD 343 million, due February 2007, and entered into a USD 325 million Euro-denominated debt obligation, with redemption rights in March 2005, and a USD 437 million Euro-denominated debt obligation, with redemption rights in January 2007. The net proceeds were used to refinance existing short-term debt associated with the Company's share repurchase program.

During 2003, both Standard & Poor's and Moody's maintained the Company's current credit ratings. Standard & Poor's rates the Company's long-term debt at AA, while Moody's rating is Aa3. The commercial paper rating is A1+ by Standard & Poor's and P1 by Moody's.

Gillette will continue to have capital available for growth through both internally generated funds and significant credit resources. The Company has substantial unused lines of credit and access to worldwide financial market sources for funds.

Source: The Gillette Company's 2000 annual report, p. 22.

- a. Does the company use the direct or indirect method of calculating net cash provided by operating activities?
- b. Determine whether each of the current assets (other than cash) and current liabilities increased or decreased during 2003.
- c. How is the company expanding its asset base?
- d. How much greater is the total market value of the company's outstanding shares of common stock than the book equity (stockholders' equity)?
- e. What is the likelihood that the company will be able to pay at least the current level of dividends in the future?

f. Do you expect to see purchases of treasury stock increase or decrease in the future?

g. Given the following data, calculate the cash flow per share of common stock ratio, the cash flow margin ratio, and the cash flow liquidity ratio. (Round the net cash provided by operating activities to the nearest million before you calculate the ratios.) How do the ratios compare with the ones for companies illustrated in the chapter?

	(in millions)
Average number of shares of common stock outstanding	1,059
Net sales	9,295
Cash and marketable securities	62
Current liabilities	5,471

Alternate problem E The following information is from the accounting records of Wescott Office Supplies, Inc., for the fiscal years 2011 and 2010:

	2011	2010
Assets		
Cash	\$ 66,250	\$ 61,000
Accounts receivable, net	84,000	42,000
Merchandise inventory	42,000	48,250
Prepaid expenses	7,875	12,125
Land	94,500	78,750
Buildings	199,500	147,000
Accumulated depreciation – buildings	(31,500)	(26,250)
Equipment	257,250	210,000
Accumulated depreciation- equipment	(78,750)	(63,000)
Total assets	\$641,125	\$509,875
Liabilities and stockholders' equity		
Accounts payable	\$73,500	\$ 47,250
Accrued liabilities payable	50,500	55,750
Five-year note payable	52,500	-0-
Capital stock -\$50 par	420,000	367,500
Retained earnings		39,375
Total liabilities and stockholders' equity	\$641,125	\$509,875

Net income for year ended 2011 June 30, was USD 56,250.

Additional land was acquired for cash, USD 15,750.

No equipment or building retirements occurred during the year.

Equipment was purchased for cash, USD 47,250.

The five-year note for USD 52,500 was issued to pay for a building erected on land leased by the company.

Stock was issued at par for cash, USD 52,500.

Dividends declared and paid were USD 51,000.

The company paid interest of USD 10,000 and income taxes of USD 40,000.

a. Prepare a working paper for a statement of cash flows.

b. Prepare a statement of cash flows under the indirect method. Also prepare any necessary supplemental schedule(s).

16.20 Beyond the numbers—Critical thinking

Business decision A National Sports, Inc., is a sports equipment sales company. During 2011, the company replaced USD 18,000 of its fully depreciated equipment with new equipment costing USD 23,000. Although a midyear dividend of USD 5,000 was paid, the company found it necessary to borrow USD 5,000 from its bank on a two-year note. Further borrowing may be needed since the Cash account is dangerously low at year-end.

Following are the income statement and "cash flow statement", as the company's accountant calls it, for 2011.

National Sports, Inc.
Income Statements For the year ended 2011 December 31

Sales		\$195,000
Cost of goods sold	\$140,000	
Operating expense and taxes	49,700	189,700
Net income		\$5,300

National Sports, Inc.
Cash flow Statement For the Year ended 2011 December 31

Cash received:		
From operations:		
Net income	\$5,300	
Depreciation	5,000	
Total cash from operations	\$10,300	
Note issued to bank	5,000	
Mortgage note issued	16,000	
Total funds provided	\$31,300	
Cash paid:		
New equipment	\$23,000	
Dividends	5,000	28,000
Increase in cash		\$ 3,300

The company's president is very concerned about what he sees in these statements and how it relates to what he knows has actually happened. He turns to you for help. Specifically, he wants to know why the cash flow statement shows an increase in cash of USD 3,300 when he knows the cash balance decreased from USD

15,000 to USD 500 during the year. Also, why is depreciation shown as providing cash?

You believe you can answer the president's questions after receiving the following condensed balance sheet data:

National Sports, Inc.
Comparative Balance Sheets 2011 December 31, and 2010

	December 31	
Assets	2011	2010
Current assets:		
Cash	\$ 500	\$ 15,000
Accounts receivable, net	17,800	13,200
Merchandise inventory	28,500	17,500
Prepaid expenses	700	300
Total current assets	\$ 47,500	\$ 46,000
Property, plant, and equipment:		
Equipment	\$40,000	\$35,000
Accumulated depreciation – equipment	(11,000)	(24,000)
Total property, plant, and equipment	\$ 29,000	\$ 11,000
	Liabilities and stockholders' equity	
Current liabilities:		
Accounts payable	\$ 8,700	\$ 10,000
Accrued liabilities payable	600	1,100
Total current liabilities	\$ 9,300	\$ 11,100
Long-term liabilities:		
Notes payable	5,000	-0-
Mortgage note payable	16,000	-0-
Total liabilities	\$ 30,300	\$ 11,100
Stockholders' equity:		
Common stock	\$ 40,000	\$ 40,000
Retained earnings	6,200	5,900
Total stockholders' equity	\$ 46,200	\$ 45,900
Total liabilities and stockholders' equity	\$ 76,500	\$ 57,000

Prepare a correct statement of cash flows using the indirect method that shows why National Sports, Inc., is having such a difficult time keeping sufficient cash on hand. Also, answer the president's questions. The company paid interest of USD 400 and income taxes of USD 3,000.

Business decision case B Following are comparative balance sheets for Hardiplank Siding, Inc.:

Hardiplank Siding, Inc.
Comparative Balance Sheets 2011 December 31, and 2010

	2011	2010
Assets		
Cash	\$ 80,000	\$ 57,500
Accounts receivable, net	60,000	45,000
Merchandise inventory	90,000	52,500
Land	67,500	60,000
Buildings	90,000	90,000
Accumulated depreciation- buildings	(30,000)	(27,000)
Equipment	285,000	225,000
Accumulated depreciation – equipment	(52,500)	(48,000)
Goodwill	120,000	150,000
Total assets	\$710,000	\$605,000
Liabilities and stockholders' equity		
Accounts payable	\$ 95,000	\$ 65,000
Accrued liabilities payable	30,000	22,500
Capital stock	315,000	300,000
Paid-in capital – stock dividends	75,000	67,500
Paid-in capital – land donations	15,000	-0-
Retained earnings	180,000	150,000
Total liabilities and stockholders' equity	\$710,000	\$605,000

An analysis of the Retained Earnings account for the year reveals the following:

Balance, 2011 January 1		\$150,000
Add: Net income for the year		107,500
		\$257,500
Less: cash dividends	\$55,000	
Stock dividends	22,500	77,500
Balance, 2011 December 31		\$180,000

a. Equipment with a cost of USD 30,000 on which USD 27,000 of depreciation had been accumulated was sold during the year at a loss of USD 1,500. Included in net income is a gain on the sale of land of USD 9,000.

b. The president of the company has set two goals for 2012: (1) increase cash by USD 40,000 and (2) increase cash dividends by USD 35,000. The company's activities in 2012 are expected to be quite similar to those of 2011, and no new fixed assets will be acquired.

Prepare a schedule showing cash flows from operating activities under the indirect method for 2011. Can the company meet its president's goals for 2012? Explain.

Annual report analysis C Refer to the Annual report appendix. Evaluate the ease with which The Limited will be able to maintain its dividend payments in the

future at 2006 amounts. (Hint: Compare current dividend amount with net cash provided by operating activities.)

Annual report analysis D Refer to "A broader perspective: Johnson & Johnson" and answer the following questions:

a. Over the last three years from which major activities (operations, investing, financing) has Johnson & Johnson received net cash inflows and on which major activities have they spent the funds?

b. What relationship do you see between "Depreciation and amortization of property and intangibles" and "Additions of property, plant, and equipment"?

c. What were the two major sources of cash outflows to stockholders and which was larger?

d. By how much did the investments in marketable securities grow or shrink over the three-year period?

e. By how much did long-term debt grow or shrink over the three-year period?

f. If you were a stockholder, would you feel uncertain or confident that this company will be able to pay future dividends at the same rate as in the past?

g. For what reason or reasons might the company be buying back its own stock?

h. For the latest year, did the current assets (other than cash) and current liabilities go up or down?

i. From the information that is available, does it appear that the company is performing well or poorly?

Group project E In groups of two or three students write a two-page, double-spaced paper on one of the following topics:

Which Is Better, the Direct or Indirect Method (of calculating net cash provided by operating activities)?

Analysis of the Johnson & Johnson Cash Flow Statement (shown in "A broader perspective" in this chapter)

Analysis of Cash Flow Statement for The Limited (shown in the Annual Report Appendix)

Your analysis should be convincing and have no spelling or grammatical errors. Your paper should be neat and the result of several drafts. The paper should have a

cover page with the title and the authors' names. Use a word processing program if possible.

Group project F In a group of one or two other students, go to the library and locate *Statement of Financial Accounting Standards No. 95*, "Statement of Cash Flows", published by the Financial Accounting Standards Board. Write a report to your instructor answering the following questions:

Why did the Board settle on cash flows instead of working capital flows?

Why did the Board strongly recommend use of the direct method?

Why did some members of the Board dissent from the final statement?

Group project G In a group of one or two other students, go to the library and locate *Statement of Financial Accounting Standards No. 95*, "Statement of Cash Flows", published by the Financial Accounting Standards Board. Write a report to your instructor covering the following points:

Describe the controversy over how to treat interest and dividends received.

What is the Board's position on reporting cash flow per share? Why did they take that position?

What is the Board's position on noncash transactions? Why did they take that position?

16.21 Using the Internet—A view of the real world

Visit the following website for the Eastman Kodak Company:

<http://www.kodak.com>

By following the instructions on the screen, locate the latest statement of cash flows and then print it. Analyze the statement and write a report to your instructor summarizing your analysis.

Visit the following website for Verizon:

<http://www.verizon.com>

By following the information on the screen, locate the latest statement of cash flows and then print it. Analyze the statement and then write a report to your instructor summarizing your analysis.

16.22 Answers to self-test

16.22.1 True-false

True. Before July 1988, the statement of changes in financial position was required. This statement emphasized changes in working capital rather than changes in cash.

True. The statement of cash flows must be published every time an income statement is published.

False. Investing activities are transactions involving the acquisition or disposal of noncurrent assets. Transactions with creditors and owners are financing activities.

False. While the direct method is the method encouraged by the FASB, it is not the predominant method in use. In a recent study, only about 3 percent of the companies surveyed used the direct method.

True. Both of these transactions are with owners and, therefore, would be financing activities.

16.22.2 Multiple-choice

c. The descriptions in (a) and (b) would be correct if they were reversed. The indirect method is easier to use, and this characteristic is probably the main reason why it is used by most companies.

a. Payment of debt is a financing activity because it is a transaction with creditors. All of the others are investing activities because they are transactions involving the acquisition or disposal of noncurrent assets.

b. Sales of USD 500,000 minus the increase in accounts receivable of USD 30,000 = USD 470,000.

d. Cost of goods sold of USD 300,000, less the increase in accounts payable of USD 20,000, plus the increase in inventory of USD 50,000 = USD 330,000.

a. Net income of USD 200,000, plus depreciation of USD 10,000, less the increase in accounts receivable of USD 15,000, plus the increase in accounts payable of USD 5,000 = USD 200,000.

17 Analysis and interpretation of financial statements

17.1 Learning objectives

After studying this chapter, you should be able to:

- Describe and explain the objectives of financial statement analysis.
- Describe the sources of information for financial statement analysis.
- Calculate and explain changes in financial statements using horizontal analysis, vertical analysis, and trend analysis.
- Perform ratio analysis on financial statements using liquidity ratios, long-term solvency ratios, profitability tests, and market tests.
- Describe the considerations used in financial statement analysis.

17.2 Accountants as investment analysts

More than ever, accounting students are being hired as securities analysts, portfolio managers, strategists, consultants, or other investment specialists. Duties in these fields involve understanding the operations of the company, assessing the value of the company, and predicting its future performance. These fields can be enormously exciting and may reap tremendous monetary rewards to those who are successful. For example, Apple's stock closed at USD 21.82 per share in January 2002, and at USD 218.95 in March 2010. So, if you had invested in Apple stock in 2002 your investment would have been worth ten times as much in 2010. Not bad! Of course, failure to understand the relationship between financial accounting information and company value can result in negative consequences as well. For example, during the dot.com boom, the stock of Webvan, an online grocer, plummeted from a high of USD 40 to just six cents within a few months as investors realized that the company could not meet expected earnings projections and was therefore highly overvalued. (Later, however, framed Webvan stock certificates were selling on Ebay for over USD 100.00 as stark symbols of the dot.com bust). In the area of investing, what accounting information can be used to separate the winners from the losers?

This is the goal of investment analysts—to understand the current value of a company and then use available information in predicting future performance. Investment analysts rely heavily on financial statements as a source of information in predicting stock price movements. Since financial statements are prepared by accountants, it is no surprise that accountants are being hired for purposes of interpreting financial information and making predictions. Given the complexity of business organizations and business transactions in today's global markets, accounting professionals no longer are solely responsible for preparing financial statements, but are being asked to interpret these statements as well.

The two primary objectives of every business are solvency and profitability. Solvency is the ability of a company to pay debts as they come due; it is reflected on the company's balance sheet. Profitability is the ability of a company to generate income; it is reflected on the company's income statement. Generally, all those interested in the affairs of a company are especially interested in solvency and profitability.

This chapter discusses several common methods of analyzing and relating the data in financial statements and, as a result, gaining a clear picture of the solvency and profitability of a company. Internally, management analyzes a company's financial statements as do external investors, creditors, and regulatory agencies. Although these users have different immediate goals, their overall objective in financial statement analysis is the same—to make predictions about an organization as an aid in decision making.

17.3 Objectives of financial statement analysis

Management's analysis of financial statements primarily relates to parts of the company. Using this approach, management can plan, evaluate, and control operations within the company. Management obtains any information it wants about the company's operations by requesting special-purpose reports. It uses this information to make difficult decisions, such as which employees to lay off and when to expand operations. Our primary focus in this chapter, however, is not on the special reports accountants prepare for management. Rather, it is on the information needs of persons outside the firm.

Investors, creditors, and regulatory agencies generally focus their analysis of financial statements on the company as a whole. Since they cannot request special-purpose reports, external users must rely on the general-purpose financial statements that companies publish. These statements include a balance sheet, an income statement, a statement of stockholders' equity, a statement of cash flows, and the explanatory notes that accompany the financial statements.

Users of financial statements need to pay particular attention to the explanatory notes, or the financial review, provided by management in annual reports. This integral part of the annual report provides insight into the scope of the business, the results of operations, liquidity and capital resources, new accounting standards, and geographic area data. Moreover, this section provides an economic outlook that an analyst may find very helpful when considering the possible future profitability of the company.

Financial statement analysis consists of applying analytical tools and techniques to financial statements and other relevant data to obtain useful information. This information reveals significant relationships between data and trends in those data that assess the company's past performance and current financial position. The information shows the results or consequences of prior management decisions. In addition, analysts use the information to make predictions that may have a direct effect on decisions made by users of financial statements.

Present and potential investors are interested in the future ability of a company to earn profits—its profitability. These investors wish to predict future dividends and changes in the market price of the company's common stock. Since both dividends and price changes are likely to be influenced by earnings, investors may predict earnings. The company's past earnings record is the logical starting point in predicting future earnings.

Some outside parties, such as creditors, are more interested in predicting a company's solvency than its profitability. The liquidity of the company affects its short-term solvency. The company's **liquidity** is its state of possessing liquid assets, such as cash and other assets easily converted to cash. Because companies must pay short-term debts soon, liquid assets must be available for their payment. For example, a bank asked to extend a 90-day loan to a company would want to know the

company's projected short-term liquidity. Of course, the company's predicted ability to repay the 90-day loan is likely to be based at least partially on its past ability to pay off debts.

Long-term creditors are interested in a company's long-term solvency, which is usually determined by the relationship of a company's assets to its liabilities. Generally, we consider a company to be solvent when its assets exceed its liabilities so that the company has a positive stockholders' equity. The larger the assets are in relation to the liabilities, the greater the long-term solvency of the company. Thus, the company's assets could shrink significantly before its liabilities would exceed its assets and destroy the company's solvency.

Investors perform several types of analyses on a company's financial statements. All of these analyses rely on comparisons or relationships of data that enhance the utility or practical value of accounting information. For example, knowing that a company's net income last year was USD 100,000 may or may not, by itself, be useful information. Some usefulness is added when we know that the prior year's net income was USD 25,000. And even more useful information is gained if we know the amounts of sales and assets of the company. Such comparisons or relationships may be expressed as:

- Absolute increases and decreases for an item from one period to the next.
- Percentage increases and decreases for an item from one period to the next.
- Percentages of single items to an aggregate total.
- Trend percentages.
- Ratios.

Earlier chapters have discussed and illustrated many of these analysis techniques. However, in this chapter we apply all of these techniques in analyzing Synotech, Inc.'s performance. This was the company introduced in Chapter 16.

Items 1 and 2 make use of comparative financial statements. **Comparative financial statements** present the same company's financial statements for one or two successive periods in side-by-side columns. The calculation of dollar changes or percentage changes in the statement items or totals is **horizontal analysis**. This analysis detects changes in a company's performance and highlights trends.

Analysts also use vertical analysis of a single financial statement, such as an income statement. **Vertical analysis** (item 3) consists of the study of a single financial statement in which each item is expressed as a percentage of a significant total. Vertical analysis is especially helpful in analyzing income statement data such as the percentage of cost of goods sold to sales.

Financial statements that show only percentages and no absolute dollar amounts are **common-size statements**. All percentage figures in a common-size balance sheet are percentages of total assets while all the items in a common-size income statement are percentages of net sales. The use of common-size statements facilitates vertical analysis of a company's financial statements.

Trend percentages (item 4) are similar to horizontal analysis except that comparisons are made to a selected base year or period. Trend percentages are useful for comparing financial statements over several years because they disclose changes and trends occurring through time.

Ratios (item 5) are expressions of logical relationships between items in the financial statements of a single period. Analysts can compute many ratios from the same set of financial statements. A ratio can show a relationship between two items on the same financial statement or between two items on different financial statements (e.g. balance sheet and income statement). The only limiting factor in choosing ratios is the requirement that the items used to construct a ratio have a logical relationship to one another.

17.4 Sources of information

Financial information about publicly owned corporations can come from different sources such as published reports, government reports, financial service information, business publications, newspapers, and periodicals.

Public corporations must publish annual financial reports. The Annual report appendix gives such data for The Limited, Inc..(see volume 1 appendix) The major sections of an annual report are (not necessarily in this order):

- **Consolidated financial statements** Consolidated financial statements include a balance sheet containing two years of comparative data; an income statement containing three years of comparative data; a statement of cash flows

containing three years of comparative data; and a statement of shareholders' equity containing three years of comparative data. For examples of each statement, refer to the annual report booklet.

- **Notes to consolidated financial statements** Notes to consolidated financial statements provide an in-depth look into the numbers contained in the financial statements. The notes usually contain sections on significant accounting policies, long-term debt, leases, stock option plans, etc. These explanations allow stockholders to look beyond the numbers to the events that triggered the dollar amounts recorded in the financial statements.

- **Letters to stockholders** Most annual reports are introduced with a letter to the stockholders. The letter often includes information about the company's past history, its mission, current year operating results, and the company's future goals.

- **Reports of independent accountants** The Securities and Exchange Commission (SEC) requires the financial statements of certain companies to be audited. The report of independent accountants, found at the end of the financial statements, provides assurance that the financial statements prepared by the company have been audited and are free of material misstatements. The report also may include a paragraph highlighting the significant accounting policies that the company has changed recently.

- **Management discussion and analysis** The management discussion and analysis section of the annual report provides management's view of the performance of the company. The analysis is based on the financial statements, the conditions of the industry, and ratios.

Publicly held companies must file detailed annual reports (Form 10-K), quarterly reports (Form 10-Q), and special events reports (Form 8-K) with the Securities and Exchange Commission. These reports are available to the public for a small charge and sometimes contain more detailed information than the published reports.

Financial statement information is often more meaningful when users compare it with industry norms. Two firms that provide information on individual companies and industries are Moody's Investors Service and Standard & Poor's. Dun & Bradstreet Companies, Inc., publishes *Key Business Ratios* and Robert Morris

Associates publishes *Annual Statement Studies*; both provide information for specific industries. Standard & Poor's *Industry Surveys* contains background descriptions and the economic outlook for different industries.

Business publications such as *The Wall Street Journal*, *Barron's*, *Forbes*, and *Fortune* also report industry financial news. Because financial statement users must be knowledgeable about current developments in business, the information in financial newspapers and periodicals is very valuable to them.

17.5 Horizontal analysis and vertical analysis: An illustration

The comparative financial statements of Synotech, Inc., will serve as a basis for an example of horizontal analysis and vertical analysis of a balance sheet and a statement of income and retained earnings. Recall that horizontal analysis calculates changes in comparative statement items or totals, whereas vertical analysis consists of a comparison of items on a single financial statement.

Imagine that you are a prospective investor interested in Synotech, Inc.. You have acquired the 2010 Annual Report of the company and want to perform some horizontal and vertical analyses of the financial statements.

First, we begin with the balance sheets. Exhibit 57 shows the comparative balance sheets for 2010 and 2009 in Columns (1) and (2). Take a few minutes to study the balance sheets. Then review Columns (3) and (4), which show the horizontal analysis that would be performed on the comparative balance sheets.

Column (3) shows the change that occurred in each item between 2009 December 31, and 2010 December 31. If the change between the two dates is an increase from 2009 to 2010, the change is a positive figure. If the change is a decrease, the change is a negative figure and is shown in parentheses. Column (4) shows the percentage change in each item. You can calculate the percentage change by dividing the dollar change by the dollar balance of the earlier year (2009). While examining the horizontal analysis in Exhibit 57 note that:

- Total current assets have increased USD 14.3 million, consisting largely of increases in cash, marketable securities, and other current assets despite a USD 63.0 million decrease in net receivables, while total current liabilities have

increased USD 181.4 million, largely as a result of increases in the current portion of long-term debt and other accruals.

- Total liabilities have decreased USD 114.1 million, while total assets increased by USD 311.0 million.

Next, study Column (4), which expresses as a percentage the dollar change in Column (3). Frequently, these percentage increases are more informative than absolute amounts, as illustrated by the current asset and current liability changes. Although the absolute amount of current liabilities has increased tremendously over the amount of current assets, the percentages reveal that current assets increased .5 percent, while current liabilities increased 8.6 percent. Thus, current liabilities are increasing at a faster rate than current assets. Current assets still exceed current liabilities. This fact indicates that the company will be able to pay its debts as they come due.

Studying the percentages in Column (4) could lead to several other observations. For instance, the 6.9 percent decrease in long-term debt indicates that interest charges will be lower in the future, having a positive effect on future net income. The 14.2 percent increase in retained earnings could be a sign of increased dividends in the future; in addition, the increase in cash of 19 percent could support this conclusion.

Now examine Columns (5) and (6) to see the vertical analysis that would be performed. A vertical analysis of the company's balance sheet discloses each account's significance to total assets or total equities. This comparison aids in assessing the importance of the changes in each account. Columns (5) and (6) in Exhibit 57 express the dollar amount of each item in Columns (1) and (2) as a percentage of total assets or equities. For example, although other assets declined USD 6.3 million in 2010, the decrease of 1.4 percent in the account represents only approximately 4.8 percent of total assets and, therefore, probably does not have great significance. Vertical analysis also shows that total debt financing decreased from 78.0 percent of total equities (liabilities and stockholders' equity) in 2009, to 74.3 percent in 2010. At the same time, the percentage of stockholder financing to total assets of the company increased from 22.0 percent to 25.7 percent.

Synotech, Inc.
Comparative balance sheets
2010 December 31, and 2009

Assets	December		Horizontal	Analysis	Vertical	Analysis
	31	31	Increase or	2010 over	percent	Analysis
	(1)	(2)	(3)	(4)	(5)	(6)
	2010	2009	Dollars*	percent*	of Total	Assets
					2010	2009
Current assets						
Cash and cash equivalents	\$ 298.0	\$ 250.5	\$47.5	19.0%	3.1 %	2.7 %
Marketable securities	71.3	57.5	13.8	24.0	0.8	0.6
Receivables, net	1,277.3	1,340.3	(63.0)	(4.7)	13.5	14.6
Inventories	924.8	929.8	(5.0)	(0.5)	9.8	10.1
Other current assets	275.3	254.3	21.0	8.3	2.9	2.8
Total current assets	\$2,846.7	\$2,832.4	\$14.3	0.5	30.0	30.9
Property, plant and equipment, net	2,914.7	2,586.2	328.5	12.7	30.7	28.2
Goodwill and other intangibles, net	3,264.5	3,290.0	(25.5)	(0.8)	34.4	35.9
Other assets	455.9	462.2	(6.3)	(1.4)	4.8	5.0
Total assets	\$9,481.8	\$9,170.8	\$311.0	3.4	100.0	100.0
Liabilities and shareholders' equity						
Current liabilities						
Notes and loans payable	\$ 206.8	\$ 245.3	\$ (38.5)	(15.7)	2.2	2.7
Current portion of long-term debt	132.5	44.4	88.1	198.4	1.4	0.5
Accounts payable	902.0	886.4	15.6	1.8	9.5	9.7
Accrued income taxes	111.7	92.1	19.6	21.3	1.2	1.0
Other accruals	932.2	835.6	96.6	11.6	9.8	9.1
Total current liabilities	\$2,285.2	\$2,103.8	\$181.4	8.6	24.1	22.9
Long-term debt	3,344.2	3,590.4	(246.2)	(6.9)	35.3	39.2
Deferred income taxes	281.2	284.8	(3.6)	(1.3)	3.0	3.1
Other liabilities	1,130.4	1,176.1	(45.7)	(3.9)	11.9	12.8
Total liabilities	\$7,041.0	\$7,155.1	\$(114.1)	(1.6)	74.3	78.0
Shareholders' equity						
Preferred stock	\$ 471.2	\$ 484.2	\$ (13.0)	(2.7)	5.0	5.3
Common stock, \$1.20 par value (500,000,000 shares authorized, 183,213,295 shares issued)	219.9	219.9	0.0	0.0	2.3	2.4
Additional paid-in capital	1,321.9	1,240.4	81.5	6.6	13.9	13.5
Retained earnings	3,277.1	2,870.6	406.5	14.2	34.6	31.3
Cumulative translation adjustments	(641.6)	(615.6)	(26.0)	4.2	-6.8	-6.7
Unearned compensation	\$4,648.5	\$4,199.5	\$449.0	10.7	49.0	45.8
Treasury stock, at cost	(445.1)	(453.6)	8.5	(1.9)	-4.7	-4.9
Total shareholders' equity	\$2,440.8	\$2,015.7	\$425.1	21.1	25.7	22.0
Total liabilities and stockholders equity	\$9,481.8	\$9,170.8	\$311.0	3.4	100.0	100.0

*Dollars = (1) - (2); percent = (3)/(2)

Exhibit 57: Comparative balance sheets

Exhibit 58 provides the information needed to analyze Synotech's comparative statements of income and retained earnings. Such a statement merely combines the

income statement and the statement of retained earnings. Columns (7) and (8) in Exhibit 58 show the dollar amounts for the years 2010 and 2009, respectively. Study these statements for a few minutes. Then examine Columns (9) and (10) which show the horizontal analysis that would be performed on the company's comparative statements of income and retained earnings. Columns (9) and (10) show the absolute and percentage increase or decrease in each item from 2009 to 2010. The absolute change is determined by deducting the 2009 amount from the 2010 amount. If the change between two dates is an increase from 2009 to 2010, the change is a positive figure. If the change is a decrease, the change is a negative figure and is shown in parentheses. You calculate the percentage change by dividing the dollar change by the dollar amount for 2009.

Synotech, Inc.
Comparative statements of income and retained earnings
For the years ended 2010 December 31, and 2009 (USD millions)

	Year ended (7)	December 31 (8)	Horizontal analysis Increase or (decrease) 2010 over 2009 (9)	analysis (decrease) 2009 (10)	Vertical analysis percent net sales of 2010 (11)	2009 (12)
	2007	2006	Dollars*	percent*	2010	2009
Net sales	\$10,498.8	\$10,029.8	\$469.0	4.7%	100.0%	100.0%
Cost of goods sold	5,341.3	5,233.7	117.6	2.3	50.9	52.1
Gross profit	\$5,157.5	\$4,806.1	\$351.4	7.3	49.1	47.9
Selling, general and administrative expenses	3,662.5	3,455.5	207.0	6.0	34.9	34.5
Provision for restructured operations	---	552.6	(552.6)	(100.0)	0.0	5.5
Other expense, net	112.6	115.3	(2.7)	(2.3)	1.1	1.1
Interest expense, net of interest income of \$41.2 and \$36.7, respectively	236.9	246.5	(9.6)	(3.9)	2.3	2.5
Income before income taxes	\$1,145.5	\$436.2	\$709.3	162.6	10.9	4.3
Provision for income taxes	383.5	229.8	153.7	66.9	3.7	2.3
Net income	\$762.0	\$206.4	\$555.6	269.2	7.3	2.1
Retained earnings, January 1	2,870.6	2,996.0	(125.4)	(4.2)		
Total	\$3,632.6	\$3,202.4	\$430.2	13.4		
Dividends declared:						
Series B convertible preference stock, net of income taxes	25.1	25.3	(0.2)	(0.8)		
Preferred stock	0.6	0.6	0.0	0.0		
Common stock	329.8	305.9	23.9	7.8		
Retained earnings, December 31	\$3,277.1	\$2,870.6	\$406.5	14.2		

*Dollars = (7) – (8); percent = (9)/(8)

Exhibit 58: Comparative statements of income and retained earnings

Having completed the horizontal analysis and vertical analysis of Synotech's balance sheet and statement of income and retained earnings, you are ready to study trend percentages and ratio analysis. The last section in this chapter discusses some final considerations in financial statement analysis. Professional financial statement analysts use several tools and techniques to determine the solvency and profitability of companies.

The horizontal analysis shows that sales increased a total of USD 469.0 million, an increase of 4.7 percent. Since cost of goods sold increased by a much smaller amount (USD 117.6 million), gross profit increased by USD 351.4, or 7.3 percent. The USD 552.6 million expense in 2009 was the result of a provision for restructured operations. Although this is not a recurring expense, it does not classify as an extraordinary expense and is treated as part of income from continuing operations.

Now look at Columns (11) and (12) to see the vertical analysis that would be performed. Columns (11) and (12) express the dollar amount of each item in Columns (7) and (8) as a percentage of net sales. Even though cost of goods sold increased in 2010, it remained a fairly constant percentage of net sales. Therefore, gross profit as a percentage of net sales increased only slightly. The percentage of expenses to net sales decreased somewhat, thus yielding an increase in income before income taxes as a percentage of net sales.

17.6 Trend percentages

Trend percentages, also referred to as index numbers, help you to compare financial information over time to a base year or period. You can calculate trend percentages by:

- Selecting a base year or period.
- Assigning a weight of 100 percent to the amounts appearing on the base-year financial statements.
- Expressing the corresponding amounts on the other years' financial statements as a percentage of base-year or period amounts. Compute the percentages by dividing nonbase-year amounts by the corresponding base-year amounts and then multiplying the result by 100.

The following information for Synotech illustrates the calculation of trend percentages:

(USD millions)	2008	2009	2010
Net sales	\$ 9,105.5	\$10,029.8	\$10,498.8
Cost of goods sold	4,696.0	5,223.7	5,341.3
Gross profit	\$ 4,409.5	\$ 4,806.1	\$ 5,157.5
Operating expenses	3,353.6	4,369.9	4,012.0
Income before income taxes	\$ 1,055.9	\$ 436.2	\$ 1,145.5

If 2008 is the base year, to calculate trend percentages for each year divide net sales by USD 9,105.5 million; cost of goods sold by USD 4,696.0 million; gross profit by USD 4,409.5 million; operating expenses by USD 3,353.6 million; and income before income taxes by USD 1,055.9 million. After all divisions have been made, multiply each result by 100. The resulting percentages reflect trends as follows:

	2008	2009	2010
Net sales	100.0%	119.2%	115.3%
Cost of goods sold	100.0	111.2	113.7
Gross profit	100.0	109.0	117.0
Operating expenses	100.0	130.3	119.6
Income before income taxes	100.0	41.3	108.5

These trend percentages indicate the changes taking place in the organization and highlight the direction of these changes. For instance, the percentage of sales is increasing each year compared to the base year. Cost of goods sold increased at a lower rate than net sales in 2008 and 2010, causing gross profit to increase at a higher rate than net sales. Operating expenses in 2009 increased due to the provision for restructured operations, causing a significant decrease in income before income taxes. Percentages provide clues to an analyst about which items need further investigation or analysis. In reviewing trend percentages, a financial statement user should pay close attention to the trends in related items, such as the cost of goods sold in relation to sales. Trend analysis that shows a constantly declining gross margin (profit) rate may be a signal that future net income will decrease.

As useful as trend percentages are, they have one drawback. Expressing changes as percentages is usually straightforward as long as the amount in the base year or period is positive—that is, not zero or negative. Analysts cannot express a USD 30,000 increase in notes receivable as a percentage if the increase is from zero last

year to USD 30,000 this year. Nor can they express an increase from a loss last year of USD 10,000 to income this year of USD 20,000 in percentage terms.

Proper analysis does not stop with the calculation of increases and decreases in amounts or percentages over several years. Such changes generally indicate areas worthy of further investigation and are merely clues that may lead to significant findings. Accurate predictions depend on many factors, including economic and political conditions; management's plans regarding new products, plant expansion, and promotional outlays; and the expected activities of competitors. Considering these factors along with horizontal analysis, vertical analysis, and trend analysis should provide a reasonable basis for predicting future performance.

17.7 Ratio analysis

Logical relationships exist between certain accounts or items in a company's financial statements. These accounts may appear on the same statement or on two different statements. We set up the dollar amounts of the related accounts or items in fraction form called ratios. These ratios include: (1) liquidity ratios; (2) equity, or long-term solvency, ratios; (3) profitability tests; and (4) market tests.

Liquidity ratios indicate a company's short-term debt-paying ability. Thus, these ratios show interested parties the company's capacity to meet maturing current liabilities.

Current (or working capital) ratio Working capital is the excess of current assets over current liabilities. The ratio that relates current assets to current liabilities is the **current (or working capital) ratio**. The current ratio indicates the ability of a company to pay its current liabilities from current assets and, thus, shows the strength of the company's working capital position.

You can compute the current ratio by dividing current assets by current liabilities:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

The ratio is usually stated as a number of dollars of current assets to one dollar of current liabilities (although the dollar signs usually are omitted). Thus, for Synotech in 2010, when current assets totaled USD 2,846.7 million and current liabilities

totalled USD 2,285.2 million, the ratio is 1.25:1, meaning that the company has USD 1.25 of current assets for each USD 1.00 of current liabilities.

The current ratio provides a better index of a company's ability to pay current debts than does the absolute amount of working capital. To illustrate, assume that we are comparing Synotech to Company B. For this example, use the following totals for current assets and current liabilities:

	Synotech	Company B
Current assets (a)	\$ 2,846.7	\$120.0
Current liabilities (b)	2,285.2	53.2
Working capital (a – b)	\$ 561.5	\$ 66.8
Current ratio (a/b)	1.25:1	2.26:1

Synotech has eight times as much working capital as Company B. However, Company B has a superior debt-paying ability since it has USD 2.26 of current assets for each USD 1.00 of current liabilities.

Short-term creditors are particularly interested in the current ratio since the conversion of inventories and accounts receivable into cash is the primary source from which the company obtains the cash to pay short-term creditors. Long-term creditors are also interested in the current ratio because a company that is unable to pay short-term debts may be forced into bankruptcy. For this reason, many bond indentures, or contracts, contain a provision requiring that the borrower maintain at least a certain minimum current ratio. A company can increase its current ratio by issuing long-term debt or capital stock or by selling noncurrent assets.

A company must guard against a current ratio that is too high, especially if caused by idle cash, slow-paying customers, and/or slow-moving inventory. Decreased net income can result when too much capital that could be used profitably elsewhere is tied up in current assets.

Refer to Exhibit 57. The Synotech data in Column (4) indicate that current liabilities are increasing more rapidly than current assets. We could also make such an observation directly by looking at the change in the current ratio. Synotech's current ratios for 2010 and 2009 follow:

(USD millions)	December 31		Amount of
	2010	2009	increase
Current assets (a)	\$2,846.7	\$,2832.4	14.3
Current liabilities (b)	2,285.6	2,103.8	181.4

Working capital (a – b)	\$ 561.5	\$ 728.6	\$(167.1)
Current ratio (a/b)	1.25:1	1.35:1	

Synotech's working capital decreased by USD 167.1 million, or 22.9 percent (USD 167.1/USD 728.6), and its current ratio decreased from 1.35:1 to 1.25:1. Together, these figures reflect that its current liabilities increased faster than its current assets.

Acid-test (quick) ratio The current ratio is not the only measure of a company's short-term debt-paying ability. Another measure, called the **acid-test (quick) ratio**, is the ratio of quick assets (cash, marketable securities, and net receivables) to current liabilities. Analysts exclude inventories and prepaid expenses from current assets to compute quick assets because they might not be readily convertible into cash. The formula for the acid-test ratio is:

$$\text{Acid-test ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}}$$

Short-term creditors are particularly interested in this ratio, which relates the pool of cash and immediate cash inflows to immediate cash outflows.

The acid-test ratios for 2010 and 2009 for Synotech are:

(USD millions)	December 31		Amount of increase or (decrease)
	2010	2009	
Quick assets (a)	\$1,646.6	\$1,648.3	\$ (1.7)
Current liabilities (b)	2,285.6	2,103.8	181.8
Net quick assets (a – b)	\$ (639.0)	\$ (455.5)	\$(183.5)
Acid-test ratio (a/b)	.72:1	.78:1	

In deciding whether the acid-test ratio is satisfactory, investors consider the quality of the marketable securities and receivables. An accumulation of poor-quality marketable securities or receivables, or both, could cause an acid-test ratio to appear deceptively favorable. When referring to marketable securities, poor quality means securities likely to generate losses when sold. Poor-quality receivables may be uncollectible or not collectible until long past due. The quality of receivables depends primarily on their age, which can be assessed by preparing an aging schedule or by calculating the accounts receivable turnover. (Covered in Chapter 9.)

Cash flow liquidity ratio Another approach to measuring short-term liquidity is the **cash flow liquidity ratio**. The numerator, as an approximation of cash resources, consists of (1) cash and marketable securities, or liquid current assets, and (2) net cash provided by operating activities, or the cash generated from the

company's operations. This reflects the company's ability to sell inventory and collect accounts receivable. The formula for the cash flow liquidity ratio is:

$$\frac{\text{Cash also marketable securities} + \text{Net cash provided by operating activities}}{\text{Current liabilities}}$$

For 2010, Synotech has USD 298.0 million in cash and cash equivalents, USD 71.3 million in marketable securities, USD 2,285.2 million in current liabilities, and USD 1,101.0 million in cash provided by operating activities (taken from the statement of cash flows in its annual report). Its cash flow liquidity ratio is:

$$\frac{\text{USD } 298.0 + \text{USD } 71.3 + \text{USD } 1,101.0}{\text{USD } 2,285.2} = .64 \text{ time}$$

This indicates that the company is going to have to rely on some other sources of funding to pay its current liabilities. The company's liquid current assets will only cover about two-thirds of the current liabilities. Possibly net cash provided by operations will be substantially higher in 2011.

Accounts receivable turnover is the relationship between the amount of an asset and some measure of its use. **Accounts receivable turnover** is the number of times per year that the average amount of receivables is collected. To calculate this ratio, divide net credit sales (or net sales) by average net accounts receivable; that is, accounts receivable after deducting the allowance for uncollectible accounts:

$$\text{Accounts receivable turnover} = \frac{\text{Net credit sales (net sales)}}{\text{Average net accounts receivable}}$$

When a ratio compares an income statement item (like net credit sales) with a balance sheet item (like net accounts receivable), the balance sheet item should be an average. Ideally, analysts calculate average net accounts receivable by averaging the end-of-month balances or end-of-week balances of net accounts receivable outstanding during the period. The greater the number of observations used, the more accurate the resulting average. Often, analysts average only the beginning-of-year and end-of-year balances because this information is easily obtainable from comparative financial statements. Sometimes a formula calls for the use of an

average balance, but only the year-end amount is available. Then the analyst must use the year-end amount.²³

In theory, the numerator of the accounts receivable turnover ratio consists of only net credit sales because those are the only sales that generate accounts receivable. However, if cash sales are relatively small or their proportion to total sales remains fairly constant, analysts can obtain reliable results by using total net sales. In most cases, the analyst may have to use total net sales because the separate amounts of cash sales and credit sales are not reported on the income statement.

Synotech's accounts receivable turnover ratios for 2010 and 2009 follow. Net accounts receivable on 2009 January 1, totaled USD 1,259.5 million.

(USD millions)	December 31		Amount of increase
	2010	2009	
Net sales (a)	\$10,498.8	\$10,029.8	\$469.0
Net accounts receivable:			
January 1	\$ 1,340.3	\$ 1,259.5	\$ 80.8
December 31	1,277.3	1,340.3	(63.0)
Total (b)	\$ 2,617.6	\$ 2,599.8	\$ 17.8
Average net receivables (c) (b/2 = c)	\$ 1,308.8	\$1,299.9	
Turnover of accounts receivable (a/c)	8.02	7.72	

The accounts receivable turnover ratio provides an indication of how quickly the company collects receivables. The accounts receivable turnover ratio for 2010 indicates that Synotech collected, or turned over, its accounts receivable slightly more than eight times. The ratio is better understood and more easily compared with a company's credit terms if we convert it into a number of days, as is illustrated in the next ratio.

Number of days' sales in accounts receivable The **number of days' sales in accounts receivable** ratio is also called the average collection period for accounts receivable. Calculate it as follows:

$$\text{Number of days' sales per accounts receivable} = \frac{\text{Number of days per year (365)}}{\text{Accounts receivable turnover}}$$

The turnover ratios for Synotech show that the number of days' sales in accounts receivable decreased from about 47 days (365/7.72) in 2009 to 46 days (365/8.02) in

²³ These general comments about the use of averages in a ratio apply to the other ratios involving averages discussed in this chapter.

2010. The change means that the average collection period for the company's accounts receivable decreased from 47 to 46 days.

An accounting perspective:

Business insight

The number of days' sales in accounts receivable ratio measures the average liquidity of accounts receivable and indicates their quality. Generally, the shorter the collection period, the higher the quality of receivables. However, the average collection period varies by industry; for example, collection periods are short in utility companies and much longer in some retailing companies. A comparison of the average collection period with the credit terms extended customers by the company provides further insight into the quality of the accounts receivable. For example, receivables with terms of 2/10, n/30 and an average collection period of 75 days need to be investigated further. It is important to determine why customers are paying their accounts much later than expected.

Inventory turnover A company's inventory turnover ratio shows the number of times its average inventory is sold during a period. You can calculate **inventory turnover** as follows:

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

When comparing an income statement item and a balance sheet item, measure both in comparable dollars. Notice that we measure the numerator and denominator in cost rather than sales dollars. (Earlier, when calculating accounts receivable turnover, we measured both numerator and denominator in sales dollars.) Inventory turnover relates a measure of sales volume to the average amount of goods on hand to produce this sales volume.

Synotech's inventory on 2009 January 1, was USD 856.7 million. The following schedule shows that the inventory turnover decreased slightly from 5.85 times per

year in 2009 to 5.76 times per year in 2010. To convert these turnover ratios to the number of days it takes the company to sell its entire stock of inventory, divide 365 by the inventory turnover. Synotech's average inventory sold in about 63 and 62 (365/5.76 and 365/5.85) in 2010 and 2009, respectively.

(USD millions)	December31		Amount of increase or (decrease)
	2010	2009	
Cost of goods sold (a)	\$5,341.3	\$5,223.7	\$117.6
Merchandise inventory:			
January 1	\$929.8	\$856.7	\$ 73.1
December 31	924.8	929.8	(5.0)
Total (b)	\$1,854.6	\$1,786.5	\$ 68.1
Average inventory (c) (b/2 = c)	\$927.3	\$893.3	
Turnover of inventory (a/c)	5.76	5.85	

Other things being equal, a manager who maintains the highest inventory turnover ratio is the most efficient. Yet, other things are not always equal. For example, a company that achieves a high inventory turnover ratio by keeping extremely small inventories on hand may incur larger ordering costs, lose quantity discounts, and lose sales due to lack of adequate inventory. In attempting to earn satisfactory income, management must balance the costs of inventory storage and obsolescence and the cost of tying up funds in inventory against possible losses of sales and other costs associated with keeping too little inventory on hand.

An accounting perspective:

Business insight

Cabletron Systems develops, manufactures, installs, and supports a wide range of standards-based LAN and WAN connectivity hardware and software products. For the year ended 2009December 31, , both its number of day's sales in accounts receivable and its inventory turnover rate increased as compared to the prior year. In its 2009 annual report, the company explained these increases as follows: Accounts receivable, net of allowance for doubtful accounts, were USD 210.9 million, or 66 days of sales outstanding, at 2009

December 31 compared to USD 228.4 million at 2008 December 31, or 54 days sales outstanding. The increase in days of sales outstanding was a result of the timing of sales and related collections.

Worldwide inventories were USD 98.1 million at 2009 December 31 or 63 days of inventory, compared to USD 85.0 million, or 37 days of inventory, at 2008 December 31. The increase of days in inventory was due to the increase in finished goods inventory purchased to protect against an anticipated shortage of supply components.

Total assets turnover **Total assets turnover** shows the relationship between the dollar volume of sales and the average total assets used in the business. We calculate it as follows:

$$\text{Total assets turnover} = \frac{\text{Net sales}}{\text{Average total assets}}$$

This ratio measures the efficiency with which a company uses its assets to generate sales. The larger the total assets turnover, the larger the income on each dollar invested in the assets of the business. For Synotech, the total asset turnover ratios for 2010 and 2009 follow. Total assets as of 2009 January 1, were USD 7,370.9 million.

(USD millions)	2010	2009	Amount of increase
Net sales (a)	\$ 10,498.8	\$ 10,029.8	\$ 469.0
Total assets:			
January 1	\$9,170.8	\$7,370.9	\$1,799.9
December 31	9,481.8	9,170.8	311.0
Total (b)	\$18,652.6	\$16,541.7	\$2,110.9
Average total assets (c) (b/2 = c)	\$9,331.8	\$8,270.9	
Turnover of total assets (a/c)	1.13:1	1.21:1	

Each dollar of total assets produced USD 1.21 of sales in 2009 and USD 1.13 of sales in 2010. In other words, between 2009 and 2010, the company had a decrease of USD .08 of sales per dollar of investment in assets.

Equity, or long-term solvency, ratios show the relationship between debt and equity financing in a company.

Equity (stockholders' equity) ratio The two basic sources of assets in a business are owners (stockholders) and creditors; the combined interests of the two

groups are total equities. In ratio analysis, however, the term equity generally refers only to stockholders' equity. Thus, the **equity (stockholders' equity) ratio** indicates the proportion of total assets (or total equities) provided by stockholders (owners) on any given date. The formula for the equity ratio is:

$$\text{Equity ratio} = \frac{\text{Stockholders' equity}}{\text{Total assets (total equities)}}$$

Synotech's liabilities and stockholders' equity from Exhibit 57 follow. The company's equity ratio increased from 22.0 percent in 2009 to 25.7 percent in 2010. Exhibit 57 shows that stockholders increased their proportionate equity in the company's assets due largely to the retention of earnings (which increases retained earnings).

(USD millions)	2010 December 31		2009 December 31	
	Amount	percent	Amount	percent
Current liabilities	\$2,285.2	24.1%	\$2,103.8	22.9%
Long-term liabilities	4,755.8	50.2	5,051.3	55.1
Total liabilities	\$7,041.0	74.3	\$7,155.1	78.0
Total stockholders' equity	2,440.8	25.7	2,015.7	22.0
Total equity (equal to total assets)	\$9,481.8	100%	\$9,170.8	100.0%

The equity ratio must be interpreted carefully. From a creditor's point of view, a high proportion of stockholders' equity is desirable. A high equity ratio indicates the existence of a large protective buffer for creditors in the event a company suffers a loss. However, from an owner's point of view, a high proportion of stockholders' equity may or may not be desirable. If the business can use borrowed funds to generate income in excess of the net after-tax cost of the interest on such funds, a lower percentage of stockholders' equity may be desirable.

To illustrate the effect of higher leveraging (i.e. a larger proportion of debt), assume that Synotech could have financed an increase in its productive capacity with USD 40 million of 6 percent bonds instead of issuing 5 million additional shares of common stock. The effect on income for 2010 would be as follows, assuming a federal income tax rate of 40 percent:

Net income as presently stated (Exhibit 58)	\$762,000,000
Deduct additional interest on debt (0.06 x \$40 million)	2,400,000
	\$759,600,000
Add reduced taxes due to interest deduction (.4 x 2,400,000)	960,000
Adjusted net income	\$760,560,000

As shown, increasing leverage by issuing bonds instead of common stock reduces net income. However, there are also fewer shares of common stock outstanding. Assume the company has 183 million shares of common stock outstanding. Earnings per share (EPS) with the additional debt would be USD 4.16 (or USD 760,560,000/183 million shares), and EPS with the additional stock would be USD 4.05 (or USD 762,000,000/188 million shares).

Since investors place heavy emphasis on EPS amounts, many companies in recent years have introduced large portions of debt into their capital structures to increase EPS, especially since interest rates have been relatively low in recent years.

We should point out, however, that too low a percentage of stockholders' equity (too much debt) has its dangers. Financial leverage magnifies losses per share as well as EPS since there are fewer shares of stock over which to spread the losses. A period of business recession may result in operating losses and shrinkage in the value of assets, such as receivables and inventory, which in turn may lead to an inability to meet fixed payments for interest and principal on the debt. As a result, the company may be forced into liquidation, and the stockholders could lose their entire investments.

Stockholders' equity to debt (debt to equity) ratio Analysts express the relative equities of owners and creditors in several ways. To say that creditors held a 74.3 percent interest in the assets of Synotech on 2010 December 31, is equivalent to saying stockholders held a 25.7 percent interest. Another way of expressing this relationship is the **stockholders' equity to debt ratio**:

$$\text{Stockholders' equity for debt ratio} = \frac{\text{Stockholders' equity}}{\text{Total debt}}$$

Such a ratio for Synotech would be .28:1 (or USD 2,015.7 million/USD 7,155.1 million) on 2009 December 31, and .35:1 (or USD 2,440.8 million/USD 7,041.0 million) on 2010 December 31. This ratio is often inverted and called the **debt to equity ratio**. Some analysts use only long-term debt rather than total debt in calculating these ratios. These analysts do not consider short-term debt to be part of the capital structure since it is paid within one year.

Profitability is an important measure of a company's operating success. Generally, we are concerned with two areas when judging profitability: (1) relationships on the

income statement that indicate a company's ability to recover costs and expenses, and (2) relationships of income to various balance sheet measures that indicate the company's relative ability to earn income on assets employed. Each of the following ratios utilizes one of these relationships.

Rate of return on operating assets The best measure of earnings performance without regard to the sources of assets is the relationship of net operating income to operating assets, the **rate of return on operating assets**. This ratio shows the earning power of the company as a bundle of assets. By disregarding both nonoperating assets and nonoperating income elements, the rate of return on operating assets measures the profitability of the company in carrying out its primary business functions. We can break the ratio down into two elements—the operating margin and the turnover of operating assets.

Operating margin reflects the percentage of each dollar of net sales that becomes net operating income. Net operating income excludes **nonoperating income elements** such as extraordinary items, cumulative effect on prior years of changes in accounting principle, losses or gains from discontinued operations, interest revenue, and interest expense. Another name for **net operating income** is "income before interest and taxes" (IBIT). The formula for operating margin is:

$$\text{Operating margin} = \frac{\text{Net operating income}}{\text{Net sales}}$$

Turnover of operating assets shows the amount of sales dollars generated for each dollar invested in operating assets. **Operating assets** are all assets actively used in producing operating revenues. Typically, we use year-end operating assets, even though in theory an average would be better. **Nonoperating assets** are owned by a company but not used in producing operating revenues, such as land held for future use, a factory building rented to another company, and long-term bond investments. Analysts do not use these nonoperating assets in evaluating earnings performance. Nor do they use total assets that include nonoperating assets not contributing to the generation of sales. The formula for the turnover of operating assets is:

$$\text{Turnover of operating assets} = \frac{\text{Net sales}}{\text{Operating assets}}$$

The rate of return on operating assets of a company is equal to its operating margin multiplied by turnover of operating assets. The more a company earns per dollar of sales and the more sales it makes per dollar invested in operating assets, the higher is the return per dollar invested. To find the rate of return on operating assets, use the following formulas:

$$\text{Operating margin} \times \text{Turnover of operating assets} = \text{Rate of return on operating assets}$$

or

$$\text{Rate of return on operating assets} = \frac{\text{Net operating income}}{\text{Net sales}} \times \frac{\text{Net sales}}{\text{Operating assets}}$$

Because net sales appears in both ratios (once as a numerator and once as a denominator), we can cancel it out, and the formula for rate of return on operating assets becomes:

$$\text{Rate of return on operating assets} = \frac{\text{Net operating income}}{\text{Operating assets}}$$

For analytical purposes, the formula should remain in the form that shows margin and turnover separately, since it provides more information.

The rates of return on operating assets for Synotech for 2010 and 2009 are:

(USD millions)	2010	2009	Amount of increase or (decrease)
Net operating income (a)*	\$ 1,382.4	\$ 682.7	\$699.7
Net sales (b)	\$10,498.8	\$10,029.8	\$469.0
Operating assets (c) †	\$9,481.8	\$ 9,170.8	\$311.0
Operating margin (a/b)	13.17%	6.81%	
Turnover of operating assets (b/c)	1.11 times	1.09 times	
Rate of return on operating assets (a/c)	14.58%	7.44%	

*Calculated as income before income taxes plus net interest expense. This method excludes nonoperating items.

†When companies have no nonoperating assets, total assets are used in the calculation

Net income to net sales (return on sales) ratio Another measure of a company's profitability is the **net income to net sales ratio**, calculated as follows:

$$\text{Net income by netsales} = \frac{\text{Net income}}{\text{Net sales}}$$

This ratio measures the proportion of the sales dollar that remains after deducting all expenses. The computations for Synotech for 2010 and 2009 are:

An accounting perspective:

Business insight

Companies that are to survive in the economy must attain some minimum rate of return on operating assets. However, they can attain this minimum rate of return in many different ways. To illustrate, consider a grocery store and a jewelry store, each with a rate of return of 8 percent on operating assets. The grocery store normally would attain this rate of return with a low margin and a high turnover, while the jewelry store would have a high margin and a low turnover, as shown here:

	Margin x Turnover =		Rate of return on operating assets	
Grocery store	1% x	8.0 times	=	8%
Jewelry store	20 x	0.4	=	8

(USD millions)	2010	2009	Amount of increase or (decrease)
Net income (a)	\$ 762.0	\$206.4	\$555.6
Net sales (b)	\$10,498.	\$10,029.	\$469.0
	8	8	
Ratio of net income to net sales (a/b)	7.26%	2.06%	

Although the ratio of net income to net sales indicates that the net amount of profit increased on each sales dollar, exercise care in using and interpreting this ratio. The net income includes all nonoperating items that may occur only in a particular period; therefore, net income includes the effects of such things as extraordinary items, changes in accounting principle, effects of discontinued operations, and interest charges. Thus, a period that contains the effects of an extraordinary item is not comparable to a period that contains no extraordinary items. Also, since interest expense is deductible in the determination of net income while dividends are not, the methods used to finance a company's assets affect net income.

Return on average common stockholders' equity From the stockholders' point of view, an important measure of the income-producing ability of a company is the relationship of return on average common stockholders' equity, also called rate of **return on average common stockholders' equity**, or simply the **return on equity (ROE)**. Although stockholders are interested in the ratio of operating income to operating assets as a measure of management's efficient use of assets, they are even more interested in the return the company earns on each dollar of stockholders' equity. The formula for return on average common stockholders' equity if no preferred stock is outstanding is:

$$\text{Return on average common stockholders' equity} = \frac{\text{Net income}}{\text{Average common stockholders' equity}}$$

When a company has preferred stock outstanding, the numerator of this ratio becomes net income minus the annual preferred dividends, and the denominator becomes the average book value of common stock. As described in Chapter 12, the book value of common stock is equal to total stockholders' equity minus (1) the liquidation value (usually equal to par value) of preferred stock and (2) any dividends in arrears on cumulative preferred stock. Thus, the formula becomes:

$$\text{Return on average common stockholders' equity} = \frac{(\text{Net income} - \text{Preferred stock dividends})}{\text{Average book value of common stock}}$$

Synotech has preferred stock outstanding. The ratios for the company follow. Total common stockholders' equity on 2009 January 1, was USD 1,697.4 million. Preferred dividends were USD 25.7 million in 2010 and USD 25.9 million in 2009.

(USD millions)	2010	2009	Amount of increase or (decrease)
Net income – Preferred stock dividends (a)	\$ 736.3	\$ 180.5	\$ 555.8
Total common stockholders' equity (book value of common stock):*			
January 1	\$1,531.5	\$1,697.4	\$(165.9)
December 31	1,969.6	1,531.5	438.1
Total (b)	\$3,501.1	\$3,228.9	\$ 272.2
Average common stockholders' equity: (c) (b/2 = c)	\$1,750.6	\$1,614.5	
Return on common stockholders' equity (a/c)	42.06%	11.18%	

*Total stockholders' equity – par value of preferred stock

The stockholders would regard the increase in the ratio from 11.18 percent to 42.06 percent favorably. This ratio indicates that for each dollar of capital invested by a common stockholder, the company earned approximately 42 cents in 2010.

An accounting perspective:

Business insight

Sometimes, two companies have the same return on assets but have different returns on stockholders' equity, as shown here:

	Company 1	Company 2
Return on assets	12.0%	12.0%
Return on stockholders' equity	6.4	8.0

The difference of 1.6 percent in Company 2's favor is the result of Company 2's use of borrowed funds, particularly long-term debt, in its capital structure. Use of these funds (or preferred stock with a fixed return) is called trading on the equity. When a company is trading profitably on the equity, it is generating a higher rate of return on its borrowed funds than it is paying for the use of the funds. The excess, in this case 1.6 percent, is accruing to the benefit of the common stockholders, because their earnings are being increased.

Companies that magnify the gains from this activity for the stockholders are using leverage. Using leverage is a risky process because losses also can be magnified, to the disadvantage of the common stockholders. We discussed trading on the equity and leverage in Chapter 15.

Cash flow margin The cash flow margin measures a company's overall efficiency and performance. The **cash flow margin** indicates the ability of a company to translate sales into cash. Measuring the amount of cash a company generates from every dollar of sales is important because a company needs cash to service debt, pay dividends, and invest in new capital assets. The formula for the cash flow margin is:

$$\text{Cash flow margin} = \frac{\text{Net cash provided by operating activities}}{\text{Net sales}}$$

Thus, we calculate Synotech's 2010 cash flow margin as follows:

$$\frac{\text{USD 1,101.0 million net cash provided by operating activities}}{\text{USD 10,498.8 million net sales}} = 10.49 \text{ per cent}$$

Earnings per share of common stock Probably the measure used most widely to appraise a company's operations is **earnings per share (EPS)** of common stock. EPS is equal to earnings available to common stockholders divided by the weighted average number of shares of common stock outstanding. The financial press regularly publishes actual and forecasted EPS amounts for publicly traded corporations, together with period-to-period comparisons. The Accounting Principles Board noted the significance attached to EPS by requiring that such amounts be reported on the face of the income statement.²⁴ (Chapter 13 illustrates how earnings per share should be presented on the income statement.)

The calculation of EPS may be fairly simple or highly complex depending on a corporation's capital structure. A company has a simple capital structure if it has no outstanding securities (e.g. convertible bonds, convertible preferred stocks, warrants, or options) that can be exchanged for common stock. If a company has such securities outstanding, it has a complex capital structure. Discussion of EPS for a corporation with a complex capital structure is beyond the scope of this text.

A company with a simple capital structure reports a single basic EPS amount, which is calculated as follows:

$$\text{EPS of common stock} = \frac{\text{Earnings available for common stockholders}}{\text{Weighted - average number of common shares outstanding}}$$

The amount of earnings available to common stockholders is equal to net income minus the current year's preferred dividends, whether such dividends have been declared or not.

Determining the weighted-average number of common shares The denominator in the EPS fraction is the weighted-average number of common shares outstanding for the period. If the number of common shares outstanding did not change during the period, the weighted-average number of common shares outstanding would, of course, be the number of common shares outstanding at the

²⁴ Accounting Principles Board, *Opinion No. 15*, "Reporting Earnings per Share" (New York: AICPA, 1969), par. 12. *FASB Statement No. 128*, "Earnings per Share" (Norwalk, Connecticut: FASB, 1997), simplified the standards for computing earnings per share and made them comparable to international EPS standards.

end of the period. The balance in the Common Stock account of Synotech (Exhibit 57) was USD 219.9 million on 2010 December 31. The common stock had a USD 1.20 par value. Assuming no common shares were issued or redeemed during 2010, the weighted-average number of common shares outstanding would be 183.2 million (or USD 219.9 million/USD 1.20 per share). (Normally, common treasury stock reacquired and reissued are also included in the calculation of the weighted-average number of common shares outstanding. We ignore treasury stock transactions to simplify the illustrations.)

If the number of common shares changed during the period, such a change increases or decreases the capital invested in the company and should affect earnings available to stockholders. To compute the weighted-average number of common shares outstanding, we weight the change in the number of common shares by the portion of the year that those shares were outstanding. Shares are outstanding only during those periods that the related capital investment is available to produce income.

To illustrate, assume that during 2009 Synotech's common stock balance increased by USD 14.0 million (11.7 million shares). Assume that the company issued 9.5 million of these shares on 2009 April 1, and the other 2.2 million shares on 2009 October 1. The computation of the weighted-average number of common shares outstanding would be:

171,5 million shares x 1 year	171.500 million
9.5 million shares x $\frac{3}{4}$ year (April – December)	7.125 million
2.2 million shares x $\frac{1}{4}$ year (October – December)	.550
Weighted-average number of common shares outstanding	179.125 million

An alternate method looks at the total number of common shares outstanding, weighted by the portion of the year that the number of shares was outstanding, as follows:

171.5 million shares x $\frac{1}{4}$ year (January – March)	42.875 million
181.0 million shares x $\frac{1}{2}$ year (April – September)	90.500 million
183.2 million shares x $\frac{1}{3}$ year (October – December)	45.800 million
Weighted-average number of shares outstanding	179.175 million

Another alternate method is:

171.5 million shares x 3 months =	514.5 million share-months
181.0 million shares x 6 months =	1,086.0 million share-months
183.2 million shares x 3 months =	549.6 million share-months
12 months	2,150.1 million share-months

2,150.1 million share-months/12 months = 179.175 million

Note that all three methods yield the same result. In 2010, the balance in the common stock account did not change as it had during 2009. Therefore, the weighted-average number of common shares outstanding during 2010 is equal to the number of common shares issued, 183.2 million. The EPS of common stock for the Synotech are:

(USD millions)	2010	2009	Amount of increase or (decrease)
Net income-preferred dividends (a)	USD 736.30	USD 180.50	USD 555.80
Average number of shares of common stock (b)	183.2	179.13	4.03
EPS of common stock (a,b)	USD 4.02	USD 1.01	

Synotech's stockholders would probably view the increase of approximately 298.0 percent ($[(\text{USD } 4.02 - \text{USD } 1.01)/\text{USD } 1.01]$) in EPS from USD 1.01 to USD 4.02 favorably.

EPS and stock dividends or splits Increases in shares outstanding as a result of a stock dividend or stock split do not require weighting for fractional periods. Such shares do not increase the capital invested in the business and, therefore, do not affect income. All that is required is to restate all prior calculations of EPS using the increased number of shares. For example, assume a company reported EPS for 2010 as USD 1.20 (or USD 120,000/100,000 shares) and earned USD 180,000 in 2011. The only change in common stock over the two years was a two-for-one stock split on 2011 December 1, which doubled the shares outstanding to 200,000. The firm would restate EPS for 2010 as USD 0.60 (or USD 120,000/200,000 shares) and as USD 0.90 (USD 180,000/200,000 shares) for 2011.

Basic EPS and diluted EPS In the merger wave of the 1960s, corporations often issued securities to finance their acquisitions of other companies. Many of the securities issued were calls on common or possessed equity kickers. These terms mean that the securities were convertible to, or exchangeable for, shares of their issuers' common stock. As a result, many complex problems arose in computing EPS. Until 1997, *APB Opinion No. 15* provided guidelines for solving these problems. In 1997, *FASB Statement No. 128*, "Earnings per Share" replaced *APB Opinion No. 15*.

A company with a complex capital structure must present at least two EPS calculations, basic EPS and diluted EPS. Because of the complexities involved in the calculations, we reserve further discussion of these two EPS calculations for an intermediate accounting text.

Times interest earned ratio Creditors, especially long-term creditors, want to know whether a borrower can meet its required interest payments when these payments come due. The **times interest earned ratio**, or interest coverage ratio, is an indication of such an ability. It is computed as follows:

$$\text{Time interest earned ratio} = \frac{\text{Income before interest including taxes (IBIT)}}{\text{Interest expense}}$$

The ratio is a rough comparison of cash inflows from operations with cash outflows for interest expense. Income before interest and taxes (IBIT) is the numerator because there would be no income taxes if interest expense is equal to or greater than IBIT. (To find income before interest and taxes, take net income from continuing operations and add back the net interest expense and taxes.) Analysts disagree on whether the denominator should be (1) only interest expense on long-term debt, (2) total interest expense, or (3) net interest expense. We will use net interest expense in the Synotech illustration.

For Synotech, the net interest expense is USD 236.9 million. With an IBIT of USD 1,382.4 million, the times interest earned ratio is 5.84, calculated as:

$$\frac{\text{USD } 1,382.4}{\text{USD } 236.9} = 5.84 \text{ time}$$

The company earned enough during the period to pay its interest expense almost 6 times over.

Low or negative interest coverage ratios suggest that the borrower could default on required interest payments. A company is not likely to continue interest payments over many periods if it fails to earn enough income to cover them. On the other hand, interest coverage of 5 to 10 times or more suggests that the company is not likely to default on interest payments.

Times preferred dividends earned ratio Preferred stockholders, like bondholders, must usually be satisfied with a fixed-dollar return on their investments. They are interested in the company's ability to make preferred dividend

payments each year. We can measure this ability by computing the **times preferred dividends earned ratio** as follows:

$$\text{Time preferred dividends earned ratio} = \frac{\text{Net income}}{\text{Annual preferred dividends}}$$

Synotech has a net income of USD 762.0 million and preferred dividends of USD 25.7 million. The number of times the annual preferred dividends are earned for 2010 is:

$$\frac{\text{USD } 762.0}{\text{USD } 25.7} = 29.65 : 1, \text{ or } 29.65 \text{ times}$$

The higher this rate, the higher is the probability that the preferred stockholders will receive their dividends each year.

Analysts compute certain ratios using information from the financial statements and information about the market price of the company's stock. These tests help investors and potential investors assess the relative merits of the various stocks in the marketplace.

The **yield** on a stock investment refers to either an earnings yield or a dividends yield.

Earnings yield on common stock You can calculate a company's **earnings yield on common stock** as follows:

$$\text{Earnings yield on common stock} = \frac{\text{EPS}}{\text{Current market price per share of common stock}}$$

Assume Synotech has common stock with an EPS of USD 5.03 and that the quoted market price of the stock on the New York Stock Exchange is USD 110.70. The earnings yield on common stock would be:

$$\frac{\text{USD } 5.03}{\text{USD } 110.7} = 4.54 \text{ per cent}$$

Price-earnings ratio When inverted, the earnings yield on common stock is the **price-earnings ratio**. To compute the price-earnings ratio:

$$\text{Price-earnings ratio} = \frac{\text{Current market price per share of common stock}}{\text{EPS}}$$

$$\frac{\text{USD } 110.7}{\text{USD } 5.03} = 22.01 : 1$$

Investors would say that this stock is selling at 22 times earnings, or at a multiple of 22. These investors might have a specific multiple in mind that indicates whether

the stock is underpriced or overpriced. Different investors have different estimates of the proper price-earnings ratio for a given stock and also different estimates of the future earnings prospects of the company. These different estimates may cause one investor to sell stock at a particular price and another investor to buy at that price.

Payout ratio on common stock Using dividend yield, investors can compute the payout ratio on common stock. Assume that Synotech's dividends per share were USD 1.80 and earnings per share were USD 5.03. To calculate **payout ratio on common stock**, divide the dividend per share of common stock by EPS. The payout ratio of stock in 2010 is:

$$\text{Payout ratio on common stock} = \frac{\text{Dividend per share of common stock}}{\text{EPS}}$$

$$\frac{\text{USD } 1.80}{\text{USD } 5.03} = 35.8 \text{ per cent}$$

A payout ratio of 35.8 percent means that the company paid out 35.8 percent of its earnings in the form of dividends. Some investors are attracted by the stock of companies that pay out a large percentage of their earnings. Other investors are attracted by the stock of companies that retain and reinvest a large percentage of their earnings. The tax status of the investor has a great deal to do with this preference. Investors in high tax brackets often prefer to have the company reinvest the earnings with the expectation that this reinvestment results in share price appreciation.

Dividend yield on common stock The dividend paid per share of common stock is also of much interest to common stockholders. When the current annual dividend per share of common stock is divided by the current market price per share of common stock, the result is called the **dividend yield on common stock**. Synotech's 2010 December 31, common stock price was USD 110.70 per share. Its dividends per share were USD 1.80. The company's dividend yield on common stock was:

$$\text{Dividend yield on of common stock} = \frac{\text{Dividend per share of common stock}}{\text{Current market price per share of common stock}}$$

$$\frac{\text{USD } 1.80}{\text{USD } 110.7} = 1.63 \text{ per cent}$$

Dividend yield on preferred stock Preferred stockholders, as well as common stockholders, are interested in dividend yields. The computation of the **dividend yield on preferred stock** is similar to the common stock dividend yield computation. Assume that Synotech's dividend per share of preferred stock is USD 5.10 with a current market price of USD 84.00 per share. We compute the dividend yield on preferred stock as follows:

$$\text{Dividend yield on preferred stock} = \frac{\text{Dividend per share of preferred stock}}{\text{Current market price per share of preferred stock}}$$

$$\frac{\text{USD } 5.10}{\text{USD } 84.00} = 6.07 \text{ per cent}$$

Through the use of dividend yield rates, we can compare different preferred stocks having different annual dividends and different market prices.

Cash flow per share of common stock Investors calculate the **cash flow per share of common stock** ratio as follows:

$$\text{Cash flow per share of common stock} = \frac{\text{Net cash provided by operating activities}}{\text{Average number of shares of common stock outstanding}}$$

Currently, *FASB Statement No. 95* does not permit the use of this ratio for external reporting purposes. However, some mortgage and investment banking firms do use this ratio to judge the company's ability to pay dividends and pay liabilities. The cash flow per share of common stock ratio for Synotech is as follows:

	Fiscal Year	
	2010	2009
Cash provided by operating activities (a)	\$1,101.0	\$972.3
Average shares outstanding (b) (assumed)	146.6	145.2
Cash flow per share of common stock (a)/(b)	\$7.51	\$6.70

Final considerations in financial statement analysis

Standing alone, a single financial ratio may not be informative. Investors gain greater insight by computing and analyzing several related ratios for a company. Exhibit 59 summarizes the ratios presented in this chapter, and Exhibit 60 presents them graphically.

Financial analysis relies heavily on informed judgment. As guides to aid comparison, percentages and ratios are useful in uncovering potential strengths and weaknesses. However, the financial analyst should seek the basic causes behind changes and established trends.

An accounting perspective:

Uses of technology

Most companies calculate some of the ratios we have discussed, if not all of them. To efficiently and effectively perform these calculations, accountants use computers. Some programs that gather information in the preparation of financial statements calculate the ratios at the end of a period. Accountants also create spreadsheets to perform this task. Remember, to interpret the numbers correctly, investors and management must compare these ratios with the industry in which the company operates.

Liquidity ratios

	Formula	Significance
Current, or working capital, ratio	Current assets + Current liabilities	Test of debt-paying ability
Acid-test (quick) ratio	Quick assets (cash + marketable securities + net receivables) + Current liabilities	Test of immediate debt-paying ability
Cash flow liquidity ratio	(Cash and marketable securities + Net cash provided by operating activities) + Current liabilities	Test of short-term, debt-paying ability
Accounts receivable turnover	Net credit sales (or net sales) + Average net accounts receivable	Test of quality of accounts receivable
Number of days' sales in accounts receivable (average collection period of accounts receivable)	Number of days in year (365) + Accounts receivable turnover	Test of quality of accounts receivable
Inventory turnover	Cost of goods sold + Average inventory	Test of whether or not a sufficient volume of business is being generated relative to inventory
Total assets turnover	Net sales + Average total assets	Test of whether or not the volume of business generated is adequate relative to amount of capital invested in the business

Equity, or Long-term Solvency, Ratios

Equity (stockholders' equity) ratio	Stockholders' equity + Total assets (or total equities)	Index of long-run solvency and safety
Stockholders' equity to debt (debt to equity) ratio	Stockholders' equity + Total debt	Measure of the relative proportion of stockholders' and of creditors' equities

Liquidity ratios	Formula	Significance
Profitability Tests		
Rate of return on operating assets	Net operating income + Operating assets or Operating margin x Turnover operating assets	Measure of managerial
Net income to net sales (return on sales)	Net income + Net sales	Indicator of the amount of net profit on each dollar of sales
Return on average common stockholders' equity	Net income + Average common stockholders' equity	Measure of what a given company earned for its stockholders from all sources as a percentage of common stockholders' investment
Cash flow margin	Net cash provided by operating activities + Net sales	Measure of the ability of a firm to translate sales into cash
EPS of common stock	Earnings available to common stockholders' + Weighted- average number of common shares outstanding	Measure of the return to investors
Times interest earned ratio	Income before interest and taxes + Interest expense	Test of the likelihood that creditors will continue to receive their interest payments
Time preferred dividends earned ratio	Net income + Annual preferred dividends	Test of the likelihood that preferred stockholders will receive their dividend each year
Market Tests		
Earnings yield on common stock	EPS + Current market price per share of common stock	Comparison with other common stocks
Price-earnings ratio	Current market price per share of common stock + EPS	Index of whether a stock is relatively cheap or expensive based on the ratio
Pay cut ratio on common stock	Dividend per share of common stock + EPS	Index of whether company pays out a large percentage of earnings as dividends or reinvests most of its earnings
Dividend yield on common stock	Dividend per share of common stock + Current market price per share of common stock	Comparisons with other common stocks
Dividend yield on preferred stock	Dividend per share of preferred stock + Current market price per share of preferred stock	Comparison with other preferred stocks
Cash flow per share of common stock	Net cash provided by operating activities + Average number of share of common stock outstanding	Test of ability to pay dividends and liabilities

Exhibit 59: Summary of ratios

Analysts must be sure that their comparisons are valid—especially when the comparisons are of items for different periods or different companies. They must follow consistent accounting practices if valid interperiod comparisons are to be made. Comparable intercompany comparisons are more difficult to secure. Accountants cannot do much more than disclose the fact that one company is using FIFO and another is using LIFO for inventory and cost of goods sold computations. Such a disclosure alerts analysts that intercompany comparisons of inventory turnover ratios, for example, may not be comparable.

Also, when comparing a company's ratios to industry averages provided by an external source such as Dun & Bradstreet, the analyst should calculate the company's ratios in the same manner as the reporting service. Thus, if Dun & Bradstreet uses net sales (rather than cost of goods sold) to compute inventory turnover, so should the analyst. Net sales is sometimes preferable because all companies do not compute and report cost of goods sold amounts in the same manner.

Facts and conditions not disclosed by the financial statements may, however, affect their interpretation. A single important event may have been largely responsible for a given relationship. For example, competitors may put a new product on the market, making it necessary for the company under study to reduce the selling price of a product suddenly rendered obsolete. Such an event would severely affect the percentage of gross margin to net sales. Yet there may be little chance that such an event will happen again.

Analysts must consider general business conditions within the industry of the company under study. A corporation's downward trend in earnings, for example, is less alarming if the industry trend or the general economic trend is also downward.

Investors also need to consider the seasonal nature of some businesses. If the balance sheet date represents the seasonal peak in the volume of business, for example, the ratio of current assets to current liabilities may be much lower than if the balance sheet date is in a season of low activity.

Potential investors should consider the market risk associated with the prospective investment. They can determine market risk by comparing the changes in the price of a stock in relation to the changes in the average price of all stocks.

Potential investors should realize that acquiring the ability to make informed judgments is a long process and does not occur overnight. Using ratios and percentages without considering the underlying causes may lead to incorrect conclusions.

Relationships between financial statement items also become more meaningful when standards are available for comparison. Comparisons with standards provide a starting point for the analyst's thinking and lead to further investigation and, ultimately, to conclusions and business decisions. Such standards consist of (1) those in the analyst's own mind as a result of experience and observations, (2) those

provided by the records of past performance and financial position of the business under study, and (3) those provided about other enterprises. Examples of the third standard are data available through trade associations, universities, research organizations (such as Dun & Bradstreet and Robert Morris Associates), and governmental units (such as the Federal Trade Commission).

In financial statement analysis, remember that standards for comparison vary by industry, and financial analysis must be carried out with knowledge of specific industry characteristics. For example, a wholesale grocery company would have large inventories available to be shipped to retailers and a relatively small investment in property, plant, and equipment, while an electric utility company would have no merchandise inventory (except for repair parts) and a large investment in property, plant, and equipment.

Even within an industry, variations may exist. Acceptable current ratios, gross margin percentages, debt to equity ratios, and other relationships vary widely depending on unique conditions within an industry. Therefore, it is important to know the industry to make comparisons that have real meaning.

Illustration 17.4 Graphic Depiction of Financial Statement analysis Utilizing Financial Ratios

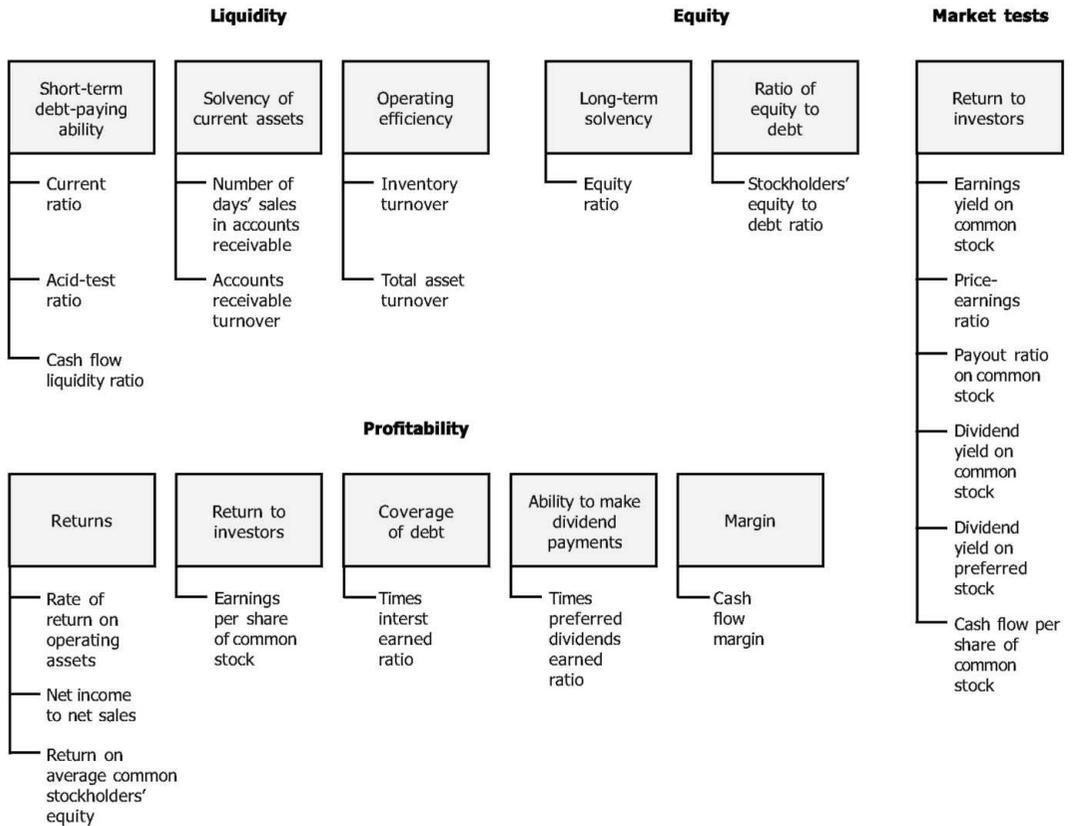


Exhibit 60: Graphic depiction of financial statement analysis utilizing financial ratios

The bankruptcies of companies like General Motors and Lehman Brothers, with the resulting significant losses to employees, stockholders, and other members of the general public, have caused important changes in corporate governance, standards of accounting, and auditing procedures and standards. These changes have come about as a result of self-regulation, oversight by the Public Company Accounting Oversight Board, regulation by the Securities and Exchange Commission, regulation by the stock exchanges, and legislation passed by Congress, and by some combination of these actions. Further changes are likely.

Financial statements are likely to become more "transparent". This means they will reveal more clearly the results of operations and the financial condition of the company. There is likely to be an increased focus on the balance sheet and on the quality and measurement of assets and the extent and nature of liabilities as well as on a proper identification of other risks. The quality of earnings will continue to be of paramount importance. There have been too many situations where companies have had to restate their earnings for prior years because they did not properly disclose material facts or properly implement the revenue recognition and/or expense recognition principles that were covered in Chapter 5.

An accounting perspective:

Business insight

The Enron situation was the focus of a massive investigation that led to significant changes in corporate governance, accounting rules, and auditing procedures. Enron was formed in 1985 and became a major player in the energy industry. Its stock reached a high of about USD 90 per share in August 2000. Top executives began selling stock shortly thereafter, while at least for a short period during the ensuing fall in the stock's price, employees were prevented from doing so. In October of 2001, the disclosure of off-balance sheet partnerships, with attendant liabilities for Enron, resulted in a USD 1.2 billion write-off in stockholder's equity. In November of 2001, Enron revealed that it had overstated earnings by USD 586 million since 1997. In December 2001, Enron filed for bankruptcy. Enron stock became almost worthless, selling for under USD 1. Employees of Enron not only lost their jobs, but many also lost their retirement savings because they consisted largely of Enron stock. Individual and pension fund investors as a group lost billions of dollars. The state of Florida's pension fund lost about USD 340 million. Enron's external auditor, Arthur Andersen & Co., was accused of shredding documents

pertaining to Enron after the US Justice Department confirmed its investigation and was indicated in March of 2002 for that action. (For more information about the Enron situation see, for instance: U.S. News & World Report, March 18 2002, pp, 26-36)

External auditors, internal auditors, audit committee members, and members of Boards of Directors are likely to ask much tougher questions of management. They are also more likely to investigate questionable transactions. Audit committees may be required to publicly disclose their activities that were performed to carry out their duties.

Management's letter to the stockholders contained in the annual report, and usually signed by the CEO, contains the views of management regarding current operations, operating results, and plans for the future. This letter is likely to become even more important in the future than it is now. There could be financial penalties if this letter is purposely misleading in that its contents are not supported by the financial statements or they misrepresent significant facts. To the extent these letters are more conservative rather than being unrealistic, individuals analyzing financial statements will be able to rely on their content to a greater extent in the future. The Sarbanes-Oxley Act of 2002 in the US sets more stringent standards for financial reporting for public companies and their managers. Boards, and independent auditors, along with strict penalties for non-compliance.

Financial statement analysis is going to have increasing importance. There will be more focus on the cash flow statement, covered in Chapter 16, and its "cash flow from operating activities", since this amount is considered by some to be "cash earnings". Some consider this amount to be less susceptible to manipulation than is net income.

Management may disclose in an accounting policy statement, its policies regarding their business practices and those accounting policies that were followed in preparing the financial statements. Conflicts of interest will be identified and discouraged.

Professional financial analysts, such as those working for stock brokerage firms and those employed to help evaluate possible merger and acquisition candidates,

typically go "beyond the numbers" in analyzing a company. They usually visit the company, interview management, and assess the physical facilities and plans for the future. They are interested in evaluating such factors as the competence and integrity of management. Professional financial analysts form an overall impression of the company by giving all of the data and other information the "smell test". In other words, does everything seem legitimate or are there possible significant hidden factors that have not yet been identified which makes one think that something is not right.

The future looks bright. Needed changes will be made to maintain public confidence in financial reporting. Protecting the public interest should be paramount in the future.

This chapter concludes our coverage of financial accounting. It is likely you will continue on with studies in managerial accounting. It is important to realize that it is impossible to completely separate financial and managerial accounting information into neat packages. Managers use both the published financial statements and managerial accounting information in making decisions. Also, some of the concepts covered in managerial accounting (e.g. job costing and process costing) have a direct impact on the formal financial statements. Many accountants are attracted to managerial accounting because it is not constrained by having to conform to generally accepted accounting principles. Instead, management accountants can provide to management whatever information in whatever form management requests.

An accounting perspective:

Uses of technology

The *Journal of Accountancy* periodically publishes articles on Internet resources to encourage greater use of technology by accountants. One of the best in this category is called "Smart Stops on the Web", a series authored by Megan Pinkston. (For example, see this one from 2007):

<http://www.journalofaccountancy.com/Issues/2007/Jun/SmartStopsOnTheWebArticle>.

You may want to investigate this article and some of the others in the series and then visit some of the websites they list. There is no doubt that the Internet will only grow in importance in the future. The more you know about it, the more marketable you will be upon graduation.

17.8 Understanding the learning objectives

- A company's financial statements are analyzed internally by management and externally by investors, creditors, and regulatory agencies.
- Management's analysis of financial statements primarily relates to parts of the company. Management is able to obtain specific, special-purpose reports to aid in decision making.
- External users focus their analysis of financial statements on the company as a whole. They must rely on the general-purpose financial statements that companies publish.
- Financial statement analysis consists of applying analytical tools and techniques to financial statements and other relevant data to obtain useful information.
- This information is the significant relationships between data and trends in those data assessing the company's past performance and current financial position.
- The information is useful for making predictions that may have a direct effect on decisions made by many users of financial statements.
- Present and potential company investors use this information to assess the profitability of the firm.
- Outside parties and long-term creditors sometimes are interested in a company's solvency, and thus use the information in predicting the company's solvency.

- Published reports are one source of financial information. Published reports include financial statements, explanatory notes, letters to stockholders, reports of independent accountants, and management's discussion and analysis (MDA).

- Government reports are another source of financial information and include Form 10-K, Form 10-Q, and Form 8-K. These reports are available to the public for a small charge.

- Financial service information, business publications, newspapers, and periodicals offer meaningful financial information to external users. Moody's Investors Services; Standard & Poor's; Dun & Bradstreet, Inc.; and Robert Morris Associates all provide useful industry information. Business publications, such as *The Wall Street Journal* and *Forbes*, also report industry financial news.

- Horizontal analysis is the calculation of dollar changes or percentage changes in comparative statement items or totals. Use of this analysis helps detect changes in a company's performance and highlights trends.

- Vertical analysis consists of a study of a single financial statement in which each item is expressed as a percentage of a significant total. Use of this analysis is especially helpful in analyzing income statement data such as the percentage of cost of goods sold to sales or the percentage of gross margin to sales.

- Trend analysis compares financial information over time to a base year. The analysis is calculated by:

- (a) Selecting a base year or period.

- (b) Assigning a weight of 100 percent to the amounts appearing on the base-year financial statements.

- (c) Expressing the corresponding amounts shown on the other years' financial statements as a percentage of base-year or period amounts. The percentages are computed by dividing nonbase-year amounts by the corresponding base-year amounts and then multiplying the results by 100.

Trend analysis indicates changes that are taking place in an organization and highlights the direction of these changes.

- **Liquidity ratios** indicate a company's short-term debt-paying ability. These ratios include (1) current, or working capital, ratio; (2) acid-test (quick) ratio; (3) cash flow liquidity ratio; (4) accounts receivable turnover; (5) number of

days' sales in accounts receivable; (6) inventory turnover; and (7) total assets turnover.

- **Equity, or long-term solvency, ratios** show the relationship between debt and equity financing in a company. These ratios include (1) equity (stockholders' equity) ratio and (2) stockholders' equity to debt ratio.

- **Profitability tests** are an important measure of a company's operating success. These tests include (1) rate of return on operating assets, (2) net income to net sales, (3) net income to average common stockholders' equity, (4) cash flow margin, (5) earnings per share of common stock, (6) times interest earned ratio, and (7) times preferred dividends earned ratio.

- **Market tests** help investors and potential investors assess the relative merits of the various stocks in the marketplace. These tests include (1) earnings yield on common stock, (2) price-earnings ratio, (3) dividend yield on common stock, (4) payout ratio on common stock, (5) dividend yield on preferred stock, and (6) cash flow per share of common stock.

- For a complete summary and a graphic depiction of all liquidity, long-term solvency, profitability, and market test ratios, see Exhibit 59 and Exhibit 60.

- **Need for comparative data:** Analysts must be sure that their comparisons are valid—especially when the comparisons are of items for different periods or different companies.

- **Influence of external factors:** A single important event, such as the unexpected placing of a product on the market by a competitor, may affect the interpretation of the financial statements. Also, the general business conditions and the possible seasonal nature of the business must be taken into consideration, since these factors could have an impact on the financial statements.

- **Impact of inflation:** Since financial statements fail to reveal the impact of inflation on the reporting entity, one must make sure that the items being compared are all comparable; that is, the impact of inflation has been taken into consideration.

• **Need for comparative standards:** In financial statement analysis, remember that standards for comparison vary by industry, and financial analysis must be carried out with knowledge of specific industry characteristics.

17.9 Demonstration problem

Demonstration problem A Comparative financial statements of Kellogg Company for 2003 and 2002 follow:

Kellogg Company
Comparative income statements For the years ended
2003 December 31, and 2002 (USD millions)

	2003	2002
Net revenues	\$6,954.7	\$6,984.2
Cost of goods sold	3,327.0	3,325.1
Gross margin	\$3,627.7	\$3,659.1
Operating expense	2,551.4	2,585.7
Nonoperating expense (interest)	137.5	118.8
Income before income taxes	\$ 938.8	\$ 954.6
Income taxes	280.0	198.4
Net earnings	\$ 658.8	\$ 756.2

Kellogg Company
Comparative Balance sheets
2003 December 31, and 2002 (USD millions)

	2003	2002
Assets		
Cash and temporary investments	\$ 204.4	\$ 150.6
Accounts receivable, net	685.3	678.5
Inventories	443.8	503.8
Other current assets	273.3	236.3
Property, net	2,526.9	2,640.9
Other assets	762.6	589.6
Total assets	\$4,896.3	\$4,808.7
Liabilities and stockholders' equity		
Current liabilities	\$2,492.6	\$1,587.8
Long-term liabilities	1,506.2	2,407.7
Common stock	103.8	103.8
Capital in excess of par value	102.0	104.5
Retained earnings	1,501.0	1,317.2
Treasury stock	(374.0)	(380.9)
Currency translation adjustment	(435.3)	(331.4)
Total liabilities and stockholders' equity	\$4,896.3	\$4,808.7

- a. Prepare comparative common-size income statements for 2003 and 2002.
- b. Perform a horizontal analysis of the comparative balance sheets.

Demonstration problem B The balance sheet and supplementary data for Xerox Corporation follow:

Xerox corporation
Balance sheet with IOFS on an equity basis
2003 December 31 (USD millions)

	2003
Assets	
Cash	\$ 1,741
Accounts receivable, net	2,281
Finance receivables, net	5,097
Inventories	1,932
Deferred taxes and other current assets	1,971
Total current assets	\$ 13,022
Finance receivables due after one year, net	7,957
Land, buildings, and equipment, net	2,495
Investments in affiliates, at equity	1,362
Goodwill	1,578
Other assets	3,061
Total assets	\$ 29,475
Liabilities and stockholders' equity	
Short-term debt and current portion of long-term debt	\$ 2,693
Accounts payable	1,033
Accrued compensation and benefit costs	662
Unearned income	250
Other current liabilities	1,630
Total current liabilities	\$ 6,268
Long-term debt	15,404
Liabilities for post-retirement medical benefits	1,197
Deferred taxes and other liabilities	1,876
Discontinued policyholders' deposits and other operations liabilities	670
Deferred ESOP benefits	(221)
Minorities' interests in equity of subsidiaries	141
Preferred stock	647
Common shareholders' equity (108.1 million)	3,493
Total liabilities and shareholders' equity	\$ 29,475

- Cost of goods sold, USD 6,197.
- Net sales, USD 18,701.
- Inventory, January 1, USD 2,290.
- Net interest expense, USD 1,031.
- Net income before interest and taxes, USD 647.
- Net accounts receivable on January 1, USD 2,633.
- Total assets on January 1, USD 28,531.

Compute the following ratios:

- a. Current ratio.
- b. Acid-test ratio.
- c. Accounts receivable turnover.
- d. Inventory turnover.

- e. Total assets turnover.
- f. Equity ratio.
- g. Times interest earned ratio.

17.10 Solution to demonstration problem

Solution to demonstration problem A

a.

Kellogg Company
Common-size comparative income statements For the year ended
2003 December 31, and 2002

	percent	
	2003	2002
Net revenues	100.00 %	100.00%
Cost of goods sold	47.84	47.61
Gross margin	52.16	52.39
Operating expenses	36.69	37.02
Nonoperating expense (interest)	1.98	1.70
Income before income taxes	13.49 %*	13.67 %
Income taxes	4.03	2.84
Net earnings	9.46 %*	10.83%

*Difference due to rounding.

b.

Kellogg Company
Comparative balance sheets 2003 December 31, and 2002 (USD millions)

	2003	2002	Increase or Decrease	
			2003	2002
			amount	percent
Assets				
Cash and temporary investments	\$204.4	\$150.6	\$ 53.8	35.72 %
Accounts receivable, net	685.3	678.5	6.8	1.00
Inventories	443.8	503.8	(60.0)	(11.91)
Other current assets	273.3	236.3	37.0	15.66
Property, net	2,526.9	2,640.9	(114.0)	(4.32)
Other assets	762.9	589.6	164.0	27.40
Total assets	\$4,896.3	\$4,808.7	\$ 87.6	1.82 %
Liabilities and stockholders' equity				
Current liabilities	\$2,492.6	\$ 1,587.8	\$ 904.8	56.98%
Long-term liabilities	1,506.2	2,407.7	(901.5)	(37.44)
Common stock	103.8	103.8	0.0	0.0
Capital in excess of par value	102.0	104.5	(2.5)	(2.39)
Retained earnings	1,501.0	1,317.2	183.8	13.95
Treasury stock	(374.0)	(380.9)	6.9	(1.81)
Currency translation adjustment	(435.3)	(331.4)	(103.9)	31.35
Total liabilities and stockholders' equity	\$4,896.3	\$4,808.7	\$ 87.6	1.82 %

Solution to demonstration problem B

a. Current ratio:

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\text{USD } 13,022,000,000}{\text{USD } 6,268,000,000} = 2.08 : 1$$

b. Acid-test ratio:

$$\frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{\text{USD } 9,119,000,000}{\text{USD } 6,268,000,000} = 1.45 : 1$$

c. Accounts receivable turnover:

$$\frac{\text{Net sales}}{\text{Average net accounts receivable}} = \frac{\text{USD } 18,701,000,000}{\text{USD } 2,457,000,000} = 7.61 \text{ time}$$

d. Inventory turnover:

$$\frac{\text{Cost of goods sold}}{\text{Average inventory}} = \frac{\text{USD } 6,197,000,000}{\text{USD } 2,111,000,000} = 2.94 \text{ time}$$

e. Total assets turnover:

$$\frac{\text{Net sales}}{\text{Average total assets}} = \frac{\text{USD } 18,701,000,000}{\text{USD } 29,003,000,000} = .64 \text{ time}$$

f. Equity ratio:

$$\frac{\text{Stockholders' equity}}{\text{Total assets}} = \frac{\text{USD } 4,140,000,000}{\text{USD } 29,475,000,000} = 14.05 \text{ per cent}$$

g. Times interest earned ratio:

$$\frac{\text{Income before interest also taxes}}{\text{Interest expense}} = \frac{\text{USD } 647,000,000}{\text{USD } 1,031,000,000} = .63 \text{ time}$$

17.11 Key terms

Accounts receivable turnover Net credit sales (or net sales) divided by average net accounts receivable.

Acid-test (quick) ratio Ratio of quick assets (cash, marketable securities, and net receivables) to current liabilities.

Cash flow liquidity ratio Cash and marketable securities plus net cash provided by operating activities divided by current liabilities.

Cash flow margin Net cash provided by operating activities divided by net sales.

Cash flow per share of common stock Net cash provided by operating activities divided by the average number of shares of common stock outstanding.

Common-size statements Show only percentages and no absolute dollar amounts.

Comparative financial statements Present the same company's financial statements for two or more successive periods in side-by-side columns.

Current ratio Also called working capital ratio. Current assets divided by current liabilities.

Debt to equity ratio Total debt divided by stockholders' equity.

Dividend yield on common stock Dividend per share of common stock divided by current market price per share of common stock.

Dividend yield on preferred stock Dividend per share of preferred stock divided by current market price per share of preferred stock.

Earnings per share (EPS) The amount of earnings available to common stockholders (which equals net income less preferred dividends) divided by weighted-average number of shares of common stock outstanding.

Earnings yield on common stock Ratio of current EPS to current market price per share of common stock.

Equity (stockholders' equity) ratio The ratio of stockholders' equity to total assets (or total equities).

Horizontal analysis Analysis of a company's financial statements for two or more successive periods showing percentage and/or absolute changes from prior year. This type of analysis helps detect changes in a company's performance and highlights trends.

Inventory turnover Cost of goods sold divided by average inventory.

Liquidity Company's state of possessing liquid assets, such as (1) cash and (2) other assets that will soon be converted to cash.

Net income to net sales Net income divided by net sales.

Net operating income Income before interest and taxes.

Nonoperating assets Assets owned by a company but not used in producing operating revenues.

Nonoperating income elements Elements excluded from net operating income because they are not directly related to operations; includes such elements as extraordinary items, cumulative effect on prior year of changes in accounting principle, losses or gains from discontinued operations, interest revenue, and interest expense.

Number of days' sales in accounts receivable The number of days in a year (365) divided by the accounts receivable turnover. Also called the average collection period for accounts receivable.

Operating assets All assets actively used in producing operating revenues.

Operating margin Net operating income divided by net sales.

Payout ratio on common stock The ratio of dividends per share of common stock divided by EPS.

Price-earnings ratio The ratio of current market price per share of common stock divided by the EPS of the stock.

Rate of return on operating assets
$$\frac{\text{Net operating income}}{\text{Net sales}} \times \frac{\text{Net sales}}{\text{Operating assets}}$$

Result is equal to net operating income divided by operating assets.

Return on average common stockholders' equity Net income divided by average common stockholders' equity; often called rate of return on average common stockholders' equity, or simply return on equity (ROE).

Return on equity (ROE) Net income divided by average common stockholders' equity.

Stockholders' equity to debt ratio Stockholders' equity divided by total debt; often used in inverted form and called the debt to equity ratio.

Times interest earned ratio A ratio computed by dividing income before interest and taxes by interest expense (also called interest coverage ratio).

Times preferred dividends earned ratio Net income divided by annual preferred dividends.

Total assets turnover Net sales divided by average total assets.

Trend percentages Similar to horizontal analysis except that a base year or period is selected, and comparisons are made to the base year or period.

Turnover The relationship between the amount of an asset and some measure of its use. See accounts receivable turnover, inventory turnover, and total assets turnover.

Turnover of operating assets Net sales divided by operating assets.

Vertical analysis The study of a single financial statement in which each item is expressed as a percentage of a significant total; for example, percentages of sales calculations.

Yield (on stock) The yield on a stock investment refers to either an earnings yield or a dividend yield. Also see Earnings yield on common stock and Dividend yield on common stock and preferred stock.

17.12 Self-test

17.12.1 True-false

Indicate whether each of the following statements is true or false.

An objective of financial statement analysis is to provide information about the company's past performance and current financial position.

Vertical analysis helps detect changes in a company's performance over several periods and highlights trends.

Common-size statements provide information about changes in dollar amounts relative to the previous periods.

Liquidity ratios show a company's capacity to pay maturing current liabilities.

A company that is quite profitable may find it difficult to pay its accounts payable.

Financial statement analysts must be sure that comparable data are used among companies to make the comparisons valid.

17.12.2 Multiple-choice

Select the best answer for each of the following questions.

The following data were abstracted from the 2007 December 31, balance sheet of Andrews Company (use for the first two questions questions):

Cash	\$136,000
Marketable securities	64,000
Accounts and notes receivable, net	184,000
Merchandise inventory	244,000
Prepaid expenses	12,000
Accounts and notes payable, short-term	256,000
Accrued liabilities	64,000
Bonds payable, long-term	400,000

The current ratio is:

- a. 1:2.
- b. 2:1.
- c. 1.2:1.
- d. 3:1.

The acid-test ratio is:

- a. 1:2.
- b. 2:1.
- c. 1.2:1.
- d. 3:1.

Benson Company shows the following data on its 2011 financial statements (use for the rest of the questions):

Accounts receivable, January 1	\$720,000
Accounts receivable, December 31	960,000
Merchandise inventory, January 1	900,000
Merchandise inventory, December 31	1,020,000
Gross sales	4,800,000
Sales returns and allowances	180,000
Net sales	4,620,000
Cost of goods sold	3,360,000
Income before interest and taxes	720,000
Interest on bonds	192,000
Net income	384,000

The accounts receivable turnover is:

- a. 5.5 times per year.
- b. 5.714 times per year.
- c. 5 times per year.
- d. 6.667 times per year.

The inventory turnover is:

- a. 5 times per year.
- b. 4.8125 times per year.
- c. 3.5 times per year.
- d. 4 times per year.

The times interest earned ratio is:

- a. 4.75 times per year.
- b. 3.75 times per year.
- c. 2 times per year.
- d. 3 times per year.

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

Questions

- What are the major sources of financial information for publicly owned corporations?
- The higher the accounts receivable turnover rate, the better off the company is. Do you agree? Why?
- Can you think of a situation where the current ratio is very misleading as an indicator of short-term, debt-paying ability? Does the acid-test ratio offer a remedy to the situation you have described? Describe a situation where the acid-test ratio does not suffice either.
- Before the Marvin Company issued USD 20,000 of long-term notes (due more than a year from the date of issue) in exchange for a like amount of accounts payable, its current ratio was 2:1 and its acid-test ratio was 1:1. Will this transaction increase, decrease, or have no effect on the current ratio and acid-test ratio? What would be the effect on the equity ratio?

- Through the use of turnover rates, explain why a firm might seek to increase the volume of its sales even though such an increase can be secured only at reduced prices.
- Indicate which of the relationships illustrated in the chapter would be best to judge:
 - The short-term debt-paying ability of the firm.
 - The overall efficiency of the firm without regard to the sources of assets.
 - The return to owners (stockholders) of a corporation.
 - The safety of long-term creditors' interest.
 - The safety of preferred stockholders' dividends.
- Indicate how each of the following ratios or measures is calculated:
 - Payout ratio.
 - Earnings per share of common stock.
 - Price-earnings ratio.
 - Earnings yield on common stock.
 - Dividend yield on preferred stock.
 - Times interest earned.
 - Times preferred dividends earned.
 - Return on average common stockholders' equity.
 - Cash flow margin.
- How is the rate of return on operating assets determined? Is it possible for two companies with operating margins of 5 percent and 1 percent, respectively, to both have a rate of return of 20 percent on operating assets? How?
- Cite some of the possible deficiencies in accounting information, especially regarding its use in analyzing a particular company over a 10-year period.
- **Real world question** From the Consolidated Statements of Income of The Limited in the Annual report appendix, determine the percentage change in operating income from 2002 to 2003.

- **Real world question** From the Consolidated Statements of Income of The Limited in the Annual report appendix, determine the 2003 net income per common share.
- **Real world question** From the financial statements of The Limited in the Annual report appendix, determine the 2003 cash dividends per common share.
- **Real world question** From the financial statements of The Limited in the Annual report appendix, determine the 2003 cash flow margin.

17.13 Exercises

Exercise A Income statement data for Boston Company for 2009 and 2010 follow:

	2009	2010
Net sales	\$2,610,000	\$1,936,000
Cost of goods sold	1,829,600	1,256,400
Selling expenses	396,800	350,000
Administrative expenses	234,800	198,400
Federal income taxes	57,600	54,000

Prepare a horizontal and vertical analysis of the income data in a form similar to Exhibit 58. Comment on the results of this analysis.

Exercise B A company engaged in the following three independent transactions:

- Merchandise purchased on account, USD 2,400,000.
- Machinery purchased for cash, USD 2,400,000.
- Capital stock issued for cash, USD 2,400,000.

a. Compute the current ratio after each of these transactions assuming current assets were USD 3,200,000 and the current ratio was 1:1 before the transactions occurred.

b. Repeat part (a) assuming the current ratio was 2:1.

c. Repeat part (a) assuming the current ratio was 1:2.

Exercise C A company has sales of USD 3,680,000 per year. Its average net accounts receivable balance is USD 920,000.

a. What is the average number of days accounts receivable are outstanding?

b. By how much would the capital invested in accounts receivable be reduced if the turnover could be increased to 6 without a loss of sales?

Exercise D Columbia Corporation had the following selected financial data for 2009 December 31: Net cash provided by operating activities

Net sales	\$1,800,000
Cost of goods sold	1,080,000
Operating expenses	315,000
Net income	195,000
Total assets	1,000,000
Net cash provided by operating activities	25,000

Compute the cash flow margin.

Exercise E From the following partial income statement, calculate the inventory turnover for the period.

Net sales		\$2,028,000
Cost of goods sold:		
Beginning inventory	\$ 234,000	
Purchases	1,236,000	
Cost of goods available for sale	\$1,560,000	
Less: Ending inventory	265,200	
Cost of goods sold		1,294,800
Gross margin		\$ 733,200
Operating expenses		327,600
Net operating income		\$ 405,600

Exercise F Eastern, Inc., had net sales of USD 3,520,000, gross margin of USD 1,496,000, and operating expenses of USD 904,000. Total assets (all operating) were USD 3,080,000. Compute Eastern's rate of return on operating assets.

Exercise G Nelson Company began the year 2010 with total stockholders' equity of USD 2,400,000. Its net income for 2010 was USD 640,000, and USD 106,800 of dividends were declared. Compute the rate of return on average stockholders' equity for 2010. No preferred stock was outstanding.

Exercise H Rogers Company had 60,000 shares of common stock outstanding on 2010 January 1. On 2010 April 1, it issued 20,000 additional shares for cash. The amount of earnings available for common stockholders for 2010 was USD 600,000. What amount of EPS of common stock should the company report?

Exercise I Smith Company started 2011 with 800,000 shares of common stock outstanding. On March 31, it issued 96,000 shares for cash, and on September 30, it

purchased 80,000 shares of its own stock for cash. Compute the weighted-average number of common shares outstanding for the year.

Exercise J A company reported EPS of USD 2 (or $\frac{\text{USD } 2,400,000}{1,200,000 \text{ shares}}$) for 2009, ending the year with 1,200,000 shares outstanding. In 2010, the company earned net income of USD 7,680,000, issued 320,000 shares of common stock for cash on September 30, and distributed a 100 percent stock dividend on 2010 December 31. Compute EPS for 2010, and compute the adjusted earnings per share for 2009 that would be shown in the 2010 annual report.

Exercise K A company paid interest of USD 32,000, incurred federal income taxes of USD 88,000, and had net income (after taxes) of USD 112,000. How many times was interest earned?

Exercise L John Company had 20,000 shares of USD 600 par value, 8 percent preferred stock outstanding. Net income after taxes was USD 5,760,000. The market price per share was USD 720.

- a. How many times were the preferred dividends earned?
- b. What was the dividend yield on the preferred stock assuming the regular preferred dividends were declared and paid?

Exercise M A company had 80,000 weighted-average number of shares of USD 320 par value common stock outstanding. The amount of earnings available to common stockholders was USD 800,000. Current market price per share is USD 720. Compute the EPS and the price-earnings ratio.

17.14 Problems

Problem A Loom's comparative statements of income and retained earnings for 2010 and 2009 are given below.

Loom
Consolidated statement of earnings
For the years ended 2010 December 31, and 2009 (USD thousands, except per data share)

	December 31	
	(1)	(2)
	2010	2009
Net sales	\$ 2,403,100	\$ 2,297,800
Cost of sales	1,885,700	1,651,300
Gross earnings	\$ 517,400	\$ 646,500
Selling, general and administrative expenses	429,700	376,300
Goodwill amortization	37,300	35,200

Impairment write down of goodwill	158,500	0
Operating earnings (loss)	\$ (108,100)	\$235,000
Interest expense	(116,900)	(95,400)
Other expense-net	(21,700)	(6,100)
Earnings (loss) before income tax (benefit) expense, extraordinary item and cumulative effect of change in accounting principles	\$ (246,700)	\$133,500
Income tax (benefit) expense	(19,400)	73,200
Earnings (loss) before cumulative effect of change in account principles	\$ (227,300)	\$60,300
Cumulative effect of change in accounting principles:		
Pre-operating costs	(5,200)	0
Net earnings (loss)	\$ (232,500)	\$60,300
Retained earnings, January 1	680,600	620,300
	\$ 448,100	\$680,600
Dividends	0	0
Retained earnings, December 31	\$ 448,100	\$680,600

Loom
Consolidated balance sheet As of 2010 December 31, and 2009 (USD thousands)

	December 31	
	(1)	(2)
	2010	2009
Assets		
Current assets		
Cash and cash equivalents	\$ 26,500	\$ 49,400
Notes and accounts receivable (less allowance for possible losses of \$26,600,000 and \$20,700,000, respectively)	261,000	295,600
Inventories		
Finished goods	522,300	496,200
Work in process	132,400	141,500
Materials and supplies	44,800	39,100
Other	72,800	54,800
Total current assets	\$ 1,059,800	\$ 1,076,600
Property, plant, and equipment		
Land	\$ 20,100	\$ 19,300
Buildings, structures and improvements	486,400	435,600
Machinery and equipment	1,076,600	1,041,300
Construction in progress	24,200	35,200
Total property, plant and equipment	\$ 1,607,300	\$ 1,531,400
Less accumulated depreciation	578,900	473,200
Net property, plant and equipment	\$ 1,028,400	\$ 1,058,200
Other assets		
Goodwill (less accumulated amortization of \$257,800,000 and \$242,400,000, respectively).	\$ 771,100	\$ 965,800
Other	60,200	62,900
Total other assets	\$831,300	\$ 1,028,700
Total assets	\$ 2,919,500	\$ 3,163,500
Liabilities and stockholders' equity		
Current liabilities		
Current maturities of long-term debt	\$ 14,600	\$ 23,100
Trade accounts payable	60,100	113,300
Accrued insurance obligations	38,800	23,600
Accrued advertising and promotion	23,800	23,400
Interest payable	16,000	18,300
Accrued payroll and vacation pay	15,300	33,100
Accrued pension	11,300	19,800
Other accounts payable and accrued expenses	123,900	77,200
Total current liabilities	\$ 303,800	\$ 331,800
Noncurrent liabilities		
Long-term debt	1,427,200	1,440,200
Net deferred income taxes	0	43,400
Other	292,900	222,300
Total noncurrent liabilities	\$ 1,720,000	\$ 1,705,900
Total liabilities	\$ 2,023,900	\$ 2,037,700
Common stockholders' equity		
Common stock and capital in excess of par value, \$.01 par value; authorized, Class A, 200,000,000 shares, Class B, 30,000,000 shares; issued and outstanding:		
Class A Common Stock, 69,268,701 and 69,160,349 shares, respectively	\$ 465,600	\$ 463,700
Class B Common Stock, 6,690,976 shares	4,400	4,400
Retained earnings	448,100	680,600
Currency translation and minimum pension liability adjustments	(22,500)	(22,900)
Total common stockholders' equity	\$ 895,600	\$ 1,125,800
Total liabilities and stockholders' equity	\$ 2,919,500	\$ 3,163,500

Perform a horizontal and vertical analysis of Loom's financial statements in a manner similar to those illustrated in this chapter. Comment on the results of the analysis in (a).

Problem B Deere & Company manufactures, distributes, and finances a full range of agricultural equipment; a broad range of industrial equipment for construction, forestry, and public works; and a variety of lawn and grounds care equipment. The company also provides credit, health care, and insurance products for businesses and the general public. Consider the following information from the Deere & Company 2000 Annual Report:

(in millions)	1997	1998	1999	2000
Sales	\$12,791	\$13,822	\$11,751	\$13,137
Cost of goods sold	8,481	9,234	8,178	8,936
Gross margin	4,310	4,588	3,573	4,201
Operating expenses	2,694	2,841	3,021	3,236
Net operating income	\$ 1,616	\$ 1,747	\$ 552	\$ 965

a. Prepare a statement showing the trend percentages for each item using 1997 as the base year.

b. Comment on the trends noted in part (a).

Problem C The following data are for Toy Company:

	December 31	
	2011	2010
Allowance for uncollectible accounts	\$72,000	\$57,000
Prepaid expenses	34,500	45,000
Accrued liabilities	210,000	186,000
Cash in Bank A	1,095,000	975,000
Wages payable	-0-	37,500
Accounts payable	714,000	585,000
Merchandise inventory	1,342,500	1,437,000
Bonds payable, due in 2005	615,000	594,000
Marketable securities	217,500	147,000
Notes payable (due in six months)	300,000	195,000
Accounts receivable	907,500	870,000
Cash flow from operating activities	192,000	180,000

a. Compute the amount of working capital at both year-end dates.

b. Compute the current ratio at both year-end dates.

c. Compute the acid-test ratio at both year-end dates.

d. Compute the cash flow liquidity ratio at both year-end dates.

e. Comment briefly on the company's short-term financial position.

Problem D On 2011 December 31, Energy Company's current ratio was 3:1 before the following transactions were completed:

- Purchased merchandise on account.
- Paid a cash dividend declared on 2011 November 15.
- Sold equipment for cash.
- Temporarily invested cash in trading securities.
- Sold obsolete merchandise for cash (at a loss).
- Issued 10-year bonds for cash.
- Wrote off goodwill to retained earnings.
- Paid cash for inventory.
- Purchased land for cash.
- Returned merchandise that had not been paid for.
- Wrote off an account receivable as uncollectible. Uncollectible amount is less than the balance in the Allowance for Uncollectible Accounts.
 - Accepted a 90-day note from a customer in settlement of customer's account receivable.
 - Declared a stock dividend on common stock.

Consider each transaction independently of all the others.

a. Indicate whether the amount of working capital will increase, decrease, or be unaffected by each of the transactions.

b. Indicate whether the current ratio will increase, decrease, or be unaffected by each of the transactions.

Problem E Digital Company has net operating income of USD 500,000 and operating assets of USD 2,000,000.

Its net sales are USD 4,000,000.

The accountant for the company computes the rate of return on operating assets after computing the operating margin and the turnover of operating assets.

a. Show the computations the accountant made.

b. Indicate whether the operating margin and turnover increase or decrease after each of the following changes. Then determine what the actual rate of return on operating assets would be. The events are not interrelated; consider each separately, starting from the original earning power position. No other changes occurred.

(a) Sales increased by USD 160,000. There was no change in the amount of operating income and no change in operating assets.

(b) Management found some cost savings in the manufacturing process. The amount of reduction in operating expenses was USD 40,000. The savings resulted from the use of less materials to manufacture the same quantity of goods. As a result, average inventory was USD 16,000 lower than it otherwise would have been. Operating income was not affected by the reduction in inventory.

(c) The company invested USD 80,000 of cash (received on accounts receivable) in a plot of land it plans to use in the future (a nonoperating asset); income was not affected.

(d) The federal income tax rate increased and caused income tax expense to increase by USD 20,000. The taxes have not yet been paid.

(e) The company issued bonds and used the proceeds to buy USD 400,000 of machinery to be used in the business. Interest payments are USD 20,000 per year. Net operating income increased by USD 100,000 (net sales did not change).

Problem F Polaroid Corporation designs, manufactures, and markets worldwide instant photographic cameras and films, electronic imaging recording devices, conventional films, and light polarizing filters and lenses. The following information is for Polaroid:

(in millions)	2000	1999
Net sales	\$13,994	\$14,089
Income before interest and taxes	2,310	2,251
Net income	1,407	1,392
Interest expense	178	142
Stockholders' equity (on 1998 December 31, \$3,988)	3,428	3,912
Common stock, par value \$1, December 31	978	978

Compute the following for both 2000 and 1999. Then compare and comment.

- EPS of common stock.
- Net income to net sales.
- Net income to average common stockholders' equity.
- Times interest earned ratio.

Problem G The Walt Disney Company operates several ranges of products from theme parks and resorts to broadcasting and other creative content. The following balance sheet and supplementary data are for The Walt Disney Company for 2000.

The Walt Disney Company
Consolidated balance sheet For 2000 September 30 (USD millions)

Assets		
Cash and cash equivalents		\$ 842
Receivables		3,599
Inventories		702
Film and television costs		1,162
Other		1,258
Total current costs		\$7,563
Film and television costs		5,339
Investments		2,270
Theme parks, resorts, and other property, at cost		
Attractions, buildings, and equipment	\$16,160	
Accumulated depreciation	(6,892)	
		9,718
Project in process		1,995
Land		597
Intangibles assets, net		16,117
Other assets		1,428
Total assets		\$25,027
Liabilities and stockholders' equity		
Accounts payable and accrued liabilities		\$ 5,161
Current portion of borrowing		2,502
Unearned royalties		739
Total current liabilities		\$ 8,402
Borrowings		6,959
Deferred income taxes		2,833
Other long-term liabilities		2,377
Minority interest		356
Common shareholders' equity		
Common shares (\$.01 par value)	\$12,101	
Retained earnings	12,767	
Cumulative translation and other adjustments	(28)	
Treasury shares	(740)	24,100
Total liabilities and stockholders' equity		\$45,027

- Net income, USD 920.
- Income before interest and taxes, USD 3,231.
- Cost of goods sold, USD 21,321.
- Net sales, USD 25,402.
- Inventory on 1999 September 30, USD 796.
- Total interest expense for the year, USD 598.

Calculate the following ratios and show your computations. For calculations normally involving averages, such as average stockholders' equity, use year-end amounts unless the necessary information is provided.

- a. Current ratio.
- b. Net income to average common stockholders' equity.
- c. Inventory turnover.
- d. Number of days' sales in accounts receivable (assume 365 days in 2000).
- e. EPS of common stock (ignore treasury stock).
- f. Times interest earned ratio.
- g. Equity ratio.
- h. Net income to net sales.
- i. Total assets turnover.
- j. Acid-test ratio.

Problem H Cooper Company currently uses the FIFO method to account for its inventory but is considering a switch to LIFO before the books are closed for the year. Selected data for the year are:

Merchandise inventory, January 1	\$1,430,000
Current assets	3,603,600
Total assets (operating)	5,720,000
Cost of goods sold (FIFO)	2,230,800
Merchandise inventory, December 31 (LIFO)	1,544,400
Merchandise inventory, December 31 (FIFO)	1,887,600
Current liabilities	1,144,000
Net sales	3,832,400
Operating expenses	915,200

- a. Compute the current ratio, inventory turnover ratio, and rate of return on operating assets assuming the company continues using FIFO.
- b. Repeat part (a) assuming the company adjusts its accounts to the LIFO inventory method.

17.15 Alternate problems

Alternate problem A Steel Corporation's comparative statements of income and retained earnings and consolidated balance sheet for 2010 and 2009 follow:

Steel Corporation
Consolidated statement of Earnings For the years ended 2010 December 31, 2009 (USD thousands)

	December 31	
	(1)	(2)
	2010	2009
Net sales	\$4,876.5	\$4,819.4
Costs and expenses:		
Cost of sales	\$4,202.8	\$4,287.3

Depreciation	284.0	261.1
Estimated restructuring losses	111.8	137.4
Total costs	\$4,598.6	\$4,685.8
Income from operations	\$268.9	\$ 133.6
Financing income (expense):		
Interest and other income	7.7	7.1
Interest and other financing costs	(60.0)	(46.2)
Loss before income taxes and cumulative effect of changes in accounting	\$ 216.6	\$ 94.5
Benefit (provision) for income taxes	(37.0)	(14.0)
Net earning (loss)	\$ 179.6	\$ 80.5
Retained earnings, January 1	(859.4)	(939.9)
	\$ (679.8)	\$ (859.4)
Dividends	0.0	0.0
Retained earnings, December 31	\$ (679.8)	(859.4)

Steel Corporation
Consolidated balance sheet As of 2010 December 31, and 2009

	December 31	
	(1)	(2)
	2010	2009
Assets		
Current Assets		
Cash and cash equivalents	\$ 180.0	\$ 159.5
Receivables	374.6	519.5
Total	\$ 554.6	\$ 679.0
Inventories		
Raw materials and supplies	\$ 335.5	\$ 331.9
Finished and semifinished products	604.9	534.9
Contract work in process less billings of \$10.9 and \$2.3	17.8	16.1
Total inventories	\$ 958.2	\$ 882.9
Other current assets	\$ 13.0	\$ 7.2
Total current assets	\$ 1,525.8	\$ 1,569.1
Property, plant and equipment less accumulated depreciation of \$4329.5 and \$4167.8	\$ 2,714.2	\$ 2,759.3
Investments and miscellaneous assets	112.3	124.2
Deferred income tax asset – net	885.0	903.2
Intangible asset – Pensions	463.0	426.6
Total assets	\$ 5,700.3	\$ 5,782.4
Liabilities and stockholders' equity		
Current liabilities		
Accounts payable	\$ 381.4	\$ 387.0
Accrued employment costs	208.0	165.8
Postretirement benefits other than pensions	150.0	138.0
Accrued taxes	72.4	67.6
Debt and capital lease obligations	91.5	88.9
Other current liabilities	146.3	163.9
Total current liabilities	\$ 1,049.6	\$ 1,011.2
Pension liability	\$ 1,115.0	\$ 1,117.1
Postretirement benefits other than pensions	1,415.0	1,441.4
Long-term debt and capital lease obligations	546.8	668.4
Other	335.6	388.5
Total noncurrent liabilities	\$ 3,412.4	# 3,615.4
Total liabilities	\$ 4,462.0	\$ 4,626.6
Common stockholders' equity		

Preferred stock – at \$1 per share par value (aggregate liquidation preference of \$481.2); Authorized 20,000,000 shares	\$ 11.6	\$ 11.6
Preference stock – at \$1 per share par value (aggregate liquidation preference of \$88.2); Authorized 20,000,000 shares	2.6	2.6
Common stock – at \$1 per share par value/Authorized 250,000,000 and 150,000,000 shares; Issued 112,699,869 and 111,882,276 shares	112.7	111.9
Held in treasury, 1,992,189 and 1,996,715 shares at cost	(59.4)	(59.5)
Additional paid-in capital	1,850.6	1,948.6
Accumulated deficit	(679.8)	(859.4)
Total common stockholders' equity	\$ 1,238.3	\$ 1,155.8
Total liabilities and stockholders' equity	\$ 5,700.3	\$ 5,782.4

a. Perform a horizontal and vertical analysis of Steel's financial statements in a manner similar to Exhibit 57 and Exhibit 58.

b. Comment on the results obtained in part (a).

Alternate problem B Ford Motor Company is the world's second-largest producer of cars and trucks and ranks among the largest providers of financial services in the United States. The following information pertains to Ford: (in millions)

(in millions)	1998	1999	2000
Sales	\$118,017	\$135,073	\$141,230
Cost of goods sold	104,616	118,985	126,120
Gross margin	\$ 13,401	\$ 16,088	\$ 15,110
Operating expenses	7,834	8,874	9,884
Net operating income	\$ 5,567	\$ 7,214	\$ 5,226

a. Prepare a statement showing the trend percentages for each item, using 1998 as the base year.

b. Comment on the trends noted in part (a).

Alternate problem C The following data are for Clock Company: Allowance for uncollectible accounts

	December 31	
	2011	2010
Notes payable (due in 90 days)	\$75,200	\$60,000
Merchandise inventory	240,000	208,000
Cash	100,000	128,000
Marketable securities	49,600	30,000
Accrued liabilities	19,200	22,000
Accounts receivable	188,000	184,000
Accounts payable	112,000	72,000
Allowance for uncollectible accounts	24,000	15,200
Bonds payable, due 2008	156,000	160,000

Prepaid expenses	6,400	7,360
Cash flow from operating activities	60,000	40,000

- Compute the amount of working capital at both year-end dates.
- Compute the current ratio at both year-end dates.
- Compute the acid-test ratio at both year-end dates.
- Compute the cash flow liquidity ratio at both year-end dates.
- Comment briefly on the company's short-term financial position.

Alternate problem D Tulip Products, Inc., has a current ratio on 2010 December 31, of 2:1 before the following transactions were completed:

- Sold a building for cash.
- Exchanged old equipment for new equipment. (No cash was involved.)
- Declared a cash dividend on preferred stock.
- Sold merchandise on account (at a profit).
- Retired mortgage notes that would have matured in 2011.
- Issued a stock dividend to common stockholders.
- Paid cash for a patent.
- Temporarily invested cash in government bonds.
- Purchased inventory for cash.
- Wrote off an account receivable as uncollectible. Uncollectible amount is less than the balance of the Allowance for Uncollectible Accounts.
- Paid the cash dividend on preferred stock that was declared earlier.
- Purchased a computer and gave a two-year promissory note.
- Collected accounts receivable.
- Borrowed from the bank on a 120-day promissory note.
- Discounted a customer's note. Interest expense was involved.

Consider each transaction independently of all the others.

- Indicate whether the amount of working capital will increase, decrease, or be unaffected by each of the transactions.
- Indicate whether the current ratio will increase, decrease, or be unaffected by each of the transactions.

Alternate problem E The following selected data are for three companies:

Operating	Net	Net
------------------	------------	------------

	Assets	Operating Income	Sales
Company 1	\$ 1,404,000	\$ 187,200	\$ 2,059,200
Company 2	8,424,000	608,400	18,720,000
Company 3	37,440,000	4,914,000	35,100,000

a. Determine the operating margin, turnover of operating assets, and rate of return on operating assets for each company.

b. In the subsequent year, the following changes took place (no other changes occurred):

Company 1 bought some new machinery at a cost of USD 156,000. Net operating income increased by USD 12,480 as a result of an increase in sales of USD 249,600.

Company 2 sold some equipment it was using that was relatively unproductive. The book value of the equipment sold was USD 624,000. As a result of the sale of the equipment, sales declined by USD 312,000, and operating income declined by USD 6,240.

Company 3 purchased some new retail outlets at a cost of USD 6,240,000. As a result, sales increased by USD 9,360,000, and operating income increased by USD 499,200.

- Which company has the largest absolute change in:

- Operating margin ratio?
- Turnover of operating assets?
- Rate of return on operating assets?

- Which one realized the largest dollar change in operating income? Explain this change in relation to the changes in the rate of return on operating assets.

Alternate problem F One of the largest spice companies in the world, McCormick & Company, Inc., produces a diverse array of specialty foods. The following information is for McCormick & Company, Inc.:

(USD thousands)	2000	1999
Net sales	\$2,123,500	\$2,006,900
Income before interest and taxes	225,700	174,700
Net income	137,500	98,500
Interest expense	39,700	32,400
Stockholders' equity	359,300	382,400
Common stock, no par value, November 30	175,300	173,800

Assume average common shares outstanding for 2000 and 1999 are 69,600 and 72,000 (in thousands), respectively.

Compute the following for both 2000 and 1999. Then compare and comment. Assume stockholders' equity for 1998 was USD 388,100.

- a. EPS of common stock.
- b. Net income to net sales.
- c. Return on average common stockholders' equity.
- d. Times interest earned ratio.

Alternate problem G Parametric Technology Corporation is in the CAD/CAM/CAE industry and is the top supplier of software tools used to automate a manufacturing company. The following consolidated balance sheet and supplementary data are for Parametric for 2003:

Parametric Technology Corporation
Consolidated balance sheet For 2003 September 30 (in thousands)

Assets	
Current assets	
Cash and cash equivalents	\$ 325,872
Short-term investments	22,969
Accounts receivable, net of allowances for doubtful account of \$6,270	183,804
Other current assets	95,788
Total current assets	\$ 628,433
Marketable investments	26,300
Property and equipment, net	66,879
Other assets	203,271
Total assets	\$ 924,883
Liabilities and stockholders' equity	
Current liabilities	
Accounts payable and accrued expenses	\$ 77,144
Accrued compensation	52,112
Deferred revenue	231,495
Income taxes	1,601
Total currents liabilities	\$ 362,352
Other liabilities	33,989
Stockholders' equity	
Preferred stock, \$.01 par value; 5,000 shares authorized; none issued	
Common stock, \$.01 par value; 500,000 shares authorized; 276,053 (2000) and 272,277 (1999) shares issued	
Additional paid-in capital	1,641,513
Foreign currency translation adjustment	(12,629)
Accumulated deficit	(1,036,456)
Treasury stock, at cost, 6,456 (2000) and 2,113 (1999) shares	(66,647)
Total liabilities and stockholders' equity	\$ 924,883

- Net loss, (USD 3,980).
- Loss before interest and taxes, (USD 4,700).
- Cost of goods sold, USD 244,984.

- Net sales, USD 928,414.
- Total interest expense for the year, USD 367.
- Weighted-average number of shares outstanding, 273,081.

Calculate the following ratios and show your computations. For calculations normally involving averages, such as average accounts receivable or average stockholders' equity, use year-end amounts if the information is not available to use averages.

- Current ratio.
- Net income to average common stockholders' equity.
- Number of days' sales in accounts receivable (assume 365 days in 2003).
- EPS of common stock.
- Times interest earned ratio.
- Equity ratio.
- Net income to net sales.
- Total assets turnover.
- Acid-test ratio.

Alternate problem H Paper Company is considering switching from the FIFO method to the LIFO method of accounting for its inventory before it closes its books for the year. The January 1 merchandise inventory was USD 864,000. Following are data compiled from the adjusted trial balance at the end of the year:

Merchandise inventory, December 31 (FIFO)	\$1,008,000
Current liabilities	720,000
Net sales	2,520,000
Operating expenses	774,000
Current assets	1,890,000
Total assets (operating)	2,880,000
Cost of goods sold	1,458,000

If the switch to LIFO takes place, the December 31 merchandise inventory would be USD 900,000.

- Compute the current ratio, inventory turnover ratio, and rate of return on operating assets assuming the company continues using FIFO.
- Repeat (a) assuming the company adjusts its accounts to the LIFO inventory method.

17.16 Beyond the numbers - Critical thinking

Business decision case A The comparative balance sheets of the Darling Corporation for 2011 December 31, and 2010 follow:

Darling Corporation
Comparative balance sheets 2011 December 31, and 2010 (USD millions)

	2011	2010
Assets		
Cash	\$ 480,000	\$ 96,000
Accounts receivable, net	86,400	115,200
Merchandise inventory	384,000	403,200
Plant and equipment, net	268,800	288,000
Total assets	\$ 1,219,200	\$902,400
Liabilities and stockholders' equity		
Accounts payable	\$ 96,000	\$ 96,000
Common stock	672,000	672,000
Retained earnings	451,200	134,400
Total liabilities and stockholders' equity	\$1,219,200	\$902,400

Based on your review of the comparative balance sheets, determine the following:

- a. What was the net income for 2011 assuming there were no dividend payments?
- b. What was the primary source of the large increase in the cash balance from 2010 to 2011?
- c. What are the two main sources of assets for Darling Corporation?
- d. What other comparisons and procedures would you use to complete the analysis of the balance sheet?

Business decision case B As Miller Manufacturing Company's internal auditor, you are reviewing the company's credit policy. The following information is from Miller's annual reports for 2008, 2009, 2010, and 2011:

	2008	2009	2010	2011
Nets accounts receivable	\$ 1,080,000	\$ 2,160,000	\$ 2,700,000	\$ 3,600,000
Net sales	10,800,000	13,950,000	17,100,000	19,800,000

Management has asked you to calculate and analyze the following in your report:

- a. If cash sales account for 30 percent of all sales and credit terms are always 1/10, n/60, determine all turnover ratios possible and the number of days' sales in accounts receivable at all possible dates. (The number of days' sales in accounts receivable should be based on year-end accounts receivable and net credit sales.)
- b. How effective is the company's credit policy?

Business decision case C Wendy Prince has consulted you about the possibility of investing in one of three companies (Apple, Inc., Baker Company, or Cookie Corp.) by buying its common stock. The companies' investment shares are selling at about the same price. The long-term capital structures of the companies alternatives are as follows:

	Apple, Inc.	Baker Company	Cookie Corp.
Bonds with a 10% interest rate			\$2,400,000
Preferred stock with an 8% dividend rate		\$2,400,000	
Common stock, \$10 par value	\$4,800,000	2400000	2,400,000
Retained earnings	384,000	384,000	384,000
Total long-term equity	\$5,184,000	\$5,184,000	\$5,184,000
Number of common shares outstanding	480,000	240,000	240,000

Prince has already consulted two investment advisers. One adviser believes that each of the companies will earn USD 300,000 per year before interest and taxes. The other adviser believes that each company will earn about USD 960,000 per year before interest and taxes. Prince has asked you to write a report covering these points:

a. Compute each of the following, using the estimates made by the first and second advisers.

(a) Earnings available for common stockholders assuming a 40 percent tax rate.

(b) EPS of common stock.

(c) Rate of return on total stockholders' equity.

b. Which stock should Prince select if she believes the first adviser?

c. Are the stockholders as a group (common and preferred) better off with or without the use of long-term debt in the companies?

Annual Report analysis D The following selected financial data excerpted from the annual report of Appliance Corporation represents the summary information which management presented for interested parties to review:

	Appliance Corporation				
	Selected Financial Data (USD thousands except per share data)				
	2010	2009	2008	2007	2006
Net sales	\$3,049,524	\$3,372,515	\$2,987,054	\$3,041,223	\$2,970,626
Cost of sales	2,250,616	2,496,065	2,262,942	2,339,406	2,254,221
Income taxes	74,800	90,200	38,600	15,900	44,400

Income (loss) from continuing operations	(14,996)	151,137	51,270	(8,254)	79,017
percent of income (loss) from continuing operations to net sales	(0.5%)	4.5%	1.7%	(0.3%)	2.7%
Income (loss) from continuing operations per share	\$ (0.14)	1.42	0.48	(0.08)	\$ 0.75
Dividends paid per share	0.515	0.50	0.50	0.50	0.50
Average shares outstanding (in thousands)	107,062	106,795	106,252	106,077	105,761
Working capital	\$ 543,431	\$ 595,703	\$ 406,181	\$ 452,626	\$ 509,025
Depreciation of property, plant and equipment	102,572	110,044	102,459	94,032	83,352
Additions to property, plant and equipment	152,912	84,136	99,300	129,891	143,372
Total assets	2,125,066	2,504,327	2,469,498	2,501,490	2,535,068
Long-term debt	536,579	663,205	724,65	789,232	809,480
Total debt to capitalization	45.9%	50.7%	60.0%	58.7%	45.9%
Shareowners' equity per share of common stock	\$ 6.05	\$ 6.82	\$ 5.50	\$ 9.50	

a. As a creditor, what do you believe management's objectives should be? Which of the preceding items of information would assist a creditor in judging management's performance?

b. As an investor, what do you believe management's objectives should be? Which of the preceding items of information would assist an investor in judging management's performance?

c. What other information might be considered useful?

Group project E Choose a company the class wants to know more about and obtain its annual report. In groups of two or three students, calculate either the liquidity, equity, profitability, or market test ratios. Each group should select a spokesperson to tell the rest of the class the results of the group's calculations. Finally, the class should decide whether or not to invest in the corporation based on the ratios they calculated.

Group project F In a group of two or three students, go to the library and attempt to locate Dun & Bradstreet's Industry Norms and Key Business Ratios. You may have to ask the reference librarian for assistance to see if this item is available at your institution. If it is not available at your institution, ask if it is available through an interlibrary loan. (Obviously, if you cannot obtain this item, you cannot do this project.) Then select and obtain the latest annual report of a company of your choice. Determine the company's SIC Code (a code that indicates the industry in which that company operates). SIC Codes for specific companies are available on COMPACT

DISCLOSURE, an electronic source that may be available at your library. As an alternative, you could call the company's home office to inquire about its SIC Code. The annual report often contains the company's phone number. From the annual report, determine various ratios for the company, such as the current ratio, debt to equity ratio, and net income to net sales. Then compare these ratios to the industry norms for the company's SIC Code as given in the Dun & Bradstreet source. Write a report to your instructor summarizing the results of your investigation.

Group project G In a group of two or three students, obtain the annual report of a company of your choice. Identify the major sections of the annual report and the order in which they appear. Would you recommend the order be changed to emphasize the most useful and important information? If so, how? Then describe some specific useful information in each section. Comment on your perceptions of the credibility that a reader of the annual report could reasonably assign to each section of the report. For instance, if such a discussion appears in the annual report you select, would you assign high credibility to everything that appears in the Letter to Stockholders regarding the company's future prospects? Write a report to your instructor summarizing the results of your investigation.

17.17 Using the Internet—A view of the real world

Visit the following website for Eastman Kodak Company:

<http://www.kodak.com>

By following choices on the screen, locate the income statements and balance sheets for the latest two years. Calculate all of the ratios illustrated in the chapter for which the data are available. Compare the ratios to those shown for Synotech as presented in the chapter. Write a report to your instructor showing your calculations and comment on the results of your comparison of the two companies.

Visit the following website for General Electric Company:

<http://www.ge.com>

By following choices on the screen, locate the income statements and balance sheets for the latest two years. Calculate all of the ratios illustrated in the chapter for which the data are available. Compare the ratios to those shown for Synotech as

presented in the chapter. Write a report to your instructor showing your calculations and comment on the results of your comparison of the two companies.

17.18 Answers to self-test

17.18.1 True-false

True. Financial statement analysis consists of applying analytical tools and techniques to financial statements and other relevant data to obtain useful information.

False. Horizontal analysis provides useful information about the changes in a company's performance over several periods by analyzing comparative financial statements of the same company for two or more successive periods.

False. Common-size statements show only percentage figures, such as percentages of total assets and percentages of net sales.

True. Liquidity ratios such as the current ratio and acid-test ratio indicate a company's short-term debt-paying ability.

True. The accrual net income shown on the income statement is not cash basis income and does not indicate cash flows.

True. Analysts must use comparable data when making comparisons of items for different periods or different companies.

17.18.2 Multiple-choice

b. Current assets: USD 136,000 + USD 64,000 + USD 184,000 + USD 244,000 + USD 12,000 = USD 640,000

Current liabilities: USD 256,000 + USD 64,000 = USD 320,000

Current ratio: $\frac{\text{USD } 640,000}{\text{USD } 320,000} = 2:1$

c. Quick assets:

USD 136,000 + USD 64,000 + USD 184,000 = USD 384,000

Current liabilities:

256,000 + USD 64,000 = USD 320,000

Acid-test ratio: $\frac{\text{USD } 384,000}{\text{USD } 320,000} = 1.2:1$

a. Net sales:

USD 4,620,000

Average accounts receivable: $\frac{(\text{USD } 720,000 + \text{USD } 960,000)}{2} = \text{USD } 840,000$

Accounts receivable turnover: $\frac{\text{USD } 4,620,000}{\text{USD } 840,000} = 5.5$

c. Cost of goods sold:

USD 3,360,000

Average inventory:

$\frac{\text{USD } 900,000 + \text{USD } 1,020,000}{2} = \text{USD } 960,000$

Inventory turnover: $\frac{\text{USD } 3,360,000}{\text{USD } 960,000} = 3.5$

b. Income before interest and taxes, USD 720,000

Interest on bonds, 192,000

Times interest earned ratio: $\text{USD } 720,000 / \text{USD } 192,000 = 3.75$ times

18 Managerial accounting concepts/job costing

18.1 Learning objectives

After studying this chapter, you should be able to:

- Compare and contrast managerial accounting and financial accounting.
- Describe the basic components of a products cost.
- Explain the difference between product costs and period costs.
- Compare financial reporting by a merchandiser to that of a manufacturer and prepare a statement of cost of goods manufactured, an income statement, and a balance sheet for a manufacturer.
- Explain the pattern of cost flows for a company.
- Compare and contrast different production methods and accounting systems.
- Describe job cost flows and determine the cost of jobs.
- Explain how and why predetermined overhead rates are computed.
- Describe the differences in net income under absorption costing and variable costing (appendix).

18.2 A manager's perspective

Ann Francis

Manager, Consumer Affairs Administration

The Coca-Cola Company

Regardless of the area of business in which they choose to make their careers, students, especially when they reach the management level, will inevitably have financial responsibilities. As a manager, I need to understand some basic accounting information in order to make decisions and to process the information flow in and out of my office.

For example, I manage a department budget, and it is my responsibility to track cash inflow and outflow on a regular basis to ensure that the budget is administered appropriately. I track all our invoices, then reconcile them with a "Deck" report,

which we receive from accounting. I also order supplies for our department, and that needs to be managed within a budget as well.

Every year we review our department's past expenditures and our anticipated expenditures, then establish a budget for the next year. At this point, we also make decisions about capital expenditures such as purchasing new computer equipment, and those plans are worked into the capital budget.

Aside from general administration, I am also responsible for a program called "Coca-Cola Cares", an employee hotline set up in 1992 to provide a vehicle for employees to report any problems they notice in the marketplace such as broken vending machines or inappropriate use of our trademark. I receive weekly and monthly reports to assess improvements based on increases and decreases in the number of calls we receive.

Another group under my management is telemarketing services, an internal service set up to help Coca-Cola associates with market research and customer service projects. Since independent telemarketing services can be very expensive, this system allows us to maintain high quality service to Coca-Cola customers in the most economically feasible way.

Have you ever considered starting or running a business, or know someone who has? Have you considered providing management skills to a nonprofit organization? If so, then you realize that good decisions are based on good information.

Managerial accounting helps managers make good decisions. Managerial accounting provides information about the cost of goods and services, whether a product is profitable, whether to invest in a new business venture, and how to budget. It compares actual performance to planned performance and facilitates many other important decisions critical to the success of organizations.

The remaining chapters in this book focus on managerial accounting. This chapter provides an overview of managerial accounting, defines cost terms, and shows how to determine the cost of a particular type of product known as a job.

18.3 Compare managerial accounting with financial accounting

Whereas financial accounting provides financial information primarily for external use, **managerial accounting** information is for internal use. By reporting on the financial activities of the organization, financial accounting provides information needed by investors and creditors.

Most managerial decisions require more detailed information than that provided by external financial reports. For instance, in their external financial statements, large corporations such as General Electric Company show single amounts on their balance sheets for inventory. However, managers need more detailed information about the cost of each of several hundred products.

We show the fundamental differences between managerial and financial accounting in the chart.

Financial accounting

Users

External users of information – usually shareholders, financial analysts, and creditors
Compliance with generally accepted Accounting Principles

Must comply with generally accepted accounting principles.

Future versus past

Uses historical data.

Detail presented

Presents summary data, costs, revenues, and profits.

Managerial accounting

Internal users of information – usually managers.

Need not comply with generally accepted accounting principles. Internal cost/benefit evaluation determines how much information is enough.

May use estimates of the future for budgeting and decision making.

More detailed data are presented about product.

Accountants currently face a big challenge: designing information systems that provide information for multiple purposes. Some people at lower levels in the organization need detailed information, but not the big picture provided by a company's income statement. However, managers at top levels need to see the big picture.

All of you will use accounting information in your careers. Therefore, you need to know enough about accounting to get the information you need for decision making.

Managerial accountants face many choices involving ethics. For example, managers are responsible for achieving financial targets such as net income.

Managers who fail to achieve these targets may lose their jobs. If a division or company is having trouble achieving financial performance targets, managers may be tempted to manipulate the accounting numbers.

In its Standards of Ethical Conduct for Management Accountants, the Institute of Management Accountants (IMA) states that management accountants have an obligation to maintain the highest levels of ethical conduct by maintaining professional competency, refraining from disclosing confidential information, and maintaining integrity and objectivity in their work.²⁵

The standards recommend that people faced with ethical conflicts follow the company's established policies that deal with such conflicts. If the policies do not resolve the conflict, accountants should consider discussing the matter with their superiors, potentially going as high as the audit committee of the board of directors. In extreme cases, the accountants may have no alternative but to resign.

18.4 Merchandiser and manufacturer accounting: Differences in cost concepts

Cost is a financial measure of the resources used or given up to achieve a stated purpose. Product costs are the costs a company assigns to units produced. **Product costs** are the costs of making a product, such as an automobile; the cost of making and serving a meal in a restaurant; or the cost of teaching a class in a university.

Manufacturing companies use the most complex product costing methods. To ensure that you understand how and why product costing is done in manufacturing companies, we use many manufacturing company examples. However, since many of you could have careers in service or merchandising companies, we also use nonmanufacturing examples.

²⁵ See Standards of Ethical Conduct for Management Accountants (Montvale, N.J.: Institute of Management Accountants, June 1, 1983.)

An ethical perspective: High pressure sales tactics and creative accounting

The most common financial fraud is premature recording of revenues. For instance, a manager or accountant recorded a sale before the end of Year 1 when, in fact, the sale occurred in Year 2. That sale and its profits appear on the Year 1 financial statements, instead of the Year 2 financial statements. A company known as Comserv provides an example of this type of fraud.

Comserv was a software development company that installed specialized software for companies. Comserv recorded revenue for a software installation as follows: First, it recorded a portion of the revenue when the customer signed a contract. Second, it recorded the rest of the revenue when the installation was complete. This approach complied with generally accepted accounting principles for external reporting and with company policy for internal reporting.

Using this method, salespeople had incentives to pressure customers to sign contracts before the end of the fiscal year. Subsequent investigations by Comserv's external auditors and the Securities and Exchange Commission uncovered several fraudulent activities. For instance, employees backdated sales contracts by recording a contract signed on January 28 of Year 2 as being signed on December 28 of Year 1. (The end of the fiscal year was December 31.)

Comserv salespeople also persuaded customers to sign contracts for software installations before the end of the fiscal year while providing a separate side agreement that allowed customers to withdraw from the deal at a later date. Because of this side agreement, the company should not have recorded revenue at the time the contract was signed. Comserv should have waited until customers could no longer withdraw from the contract. The accounting department, not knowing of the separate side agreement, recorded revenue at the time of the contract.

The Securities and Exchange Commission alleged many people at Comserv were involved in fraudulent activities, including salespeople and accountants who unwittingly supported these activities. In the end, several people were charged with committing fraud by the Securities and Exchange Commission, and the company was taken over by another company in the computer software industry.

Based on the authors' research of Securities and Exchange Commission files and court testimony.

In manufacturing companies, a product's cost is made up of three cost elements: direct material costs, direct labor costs, and manufacturing overhead costs.

Direct materials are unprocessed items used in the manufacturing process. **Direct materials** are those materials used only in making the product and are clearly and easily traceable to a particular product. For example, iron ore is a direct material to a steel company because the iron ore is clearly traceable to the finished product, steel. In turn, steel becomes a direct material to an automobile manufacturer.

Some materials (such as glue and thread used in manufacturing furniture) may become part of the finished product, but tracing those materials to a particular product would require more effort than is sensible. Such materials, called indirect materials or supplies, are included in manufacturing overhead. **Indirect materials** are materials used in the manufacture of a product that cannot, or will not for practical reasons, be traced directly to the product being manufactured. Indirect materials are part of overhead, which we will discuss later.

Direct labor **Direct labor** costs include the labor costs of all employees actually working on materials to convert them into finished goods. As with direct material costs, direct labor costs of a product include only those labor costs clearly traceable to, or readily identifiable with, the finished product. The wages paid to a construction worker, a pizza delivery driver, and an assembler in an electronics company are examples of direct labor.

Many employees receive fringe benefits—employers pay for payroll taxes, pension costs, and paid vacations. These fringe benefit costs can significantly increase the

direct labor hourly wage rate. Some companies treat fringe benefit costs as direct labor. Other companies include fringe benefit costs in overhead if they can be traced to the product only with great difficulty and effort.

Firms account for some labor costs (for example, wages of materials handlers, custodial workers, and supervisors) as indirect labor because the expense of tracing these costs to products would be too great. These indirect labor costs are part of overhead. **Indirect labor** consists of the cost of labor that cannot, or will not for practical reasons, be traced to the products being manufactured.

Overhead In a manufacturing company, overhead is generally called manufacturing overhead. (You may also see other names for manufacturing overhead, such as factory overhead, factory indirect costs, or factory burden.) Service companies use service overhead, and construction companies use construction overhead. Any of these companies may just use the term overhead rather than specifying it as manufacturing overhead, service overhead, or construction overhead. Some people confuse overhead with selling and administrative costs. Overhead is part of making the good or providing the service, whereas selling costs result from sales activity and administrative costs result from running the business.

In general, **overhead** refers to all costs of making the product or providing the service except those classified as direct materials or direct labor. (Some service organizations have direct labor but not direct materials.) In manufacturing companies, **manufacturing overhead** includes all manufacturing costs except those accounted for as direct materials and direct labor. Manufacturing overhead costs are manufacturing costs that must be incurred but that cannot or will not be traced directly to specific units produced. In addition to indirect materials and indirect labor, manufacturing overhead includes depreciation and maintenance on machines and factory utility costs. Look at Exhibit 61 for more manufacturing overhead costs.

Selling costs **Selling costs** are costs incurred to obtain customer orders and get the finished product in the customers' possession. Advertising, market research, sales salaries and commissions, and delivery and storage of finished goods are selling costs. The costs of delivery and storage of finished goods are selling costs because they are incurred after production has been completed. Therefore, the costs of

storing materials are part of manufacturing overhead, whereas the costs of storing finished goods are a part of selling costs. Remember that retailers, wholesalers, manufacturers, and service organizations all have selling costs.

Administrative costs **Administrative costs** are nonmanufacturing costs that include the costs of top administrative functions and various staff departments such as accounting, data processing, and personnel. Executive salaries, clerical salaries, office expenses, office rent, donations, research and development costs, and legal costs are administrative costs. As with selling costs, all organizations have administrative costs.

Companies also classify costs as product costs and period costs. **Product costs** are the costs incurred in making products. These costs include the costs of direct materials, direct labor, and manufacturing overhead.

Period costs are closely related to periods of time rather than units of products. For this reason, firms expense (deduct from revenues) period costs in the period in which they are incurred. Accountants treat all selling and administrative costs as period costs for external financial reporting.

Indirect labor:	Repairs and maintenance on factory buildings and equipment
Janitors in factory buildings	Payroll taxes and fringe benefits for manufacturing employees
Supervisors in factory buildings	Depreciation on factory buildings and equipment
Materials storeroom personnel	Insurance and taxes on factory property and inventories
Cost accountant	Utilities for factory buildings
Indirect materials:	
Oil	
Nails	

Exhibit 61: Manufacturing overhead costs

To illustrate, assume a company pays its sales manager a fixed salary. Even though the manager may be working on projects to benefit the company in future accounting periods, it expenses the sales manager's salary in the period incurred because the expense cannot be traced to the production of a specific product.

An accounting perspective:

Business insight

Many service organizations have inventories. For example, consulting firms, public accounting firms, and law firms have inventories of work not yet billed to clients. The inventories in service companies are less tangible than the inventories in manufacturing companies. Inventories represent the time and talent that have gone into the job. In service companies, this includes working papers and documents or simply the ideas of the people doing the work.

18.5 Financial reporting by manufacturing companies

Many of you will work in manufacturing companies or provide services for them. Others will work in retail or service organizations that do business with manufacturers. This section will help you understand how manufacturing companies work and how to read both their internal and external financial statements.

Assume you own a bicycle store and purchase bicycles and accessories to sell to customers. To determine your profitability, you would subtract the cost of bicycles and accessories from your gross sales as cost of goods sold. However, if you owned the manufacturing company that made the bicycles, you would base your cost of goods sold on the cost of manufacturing those bicycles. Accounting for manufacturing costs is more complex than accounting for costs of merchandise purchased that is ready for sale.

Perhaps the most important accounting difference between merchandisers and manufacturers relates to the differences in the nature of their activities. A merchandiser purchases finished goods ready to be sold. On the other hand, a manufacturer must purchase raw materials and use production equipment and employee labor to transform the raw materials into finished products.

Thus, while a merchandiser has only one type of inventory—merchandise available for sale—a manufacturer has three types—unprocessed materials, partially

complete work in process, and ready-for-sale finished goods. Instead of one inventory account, three different inventory accounts are necessary to show the cost of inventory in various stages of production. Looking at Exhibit 62, you can see how the inventory cost flows differ between manufacturing and merchandising companies.

We compare a manufacturer's cost of goods sold section of the income statement to that same section of the merchandiser's income statement in Exhibit 63. There are two major differences in these cost of goods sold sections: (1) goods ready to be sold are referred to as merchandise inventory by a merchandiser and finished goods inventory by a manufacturer, and (2) the net cost of purchases for a merchandiser is equivalent to the cost of goods manufactured by a manufacturer.

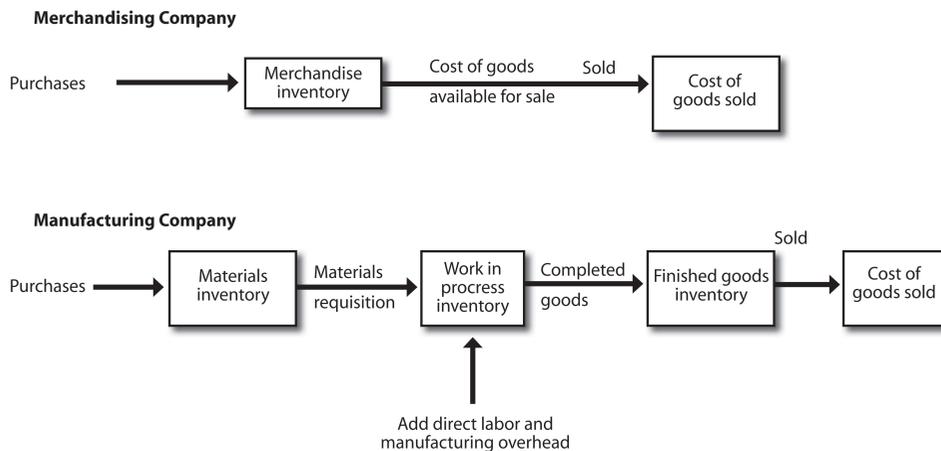


Exhibit 62: Comparison of inventory cost flows

Merchandiser		Manufacturer	
Cost of goods sold:		Cost of goods sold:	
Merchandise inventory, January 1	\$ 25,000	Finished goods inventory, January 1	\$ 50,000
Net cost of purchases	165,000	Cost of goods manufactured (from statement of cost of goods manufactured)	1,100,000
Cost of goods available for sale	\$ 190,000	Cost of goods available for sale	\$1,150,000
Merchandise inventory, December 31	30,000	Finished goods inventory, December 31	60,000
Cost of goods sold	\$ 160,000	Cost of goods sold	\$1,090,000

Exhibit 63: Cost of goods sold comparison

The **statement of cost of goods manufactured** supports the cost of goods sold figure on the income statement. (See the USD 1,100,000 cost of goods

manufactured in Exhibit 63.) The two most important numbers on this statement are the cost to manufacture and the cost of goods manufactured. Be careful not to confuse the terms cost to manufacture and cost of goods manufactured with each other or with the cost of goods sold. We depict the relationship among these terms in Exhibit 64.

Cost to manufacture includes the costs of all resources put into production during the period. **Cost of goods manufactured** consists of the cost of all goods completed during the period. It includes cost to manufacture plus the beginning work in process inventory minus the ending work in process inventory. **Cost of goods sold** includes the cost of goods manufactured plus the beginning finished goods inventory minus the ending finished goods inventory.

Look at Exhibit 65, the statement of cost of goods manufactured for Farside Manufacturing Company for 2010. Farside Manufacturing makes calendars and books.

Note how the statement shows the costs incurred for direct materials, direct labor, and manufacturing overhead. The statement totals these three costs as cost to manufacture during the period. When adding beginning work in process inventory and deducting ending work in process inventory from the cost to manufacture, we obtain cost of goods manufactured or completed. Cost of goods sold does not appear on the cost of goods manufactured statement but on the income statement.

To make the manufacturer's income statement more understandable to readers of the financial statements, accountants do not show all of the details that appear in the cost of goods manufactured statement. In Exhibit 66 on the next page, we show the income statement for Farside Manufacturing Company. Notice in Exhibit 66 the relationship of the statement of cost of goods manufactured to the income statement.

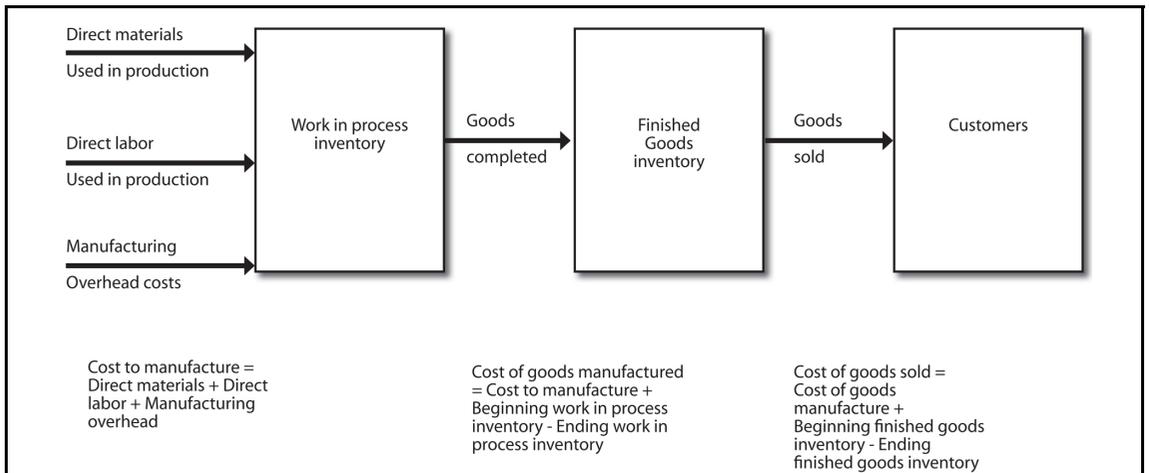


Exhibit 64: Relationship of cost to manufacture, cost of goods manufactured, and cost of goods sold

**Farside manufactured company
Statement of cost of goods manufactured
For the year ended 2010 December 31**

Direct materials		
Materials inventory, January 1	\$ 40,000	
Materials purchases	480,000	
Materials available for use	\$520,000	
Less: Materials inventory, December 31	30,000	
Materials used		\$490,000
Direct labor		380,000
Manufacturing overhead		
Indirect labor	\$ 120,000	
Maintenance and repairs expense	60,000	
Factory utilities expense	10,000	
Depreciation expense – factory building	20,000	
Depreciation expense – factory equipment	30,000	
Other expense – factory	20,000	
Total manufacturing overhead		260,000
Cost to manufacture		\$1,130,000
Add: Work in process inventory, January 1		30,000
		\$1,160,000
Less: Work in process inventory, December 31		60,000
Cost of goods manufactured		\$1,100,000

Exhibit 65: Statement of cost of goods manufactured

The cost of goods manufactured appears in the cost of goods sold section of the income statement. The cost of goods manufactured is in the same place that purchases would be presented on a merchandiser's income statement. We add cost of goods manufactured to beginning finished goods inventory to derive cost of goods

available for sale. This is similar to the merchandiser who presents purchases added to beginning merchandise to derive goods available for sale.

Farside manufacturing company		
Income statement		
For the year ended 2010 December 31		
Sales		\$1,800,000
Cost of goods sold:		
Finished goods inventory, January 1	\$ 50,000	
Cost of goods manufactured (see statement of cost of goods manufactured in Exhibit 65)	1,100,000	
Cost of goods available for sale	\$1,150,000	
Less: Finished goods inventory, December 31	60,000	
Cost of goods sold		1,090,000
Gross margin		\$ 710,000
Operating expenses:		
Selling expenses	\$ 300,000	
Administrative expenses	200,000	
Total operating expenses		500,000
Income from operations		\$ 210,000

Note: Income statements presented in external financial statements also include nonoperating revenues and expenses and income taxes.

Exhibit 66: Income statement of a manufacturer

When financial statements are released to the public, it is common to further simplify the income statement. These simplified statements show only the items and amounts in the right column of Exhibit 66, not the details in the left column.

Unlike a merchandiser's balance sheet that reports a single inventory amount, the balance sheet for a manufacturer typically shows materials, work in process, and finished goods inventories separately. A manufacturer's balance sheet may also show greater detail in the property, plant, and equipment section because of the significant investment in plant assets.

18.6 The general cost accumulation model

In general, companies match the flow of costs to the physical flow of products through the production process, as shown in Exhibit 67. They place materials received from suppliers in the materials storeroom. They also record the cost of those materials when purchasing them. As they are needed for production, the materials move from the materials storeroom to the production departments, and their cost is assigned to those production departments, as shown in Exhibit 67.

During production, the materials processed by workers and machines become partially manufactured products. At any time during production, these partially manufactured products are collectively known as **work in process**. For example, if accountants compute the inventory when the company has partially finished products at the end of the year, this inventory is work in process inventory.

Completed products are **finished goods**. When the products are completed and transferred to the finished goods storeroom, the company removes their costs from Work in Process Inventory and assigns them to Finished Goods Inventory. As the goods are sold, the company transfers related costs from Finished Goods Inventory to Cost of Goods Sold.

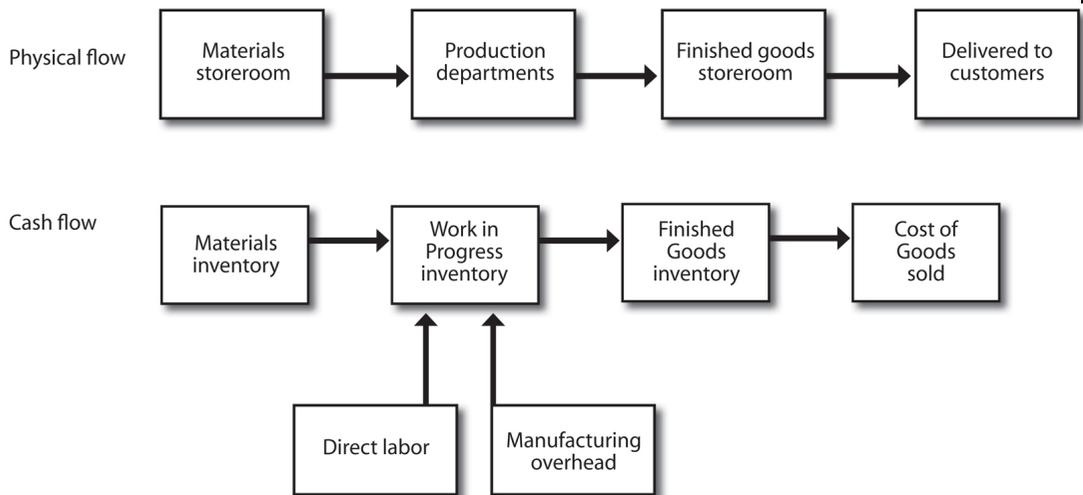


Exhibit 67: Product and cost flows

Type of production	Accounting system	Type of product
Job shop Hospital, custom home builder, consulting firm	Job costing	Customized
Batch production Furniture manufacturer, winery	Mostly job costing	Several different products
Repetitive manufacturing Computer manufacturer, bicycle manufacturer	Mostly process costing (operations)	Few new products
Continuous flow processing Oil refinery, paint manufacturer	Process costing	Standardized

Exhibit 68: Production activities and types of accounting systems

The accounting flow of costs follows the physical flow of the manufacturing process in most companies. Some companies use an alternative approach that we discuss in Chapter 20. In this chapter and the next, we assume costs follow the physical flow of products.

In discussing product costing, we described how accountants and managers assign costs to products. Recall that products can be either goods or services, so this discussion applies to service and merchandising companies as well as to manufacturing companies.

In Exhibit 68, we show how various companies choose different accounting systems, depending on their products. First, companies producing individual, unique products known as jobs use job costing (also called job order costing). Companies such as construction companies and consulting firms, produce jobs and use job costing.

Second, some companies, like furniture manufacturers, produce batches of products. They produce all of the components of a single product (e.g. coffee tables) in one batch. They would then produce the components of another product (e.g. dining room sets) in a new batch. (Some university food service companies prepare meals this way.) Companies such as these use job costing methods to accumulate the cost of each batch.

The last two types of production in Exhibit 68 use process costing methods described in Chapter 19, so we give just a brief overview here. Repetitive manufacturing lends itself to the use of automated equipment that minimizes the amount of manual material handling. Automobile assembly plants, bicycle assembly plants, and computer assembly plants use repetitive manufacturing.

Continuous flow processing is the opposite of job shops. Companies using this process continuously mass-produce a single, homogeneous product. Companies use process cost systems in manufacturing paint, grinding flour, and refining oil.

An accounting perspective:

Business insight

Engineers for automobile companies in the United States believe that Japanese manufacturers can build cars for considerably less than their US counterparts. Many hospitals that thrived when health care costs were reimbursed faced troubled financial times when they had to compete with health maintenance organizations. These organizations required a better understanding of their costs. It is simple. Companies with competitors have to know and control their costs to be competitive.

18.7 Job costing

A **job cost system (job costing)** accumulates costs incurred according to the individual jobs. Companies generally use job cost systems when they can identify separate products or when they produce goods to meet a customer's particular needs.

Who uses job costing? Examples include home builders who design specific houses for each customer and accumulate the costs separately for each job, and caterers who accumulate the costs of each banquet separately. Consulting, law, and public accounting firms use job costing to measure the costs of serving each client. Motion pictures, printing, and other industries where unique jobs are produced use job costing. Hospitals also use job costing to determine the cost of each patient's care.

Assume Creative Printers is a company run by a group of students who use desktop publishing to produce specialty books and instruction manuals. Creative Printers uses job costing. Creative Printers keeps track of the time and materials (mostly paper) used on each job.

The company compares the cost of each job with the revenue received to be sure the jobs are profitable. Sometimes the company learns that certain jobs are too costly

considering the prices they can charge. For example, Creative Printers recently learned that cookbooks were not profitable. On the other hand, printing instruction manuals was quite profitable, so the company has focused more on the instruction manual market. To illustrate a job costing system, this section describes the transactions for the month of July for Creative Printers.

On July 1, Creative Printers had these beginning inventories:

Materials inventory	\$20,000
Work in process inventory (Job No. 106: direct materials, \$4,200; direct labor, \$5,000; and overhead, \$4,000)	13,200
Finished goods inventory (Job No. 105)	5,500

Creative Printing had completed Job No. 105, a set of gardening books, but had not shipped them to the customer as of June 30. They had Job No. 106, a set of instruction manuals for computer software, in process at the beginning of July and completed it in July. They started Job No. 107, a travel guide for visitors to Southeast Asia, in July but had not completed it.

The transactions and the journal entries to record these transactions follow. In Exhibit 69, we show the flow of costs through accounts and the beginning balances just presented.

- During July, Creative Printers sent direct materials from the materials storeroom to jobs as follows: USD 9,000 to Job No. 106, and USD 14,000 to Job No. 107. The company also sent indirect materials of USD 1,000 to jobs. It charged indirect materials to overhead, not to each job, because the company does not keep track of how much indirect materials it uses on each job. (Manufacturing companies often use Manufacturing Overhead for the Overhead account. We generally use the Overhead account for both manufacturing and non-manufacturing companies in this chapter.) Each job has a separate Work in Process Inventory account to keep track of the particular job's costs.

Work in process inventory – Job No. 106 (+A)	9,000	
Work in process inventory – Job No. 107 (+A)	14,000	
Overhead (or manufacturing overhead) (-SE)	1,000	
Materials inventory (-A)		24,000
To record direct and indirect materials sent from the storeroom to jobs.		

See Exhibit 69, for the flow of materials from Materials Inventory to the Work in Process and Overhead accounts.

- Production workers keep track of the time spent on each job at Creative Printers. Based on that information, the company assigned production-related labor costs to jobs and to Overhead as follows: USD 4,000 to Job No. 106, USD 16,000 to Job No. 107, and indirect labor of USD 5,000 to Overhead.

Work in process inventory – Job No. 106	4,000	
Work in process inventory – Job No. 107	16,000	
Overhead	5,000	
Payroll summary		25,000
To distribute labor costs to jobs and overhead		

The entry to record payroll incurred during the accounting period (not shown) includes a debit to Payroll Summary and a credit to liability accounts to show payables for fringe benefits, such as health insurance, payroll taxes, and employee wages. In entry (3) the payroll summary is distributed to the jobs and overhead. Look at Exhibit 69, to see the assignment of labor costs to the Work in Process and Overhead accounts.

- The company assigns overhead to each job in the following manner: Creative Printers charges indirect materials to jobs based on each job's usage of materials; it charges indirect labor to jobs based on each job's usage of labor;

and it charges all other overhead to jobs on the basis of the machine-hours each job uses.

By definition, overhead cannot be traced directly to jobs. Instead, we use cost drivers to assign overhead to jobs. A **cost driver** is a measure of activities, such as machine-hours, that is the cause of costs. To assign overhead to jobs, the cost driver should be the cause of the overhead costs, or at least be reasonably associated with the overhead costs. Just as automobile mileage is a good cost driver for measuring the cause of gasoline consumption, machine-hours is a measure of what causes energy costs. By assigning energy costs to jobs based on the number of machine-minutes or hours the job uses, we have a pretty good idea of the energy costs required to produce the job.

Creative Printers assigns overhead (such as machine maintenance) to jobs on a machine-hour basis. This makes good sense if machine maintenance is based on hours of usage, similar to having car maintenance done every 6,000 miles.

Creative Printers also assigns overhead (such as building depreciation) to jobs on a machine-hour basis, which is less logical. However, Creative Printers' management does not believe the time and trouble of developing a more sophisticated method of assigning building depreciation to jobs is justified. For example, management did not believe better overhead allocation would sufficiently improve company profits to justify hiring another accountant to improve its overhead allocation method.

Creative Printers allocates overhead to each job as follows:

Materials basis: Overhead is assigned to a job at the rate of 5 percent of the cost of materials used on the job.

Labor basis: Overhead is assigned at the rate of 25 percent of the cost of labor used on the job.

Machine-hours basis: Overhead is assigned to a job at the rate of USD 2 per machine-hour used on the job.

For now, assume these overhead rates are correct. Later in the chapter we discuss how companies derive these overhead rates. Creative Printers assigned overhead to Jobs 106 and 107 as follows:

Job 106		Overhead assigned to Job 106:	
Materials	\$9,000	5% x \$9,000	\$ 450
Labor cost	\$4,000	25% x \$4,000	1,000

Machine-hours	875 hours	\$2 x 875 hours	1,750
		Total overhead assigned to Job 106	\$3,200
Job 107		Overhead assigned to Job 107:	
Materials	\$14,000	5% x \$14,000	\$ 700
Labor cost	\$16,000	25% x \$16,000	4,000
Machine-hours	4,050 hours	\$2 x 4,050 hours	8,100
		Total overhead assigned to Job 107	\$12,800

Here is the journal entry to assign overhead to jobs:

Work in process inventory – Job No. 106	3,200	
Work in process inventory – Job No. 107	12,800	
Overhead		16,000
To record application of overhead to jobs.		

See Exhibit 69 for the application of overhead to jobs.

- Job No. 106 was completed. Job 106 cost USD 29,400 for the total work done on the job, including costs in beginning Work in Process Inventory on July 1 and costs added during July. This entry records the completion of Job 106:

Finished goods inventory (+A)	29,400	
Work in process inventory – Job No. 106 (-A)		29,400
To record completed production for July.		

See Exhibit 69 for the flow of costs from Work in Process Inventory to Finished Goods Inventory.

- Job No. 105 was sold on account in July for USD 9,000. These entries record the sale and the related cost of goods sold:

Accounts receivable (+A)	9,000	
Sales (+SE)		9,000
To record sales on account for July.		
Cost of goods sold (-SE)	5,500	
Finished goods inventory (-A)		5,500
To record cost of goods sold in July (Job 105).		

- The company applied overhead to the jobs in entry (4) based on a predetermined overhead rate. Many of the actual overhead costs are not known until the end of the month or later. For example, the company would not receive its utility bill for July until sometime in August. In addition to the indirect materials and indirect labor recorded in entries (2) and (3), Creative Printers incurred these other overhead costs for July:

Machinery repairs and maintenance	\$4,500
Utilities, including energy costs to run machines	1,000
Depreciation of building and machines	2,500

Other overhead	1,800
Total overhead incurred in July other than indirect materials and indirect labor	\$9,800

To prepare the journal entry, we debit the Overhead account for the actual costs. Then we credit Accounts Payable for the machinery repairs and maintenance, utilities, and other overhead. (We assume an outside contractor does the maintenance and repairs.) The amount is USD 7,300 (USD 4,500 + USD 1,000 + USD 1,800). And, finally we credit Accumulated Depreciation for USD 2,500. Here is the journal entry:

Overhead	9,800
Accounts payable	7,300
Accumulated depreciation	2,500
To record actual overhead costs for July.	

Overhead		Cost of goods Sold	
1,000*	16,000*	5,500*	
5,000*			
9,800*			
			Transfer from overhead (8)
			200
	Overapplied balance 200*	Cost of goods sold for July	5,300
Transfer to cost of goods sold (8) 200			
-0-			

*These amounts are from Exhibit 69

Exhibit 70: Transfer overapplied overhead to cost of goods sold

At this point, you may want to review the flow of costs through the inventory accounts in Exhibit 69. Note that Exhibit 69, shows only the inventory accounts, Payroll Summary, Overhead, and Cost of Goods Sold, not all of the accounts in the preceding entries.

- At the end of the month, the Overhead account contains **overapplied overhead** of USD 200 as shown in Exhibit 69. Companies generally transfer the balance of the Overhead account to Cost of Goods Sold at the end of the accounting period. Some companies do this monthly; others do it quarterly or annually. The journal entry to transfer Creative Printers' overhead balance to Cost of Goods Sold for the month of July is as follows:

Overhead (-SE)	200
Cost of goods sold (+SE)	200
To transfer the overhead balance to Cost of goods sold.	

See the adjusted Cost of Goods Sold and the Overhead accounts in Exhibit 70.

Why does the previous entry reduce the Cost of Goods Sold by USD 200? The overhead applied to the jobs was too high—it was overapplied. Thus, the cost of jobs was overstated. Although those jobs are still in Work in Process or Finished Goods Inventory, companies usually adjust the Cost of Goods Sold account instead of each inventory account. Adjusting each inventory account for a small overhead adjustment is usually not a good use of managerial and accounting time and effort. All jobs appear in Cost of Goods Sold sooner or later, so companies simply adjust Cost of Goods Sold instead of the inventory accounts.

In this book, we assume companies transfer overhead balances to Cost of Goods Sold. We leave the more complicated procedure of allocating overhead balances to inventory accounts to textbooks on cost accounting.

Although Creative Printers had overapplied overhead, it could just as easily have had **underapplied overhead**. If overhead had been underapplied, the company would have debited Cost of Goods Sold and credited Overhead to transfer the overhead balance.

**Creative Printers
Income statement
For the month ended 2010 July 31**

Sales		\$9,000
Cost of goods sold:		
Finished goods inventory, July 1	\$ 5,500	
Cost of goods manufactured	29,400	
Cost of goods available for sale	\$34,900	
Less: Finished goods inventory, July 31	29,400	
Cost of goods sold before transfer of overapplied overhead	\$ 5,500	
Less: Overapplied overhead	200	
Cost of goods sold		5,300
Gross margin		\$3,700
Selling and administrative expenses		3,000
Net income		\$ 700

Exhibit 71: Creative Printers-Income statement

Sometime in July or August, Creative Printers would collect its receivables in cash and pay its payables. The accounts payable for July amount to USD 32,300 (USD 25,000 for the materials purchase + USD 7,300 payables for overhead costs). The payroll liabilities amount to USD 25,000. Here are the entries recording Creative

Printers' payment of payables and payroll liabilities, and the collection of its receivables of USD 9,000:

Accounts payable (-L)	32,300	
Cash (-A)		32,300
Payroll liabilities (-L)	25,000	
Cash (-A)		25,000
Cash (+A)	9,000	
Accounts receivable (-A)		9,000

Note that in Exhibit 71 we present the income statement for Creative Printers. Assume the selling and administrative expenses for July are USD 3,000.

Managers would use the preceding cost information for several purposes: First, they would compare the actual costs of the job with expected costs, both as the work is being done and after the job has been completed. Later chapters discuss the role of managerial accounting in performance evaluation. Second, managers would assess the profitability of jobs. For example, Job 105 had revenue of USD 9,000 and costs of USD 5,500.

Third, managers would compare actual overhead on the left side of the Overhead account, with the overhead applied to jobs on the right side. If the actual overhead exceeds the applied overhead, they may wish to learn why the actual overhead is so high. Also, they may ask the accountants to increase the overhead applied to jobs to give them a better idea of the cost of jobs. If the actual is less than the applied overhead, they may ask the accountants to reduce the overhead applied to jobs.

18.8 Predetermined overhead rates

Creative Printers used predetermined rates to apply overhead to jobs. For example, they determined the 5 percent rate used to apply materials-related overhead to jobs before the month of July. Most manufacturing and service organizations use predetermined rates.

To calculate a **predetermined overhead rate**, a company divides the estimated total overhead costs for a period by an expected level of activity. This activity could be total expected machine-hours, total expected direct labor-hours, or total expected direct labor cost for the period. Companies set predetermined overhead rates at the beginning of the year in which they will use them. Thus, the

rates for July may have been computed in November or December of the previous year. This formula computes a predetermined rate:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs}}{\text{Expected level of activity (such as machine-hours)}}$$

To demonstrate, assume the accountants at Creative Printers estimated overhead related to machine usage to be USD 120,000 for the year and estimated the machine usage for the year to be 60,000 machine-hours. Thus, the predetermined overhead rate would be USD 2 per hour, calculated as follows:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs}}{\text{Expected machine-hours}}$$

$$\text{Predetermined overhead rate} = \frac{\text{USD } 120,000}{60,000} = \text{USD } 2 \text{ per machine-hour}$$

Some companies compute the overhead rate after the fact; that is, after the jobs are done and the overhead costs are known. The formula to calculate an **actual overhead rate** is:

$$\text{Actual overhead rate} = \frac{\text{Total actual overhead costs}}{\text{Total actual manufacturing activity}}$$

Recall that we measure manufacturing activity using machine-hours, labor-hours, labor costs, materials costs, or some other cost driver.

Reasons for using predetermined rates Most companies use predetermined overhead rates instead of actual overhead rates for the following reasons:

- A company usually does not incur overhead costs uniformly throughout the year. For example, heating costs are greater during winter months. However, allocating more overhead costs to a job produced in the winter compared to one produced in the summer may serve no useful purpose.
- Some overhead costs, like factory building depreciation, are fixed costs. If the volume of goods produced varies from month to month, the actual rate varies from month to month, even though the total cost is constant from month to month. The predetermined rate, on the other hand, is constant from month to month.
- Predetermined rates make it possible for companies to estimate job costs sooner. Using a predetermined rate, companies can assign overhead costs to production when they assign direct materials and direct labor costs. Without a

predetermined rate, companies do not know the costs of production until the end of the month or even later when bills arrive. For example, the electric bill for July will probably not arrive until August. If Creative Printers had used actual overhead, the company would not have determined the costs of its July work until August. It is better to have a good estimate of costs when doing the work instead of waiting a long time for only a slightly more accurate number.

An accounting perspective:

Uses of technology

Recently, many high-tech companies have installed computer-assisted methods of manufacturing, merchandising, or providing services. These new technologies have had a major impact on managerial accounting. For example, where robots and computer-assisted manufacturing methods have replaced people, labor costs have shrunk from 20 percent to 40 percent of product costs to less than 5 percent. Accounting in traditional settings required much more work to keep track of labor costs than is necessary in current systems. On the other hand, in highly automated environments, accountants have had to become more sophisticated in finding the sources of overhead costs, which have become a larger part of total product cost.

18.8.1 Understanding the learning objectives

- Financial accounting refers to providing financial information primarily for external use. Managerial accounting information is intended for internal use to provide more detailed information to managers.
- In manufacturing companies, a product's cost is made up of three cost elements: direct materials costs, direct labor costs, and manufacturing overhead costs.
- Direct materials costs are clearly and easily traceable to the product.

- Direct labor costs include only those labor costs clearly traceable to, or readily identifiable with, the finished product.
- Overhead costs (1) include all costs of making the product except direct materials and direct labor costs; (2) are costs that must be incurred in making the product but cannot or will not be traced directly to specific units produced; and (3) include a number of costs related to the production process, such as depreciation and maintenance on machines, supervisors' salaries, and utility costs for production facilities.
- Product costs are costs incurred in making products. These costs include costs of direct materials, direct labor, and overhead.
- Period costs are not assigned to units of a product but are related more closely to periods of time. For this reason, period costs are expensed (deducted from revenues) in the period in which they are incurred.
- The major difference between a merchandiser and a manufacturer is in the types of inventories carried.
- The statement of cost of goods manufactured supports the cost of goods sold figure on the income statement and has two important calculations: (1) Cost to manufacture, which includes the costs of all resources put into production during the period and (2) Cost of goods manufactured, which consists of the cost of all goods completed during the period.
- The manufacturer's balance sheet shows materials, work in process, and finished goods inventories separately.
- The accounting flow of costs follows the physical flow of the manufacturing process.
- Accountants record the flow of direct materials costs from Materials Inventory into Work in Process Inventory. They add the costs of direct labor and overhead to Work in Process Inventory. When the products are completed and transferred to the finished goods storeroom, accountants transfer their costs from Work in Process Inventory to Finished Goods Inventory. As the goods are sold, the related costs are transferred from Finished Goods Inventory to Cost of Goods Sold.

- Companies producing individual, unique products known as jobs use job costing (also called job order costing).
- Companies such as furniture manufacturers produce batches of products and use job costing methods to accumulate the cost of each batch.
- Repetitive manufacturing companies (automobile assembly plants) and companies producing in a continuous flow (oil refineries) use process costing, discussed in the next chapter.
- A job cost system (job costing) is a cost system that accumulates costs incurred according to the individual jobs. Each job has its own Work in Process Inventory account.
- The formula for the predetermined overhead rate is:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs}}{\text{Expected level of activity (such as machine - hours)}}$$
- Under variable costing, all the fixed manufacturing overhead costs are charged off (as period costs) during the period rather than being deferred and carried forward (as product costs) to the next period as part of inventory cost.
- Under absorption costing, all manufacturing costs are treated as product costs, including fixed manufacturing overhead.

18.9 Appendix: Variable versus absorption costing

Under **absorption costing**, companies treat all manufacturing costs, including both fixed and variable manufacturing costs, as product costs. Under variable costing, companies treat only variable manufacturing costs as product costs. Total variable costs change proportionately with changes in total activity, while fixed costs do not change as activity levels change. These variable manufacturing costs are usually made up of direct materials, variable manufacturing overhead, and direct labor. (Direct labor can be a fixed cost if the company chooses not to decrease or increase its direct labor force as volume changes. Unless otherwise stated, we treat direct labor as a variable cost.)

Variable costing (also known as direct costing) treats all fixed manufacturing costs as period costs to be charged to expense in the period received. The logic behind this expensing of fixed manufacturing costs is that the company would incur

such costs whether a plant was in production or idle. Therefore, these fixed costs do not specifically relate to the manufacture of products.

Look at Exhibit 72, Bradley Company's income statements for May 2010 using absorption costing on top and variable costing on the bottom. Notice that Bradley's variable costing income statement carries the goods in inventory at USD 3.30 per unit rather than at the USD 3.90 full cost. The statement shows all variable costs as deductions from sales to disclose the contribution margin for the month. It classifies all fixed costs as period costs no matter what the source of the cost (manufacturing, selling, or administrative).

Income statement under Absorption costing		
Bradley Company		
Income statement		
For the period ending 2010 May 31		
Sales (9,000 units at \$8)		\$72,000
Cost of goods sold:		
Variable costs of production (10,000 units at \$3.30)	\$33,000	
Fixed overhead costs	6,000	
Total costs of producing 10,000 units	\$39,000	
Less: Ending inventory (1,000 units at \$3.90)	3,900	35,100
Gross margin on sales		\$36,900
Operating expenses:		
Selling expenses (\$15,000 fixed plus 9,000 at \$0.20 each)	\$16,800	
Administrative expenses	12,000	28,800
Income before income taxes		\$ 8,100

Contribution margin income statement under variable costing		
Bradley Company		
Income statement		
For the period ending 2010 May 31		
Sales (9,000 units at \$8)		\$72,000
Variable costs:		
Variable production costs incurred (10,000 units at \$3.30)	\$33,000	
Less: Ending inventory (1,000 units at \$3.30)	3,300	29,700
Manufacturing margin		\$42,300
Variable selling expenses (9,000 units at \$0.20)		1,800
Contribution margin		\$40,500
Fixed costs:		
Manufacturing overhead	\$ 6,000	
Selling expenses	15,000	
Administrative expenses	12,000	33,000
Income before income taxes		\$ 7,500

Exhibit 72: Comparative income statements

In comparing the two income statements in Exhibit 72, notice the USD 600 difference in net income for the month and a USD 600 difference in ending inventory valuation, as shown in Exhibit 73, on the next page. These differences are due to the treatment of fixed manufacturing costs. Under absorption costing, each

unit in ending inventory carries USD 0.60 of fixed overhead cost as part of product cost. At the end of the month, Bradley has 1,000 units in inventory. Therefore, ending inventory under absorption costing includes USD 600 of fixed manufacturing overhead costs (USD 0.60 X 1,000 units) and is valued at USD 600 more than under variable costing.

Under variable costing, companies charge off, or expense, all the fixed manufacturing costs during the period rather than deferring their expense and carrying them forward to the next period as part of inventory cost. Therefore, USD 6,000 of fixed manufacturing costs appear on the variable costing income statement as an expense, rather than USD 5,400 (USD 6,000 fixed overhead costs - USD 600 fixed manufacturing included in inventory) under absorption costing. Consequently, income before income taxes under variable costing is USD 600 less than under absorption costing because more costs are expensed during the period.

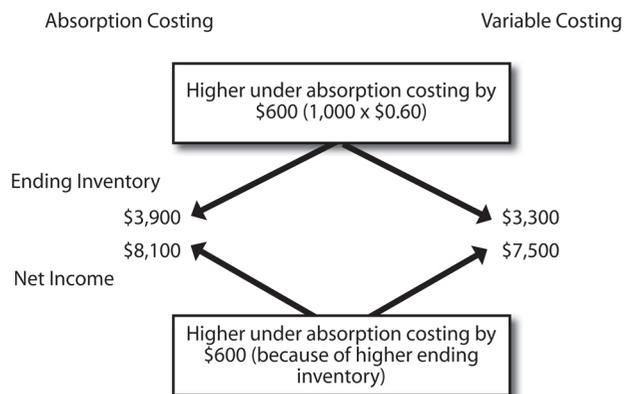


Exhibit 73: Comparison of results under absorption and variable costing

Finally, remember that the difference between the absorption costing and variable costing methods is solely in the treatment of fixed manufacturing overhead costs and income statement presentation. Both methods treat selling and administrative expenses as period costs. Regarding selling and administrative expenses, the only difference is their placement on the income statement and the segregation of variable and fixed selling and administrative expenses. Variable selling and administrative expenses are not part of product cost under either method.

As a general rule, relate the difference in net income under absorption costing and variable costing to the change in inventories. Assuming a relatively constant level of production, if inventories increase during the year, production exceeded sales and reported income before federal income taxes is less under variable costing than under absorption costing. Conversely, if inventories decreased, then sales exceeded production, and income before income taxes is larger under variable costing than under absorption costing.

Variable costing is not currently acceptable for income measurement or inventory valuation in external financial statements that must comply with generally accepted accounting principles (GAAP) in the United States. However, managers often use variable costing for internal company reports.

18.10 Demonstration problem

Demonstration problem A Good Earth Construction Company uses a job cost system to account for the houses it builds. Each house is a separate job. As of 2010 January 1, its records showed:

Inventories:	
Materials and supplies	\$ 48,000
Work in process (Job No. 212 and 213)	103,200
Finished goods (Job No. 211)	120,000

The work in process inventory consists of two jobs:

Job No.	Direct materials	Direct Labor	Construction Overhead*	Construction Total
212	\$18,000	\$24,000	\$12,000	\$ 54,000
213	20,400	19,200	9,600	49,200
	\$38,400	\$43,200	\$21,600	\$103,200

*Construction overhead is treated just like overhead in the text examples.

Cost and sales data for 2010:

- Materials purchased on account, USD 198,000.
- Labor costs: Direct labor assigned to jobs—Job No. 212, USD 48,000; Job No. 213, USD 96,000; Job No. 214 (started in 2010), USD 144,000; supervision and other indirect labor, USD 120,000.
- Materials used: Job No. 212, USD 31,200; Job No. 213, USD 57,600; Job No. 214, USD 96,000; and indirect materials, USD 4,800.

- Overhead is assigned to jobs at the rate of 50 percent of the actual direct labor costs incurred on each job.
- Job No. 212 and 213 were completed.
- Jobs 211 and 212 were sold for USD 540,000.
- Construction overhead costs incurred, other than indirect materials and indirect labor: depreciation, USD 12,000; heat, light, power, and miscellaneous, USD 12,000.

Prepare journal entries to record the preceding data and close any underapplied or overapplied overhead to Cost of Goods Sold.

Demonstration problem B Companies use different bases in computing their predetermined overhead rates. From the following estimated data, compute the predetermined rate used by each company.

	Company		
	A	B	C
Machine-hours	103,000	212,000	125,000
Direct labor-hours	52,000	48,000	39,000
Direct labor cost	\$650,000	\$735,000	\$420,000
Overhead costs	\$845,000	\$864,000	\$750,000

Basis for predetermined overhead rate:

Company	Basis
A	Direct labor cost
B	Direct labor-hours
C	Machine-hours

18.11 Solution to demonstration problem

Solution to demonstration problem A

Good Earth Construction Company		
General Journal		
1.	Materials inventory	198,000
	Accounts payable	198,000
	To record materials purchased on account.	
2.	Work in process inventory – Job No. 212	48,000
	Work in process inventory – Job No. 213	96,000
	Work in process inventory – Job No. 214	144,000
	Construction overhead	120,000
	Payroll summary	408,000
	To distribute labor costs to jobs and overhead.	
3.	Work in process inventory – Job No. 212	31,200
	Work in process inventory – Job No. 213	57,600

	Work in process inventory – Job No. 214	96,000	
	Construction overhead	4,800	
	Materials inventory		189,600
	To record direct and indirect materials sent from storeroom to jobs.		
4.	Work in process inventory – Job No. 212	24,000	
	Work in process inventory – Job No. 213	48,000	
	Work in process inventory – Job No. 214	72,000	
	Construction overhead		144,000
	To record overhead applied to jobs using the predetermined rate 50% of direct labor cost: Job No. 212, \$24,000 (50% x \$48,000); Job No. 213, \$48,000 (50% x \$96,000); and Job No. 214, \$72,000 (50% x \$144,000).		
5.	Finished goods inventory	408,000	
	Work in process inventory – Job No. 212		157,200
	Work in process inventory – Job No. 213		250,800
	To record completion of Jobs 212 and 213.		

The following amounts were computed by adding beginning Work in Process balances to the current month's debits to Work in Process for direct materials, direct labor, and construction overhead:

Job No. 212: USD 157,200 (USD 54,000 + USD 31,200 + USD 48,000 + USD 24,000)

Job No. 213: USD 250,800 (USD 49,200 + USD 57,600 + USD 96,000 + USD 48,000)

USD 408,000

6.	Accounts receivable	540,000	
	Sales		540,000
	To record sales on account.		
	Cost of goods sold	277,200	
	Finished goods inventory		277,200
	To record cost of goods sold (\$120,000 + \$157,200 = \$277,200).		
7.	Construction overhead	24,000	
	Accumulated depreciation		12,000
	Various accounts (Accounts payable, accrued liabilities payable, cash, etc)		12,000
	To record various construction overhead costs incurred.		
8	Cost of goods sold	4,800	
	Construction overhead		4,800
	To close underapplied construction overhead (actual = \$148,800, applied = \$144,000).		

Solution to demonstration problem B Company A:

Predetermined overhead rate = $\frac{\text{USD } 845,000}{\text{USD } 650,000} = 130$ per cent of direct labor cost

Company B:

Predetermined overhead rate = $\frac{\text{USD } 864,000}{48,000 \text{ hours}} = \text{USD } 18 \text{ per direct labor - hour}$

Company C:

Predetermined overhead rate = $\frac{\text{USD } 750,000}{125,000 \text{ hours}} = \text{USD } 6 \text{ per machine - hour}$

18.12 Key terms

Absorption costing (Appendix) A concept of costing under which all manufacturing costs, including both fixed and variable manufacturing costs, are accounted for as product costs.

Actual overhead rate Total actual manufacturing overhead divided by total actual manufacturing activity.

Administrative costs Costs of managing the organization, including the costs of top administrative functions and various staff departments such as accounting, data processing, and personnel.

Cost A financial measure of the resources used or given up to achieve a stated purpose.

Cost driver Activity or transaction that causes costs to be incurred. Machine-hours can be a cost driver for costs of energy to run machines, for example.

Cost of goods manufactured Consists of the total costs of all goods completed during the period; includes cost to manufacture plus beginning work in process inventory minus ending work in process inventory

Cost of goods sold Cost of goods manufactured plus the beginning finished goods inventory minus the ending finished goods inventory.

Cost to manufacture Includes the direct materials, direct labor, and manufacturing overhead incurred during the period.

Direct labor Labor costs of all employees actually working on materials to convert them to finished goods. Direct labor costs are directly traced to particular products in contrast to indirect labor costs.

Direct materials Materials that are used only in making the product and are clearly and easily traceable to a particular product.

Finished goods Completed manufactured products ready to be sold. Finished Goods Inventory is the title of an inventory account maintained for such products.

Indirect labor The cost of labor that cannot, or will not for practical reasons, be traced to the goods being produced or the services being provided.

Indirect materials Materials used in making a product that cannot, or will not for practical reasons, be traced directly to particular products.

Job cost system (job costing) A manufacturing cost system that accumulates costs incurred to produce a product according to individual jobs, such as a building, a consulting job, or a batch of 100 computer desks.

Managerial accounting Managerial accounting information is intended for internal use. The purpose is to generate information managers can use to make good decisions.

Manufacturing overhead All manufacturing costs except for those costs accounted for as direct materials and direct labor.

Materials Unprocessed items used in the manufacturing process.

Overapplied (overabsorbed) overhead The amount by which the overhead applied to production exceeds the actual overhead costs incurred in that same period.

Overhead All costs of making goods or providing services except for those costs classified as direct materials and direct labor. See manufacturing overhead for overhead in manufacturing companies.

Period costs Costs related more closely to periods of time than to products produced. Period costs cannot be traced directly to the manufacture of a specific product; they are expensed in the period in which they are incurred.

Predetermined overhead rate Calculated by dividing estimated total overhead costs for a period by the expected level of activity, such as total expected machine-hours or total expected direct labor-hours for the period.

Product costs Costs a company assigns to units produced. In manufacturing companies, these costs are direct materials, direct labor, and manufacturing overhead. In service companies that have no materials, these costs are direct labor and overhead.

Selling costs Costs incurred to obtain customer orders and distribute the finished product to the customer.

Statement of cost of goods manufactured An accounting report showing the cost to manufacture and the cost of goods manufactured.

Underapplied (underabsorbed) overhead The amount by which actual overhead costs incurred in a period exceed the overhead applied to production in that period.

Variable costing (also called direct costing) (Appendix) A concept of costing under which only variable manufacturing costs are accounted for as product costs and charged to the units produced during a period. All fixed manufacturing costs are charged to expense in the period in which they are incurred.

Work in process Partially manufactured products; a Work in Process Inventory account is maintained for such products.

18.13 Self-test

18.13.1 True-false

Indicate whether each of the following statements is true or false.

Managerial accounting is for external use and gives less detailed information than financial accounting.

A manufacturer produces speedboats, and each one requires a motor. The motors are considered direct materials and are product costs.

A Pepsi-Cola bottling plant is an example of a company that would use a job cost system.

A predetermined overhead rate is calculated by dividing the expected level of activity by the estimated total overhead cost.

Overhead cannot be entered in Work in Process Inventory when using a predetermined overhead rate. Only when the actual overhead costs are determined is the overhead entered.

Selling and administrative expenses are part of period costs under both absorption and variable costing methods.

18.13.2 Multiple-choice

Select the best answer for each of the following questions.

Under which cost category are indirect material costs included?

- a. Direct materials.
- b. Overhead.
- c. Direct labor.
- d. None of the above.

For financial accounting and external reporting purposes, all selling and administrative expenses are treated as:

- a. Period costs.
- b. Selling costs.
- c. Manufacturing overhead costs.
- d. Product costs.

What are the differences between the cost of goods sold sections in a manufacturer's and a merchandiser's income statements?

a. A merchandiser uses Merchandise Inventory and Direct Labor, whereas a manufacturer uses Finished Goods Inventory and Cost of Goods Manufactured.

b. A merchandiser uses Merchandise Inventory and Cost of Goods Available for Sale, whereas a manufacturer uses Finished Goods Inventory and Cost of Goods Available for Sale.

c. A merchandiser uses Work in Process Inventory and Cost of Goods Sold, whereas a manufacturer uses Finished Goods Inventory and Cost of Goods Sold.

d. None of the above.

A job cost system is used:

a. When there are dissimilar products.

b. By manufacturers and service companies.

c. When goods are produced to meet a customer's particular needs.

d. All of the above.

Which of the following best describes the advantages of using a predetermined overhead rate?.

a. Overhead costs are applied evenly throughout the year rather than fluctuating from month to month.

b. Predetermined rates require managers to wait until long after the accounting period to get an estimate of product costs.

c. Total unit costs of production are known sooner than using actual overhead rates, and overhead costs are evenly distributed throughout the year.

d. Both (a) and (c) above.

The expected level of activity in a production center is 30,000 machine-hours. Estimated overhead costs are indirect materials and indirect labor, USD 360,000; other overhead, USD 90,000. Which of the following is the predetermined overhead rate per machine-hour?

a. USD 3.

b. USD 12.

c. USD 15.

d. USD 20.

You are given the following data relating to a company:

Estimated manufacturing overhead per year	USD 24,000
Expected level of activity per year	40,000 machine-hours
Predetermined overhead rate	USD 0.60 per machine-hour
Actual overhead costs incurred during year	USD 22,500
Actual machine-hours	35,000

Which of the following are the correct journal entries for the preceding data?

- | | | | |
|-----------|---------------------------|--------|--------|
| a. | Manufacturing overhead | 22,500 | |
| | Various accounts | | 22,500 |
| | Work in process inventory | 21,000 | |
| | Manufacturing overhead | | 21,000 |
| b. | Manufacturing overhead | 22,500 | |
| | Various accounts | | 22,500 |
| | Work in process inventory | 15,428 | |
| | Manufacturing overhead | | 15,428 |
| c. | Manufacturing overhead | 24,000 | |
| | Various accounts | | 24,000 |
| | Work in process inventory | 15,428 | |
| | Manufacturing overhead | | 15,428 |
| d. | Various accounts | 22,500 | |
| | Manufacturing overhead | | 22,500 |
| | Manufacturing overhead | 15,428 | |
| | Work in process inventory | | 15,428 |

Now turn to “Answers to self-test” at the end of the chapter to check your answers.

18.14 Questions

- What are the major differences between managerial and financial accounting?
- Identify the three elements of cost incurred in manufacturing a product and indicate the distinguishing characteristics of each.
- Why might a company claim that the total cost of employing a person is USD 15.30 per hour when the employee's wage rate is USD 10.50 per hour? How should this difference be classified and why?
- Why are certain costs referred to as period costs? What are the major types of period costs incurred by a manufacturer?
- Explain why the income statement of a manufacturing company differs from the income statement of a merchandising company.
- What is the general content of a statement of cost of goods manufactured? What is its relationship to the income statement?
- What is the relationship between cost flows in the accounts and the flow of physical products through a factory?

- Define a job cost system and give an example of a situation in which it can be used.
- What are the major reasons for using predetermined manufacturing overhead rates?
- What is the formula for computing a predetermined overhead rate? If the expected level of activity in a production center is 50,000 machine-hours and the estimated overhead costs are USD 750,000, what is the predetermined overhead rate? Show the calculation.
- What is underapplied and overapplied overhead? What type of balance does each have in the Overhead account?
- Direct materials were issued to the following jobs: Material A was issued to Job No. 101, USD 2,000; Job No. 102, USD 1,000; and Job No. 103, USD 5,000. Material B was issued to Job No. 101, USD 5,000; Job No. 102, USD 2,000; and Job No. 103, USD 3,000. A total of USD 3,000 in indirect materials was issued to all jobs.
- Record the direct and indirect materials issued in journal entry form.
- **Real world question** Assume Domino's Pizza is considering offering a new product—a 6-inch (15.24 cm) pizza. Why would it matter if Domino's Pizza knows how much it costs to produce and deliver this 6-inch (15.24 cm) pizza?
- **Real world question** Why is it becoming more important that the managers of hospitals understand their product costs?
- **Real world question** Besides law firms and public accounting firms, name three service organizations that produce individual jobs and would use job costing.
- (Appendix) Under what specific circumstances would you expect net income to be larger under variable costing than under absorption costing? What is the reason for this difference?

18.15 Exercises

Exercise A The following costs are incurred by an electrical appliance manufacturer. Classify these costs as direct materials, direct labor, manufacturing overhead, selling, or administrative.

- a. President's salary.
- b. Cost of electrical wire used in making appliances.
- c. Cost of janitorial supplies (the janitors work in the factory).
- d. Wages of assembly-line workers.
- e. Cost of promotional displays.
- f. Assembly-line supervisor's salary.
- g. Cost accountant's salary (the accountant works in the factory).
- h. Cost of cleaner used to clean appliances when they are completed.
- i. Cost of aluminum used for toasters.
- j. Cost of market research survey.

Exercise B Classify the costs listed in the previous exercise as either product costs or period costs.

Exercise C Gore Company makes products for sporting events. The following data are for the year ended 2010 December 31:

Materials inventory, 2010 January 1	\$ 45,000
Materials inventory, 2010 December 31	65,000
Materials purchases	175,000
Direct labor	225,000
Work in process inventory, 2010 January 1	30,000
Work in process inventory, 2010 December 31	40,000
Manufacturing overhead	130,000
Finished goods inventory, 2010 January 1	80,000
Finished goods inventory, 2010 December 31	140,000

Prepare a Cost of Goods Manufactured Statement and compute the cost of goods sold.

Exercise D In June, Sierra Company worked only on Job No. 100 and completed it on June 30. There were no prior costs accumulated on Job No. 100 before June 1. During the month, the company purchased and used USD 10,800 of direct materials, used 2,000 machine-hours, and incurred USD 19,200 of direct labor costs. Assuming manufacturing overhead is applied at the rate of USD 12 per machine-

hour, what is the total cost of Job No. 100? Prepare journal entries to assign the materials, labor, and manufacturing overhead costs to production and to record the transfer of Job No. 100 to Finished Goods Inventory.

Exercise E At the end of the second week in March, Job No. 710 has an accumulated total cost of USD 37,800. In the third week, USD 9,000 of direct materials were used on Job 710, 300 hours of direct labor were charged to the job at USD 40 per hour, and manufacturing overhead was applied on the basis of USD 40 per machine-hour for overhead. Job No. 710 was the only job worked on in the third week. It was also completed in the third week. Job No. 710 used 160 machine-hours during the third week in March. Compute the cost of Job No. 710, and give the journal entry required to record its completion and transfer to Finished Goods Inventory.

Exercise F Different companies use different bases in computing their predetermined overhead rates. From the following estimated data, compute the predetermined rate to be used by each company:

	Company Paper	Rock	Scissors
Machine-hours	100,000	210,000	125,000
Direct labor-hours	50,000	48,000	39,000
Direct labor cost	\$800,000	\$735,000	\$410,000
Manufacturing overhead cost	\$400,000	\$432,000	\$375,000

Basis for determining predetermined overhead rate:

Company	Basis
Paper	Direct labor cost
Rock	Direct labor-hours
Scissors	Machine-hours

Exercise G Refer to the previous exercise. Assume the actual hours and cost data were:

Actual	Paper	Rock	Scissors
Manufacturing overhead	\$450,000	\$400,000	\$375,000
Direct labor cost	\$850,000	\$700,000	\$400,000
Direct labor-hours	45,000	46,000	38,000
Machine-hours	105,000	200,000	130,000

- a. Compute overapplied or underapplied overhead for each company.
- b. Prepare journal entries to transfer overapplied or underapplied overhead to Cost of Goods Sold for each company.

Exercise H Ernest Peat Consultants uses a job cost system and had the following activity during December:

There were no jobs in beginning Work in Process or Finished Goods Inventory.

Three jobs were started: No. 222, 223, and 224. Job No. 222 was completed and the customer was billed for USD 10,000 on account. Job No. 223 was completed and in Finished Goods Inventory awaiting billing to the client at the end of the month. Job No. 224 was still in process at month-end.

Direct labor costs incurred for:

Job No. 222	200 hours @ \$21/hour
Job No. 223	300 hours @ \$18/hour
Job No. 224	120 hours @ \$17/hour

Assume overhead is applied at the rate of USD 10 per labor-hour.

Actual overhead was USD 6,400. (The credit part of the journal entry is to Accounts Payable.)

Prepare journal entries to record the preceding data, as well as the transfer of underapplied or overapplied overhead to Cost of Goods Sold.

Exercise I The following data relate to Socks Company for the year ended 2010 December 31:

Cost of production:	
Direct materials (variable)	\$360,000
Direct labor (variable)	504,000
Manufacturing overhead:	
Variable	180,000
Fixed	360,000
Sales commissions (variable)	108,000
Sales salaries (fixed)	72,000
Administrative expenses (fixed)	144,000
Units produced	150,000
Units sold (at \$18 each)	120,000
Beginning inventory, 2010 January 1	-0-

There were no beginning inventories. Assume direct materials and direct labor are variable costs. Prepare two income statements—a variable costing income statement and an absorption costing income statement.

18.16 Problems

Problem A Total Block, Inc., is considering a new sunscreen packet that contains a skin wipe with sunscreen on it. These would be particularly useful for people who

do not want to carry a bottle of sunscreen, according to Sunspot's marketing manager. Classify the following costs of this new product as direct materials, direct labor, manufacturing overhead, selling, or administrative.

- a. President's salary.
- b. Packages used to hold the skin wipes.
- c. Cleaning materials used to clean the skin wipe packages.
- d. Wages of workers who package the product.
- e. Cost of advertising the product.
- f. The salary of the supervisor of the workers who package the product.
- g. Cost accountant's salary (the accountant works in the factory).
- h. Cost of a market research survey.
- i. Sales commissions paid as a percent of sales.
- j. Depreciation of administrative office building.

Problem B Classify the costs listed in the previous problem as either product costs or period costs.

Problem C Good Vibrations, Inc., produces videotapes of musical performances. A newly hired executive of the company has asked you to sort through the records and prepare a statement of the company's cost of goods manufactured. You find the following data from records prepared by Good Vibrations, Inc., for the year ended 2009 December 31:

Inventories:	
Beginning direct materials inventory, 2009 January 1	\$ 6,000
Ending direct materials inventory, 2009 December 31	10,500
Beginning work in process inventory, 2009 January 1	10,000
Ending work in process inventory, 2009 December 31	9,500
Materials purchases	50,000
Direct labor	40,000
Indirect labor	15,000
Factory utilities expense	7,000
Factory supplies expense	5,000
Depreciation expense – factory building	14,000
Depreciation expense – Factory Equipment	10,500
Other manufacturing overhead	25,000

You also learn that beginning Finished Goods Inventory on 2009 January 1, was USD 20,000 and ending Finished Goods Inventory on 2009 December 31, was USD 5,000. Sales for the year were USD 400,000. Selling expenses were USD 50,000 and administrative expenses were USD 75,000.

a. Prepare a statement of cost of goods manufactured for Good Vibrations, Inc., for the year ended 2009 December 31.

b. Prepare an income statement for Good Vibrations, Inc., for the year ended 2009 December 31.

Problem D Log Cabin Homes, Inc., uses a job cost system to account for its jobs, which are prefabricated houses. As of 2010 January 1, its records showed inventories as follows:

Materials and supplies	\$100,000
Work in process (Job Nos. 22 and 23)	180,000
Finished goods (Job No. 21)	140,000

The work in process inventory consisted of two jobs:

Job No.	Direct materials	Direct labor	Manufacturing overhead	Total
22	\$36,000	\$40,000	\$20,000	\$ 96,000
23	40,000	28,000	16,000	84,000
		\$76,000	\$68,000	\$180,000

Cost and sales data for 2010:

Materials purchased on account, USD 400,000.

Direct materials used: Job No. 22, USD 60,000; Job No. 23, USD 120,000; Job No. 24, USD 180,000.

Indirect materials used, USD 10,000.

Direct labor costs: Job No. 22, USD 100,000; Job No. 23, USD 200,000; and Job No. 24, USD 80,000.

Indirect labor costs, USD 80,000.

Overhead is assigned to jobs at USD 100 per machine-hour. Job No. 22 used 500 machine-hours, Job No. 23 used 1,000 machine-hours, and Job No. 24 used 300 machine-hours in January.

Job No. 22 and 23 were completed and transferred to Finished Goods Inventory.

Job No. 21 and 22 were sold on account for USD 1,200,000, total.

Manufacturing overhead costs incurred, other than indirect materials and indirect labor, were depreciation, USD 80,000, and heat, light, power, miscellaneous, USD 40,000.

a. Prepare journal entries to assign the preceding costs to jobs. Show the appropriate entries debiting Finished Goods Inventory and Cost of Goods Sold. Transfer overapplied or underapplied overhead to Cost of Goods Sold.

b. Assuming selling and administrative expenses were USD 100,000, prepare an income statement for 2010.

Problem E Green Thumb Landscaping Company uses a job cost system. As of 2010 January 1, its records showed the following inventory balances:

Materials (shrubs, trees, etc.)	\$ 13,500
Work in process	25,800
Finished goods (Job No. 211)	30,000

The work in process inventory consisted of two jobs:

Job No.		Direct Materials	Direct Labor	Manufacturing Overhead	Total
212	10 Downing St.	\$4,500	\$ 6,000	\$2,400	\$12,900
213	1010 Wilshire Blvd.	5,100	4,800	3,000	12,900
		\$9,600	\$10,800	\$5,400	\$25,800

Here are data for the company for January:

Materials purchased, USD 48,000.

Landscaping direct labor costs: direct labor to Job No. 212, USD 12,000; to Job No. 213, USD 24,000; and to Job No. 214, USD 36,000. Indirect labor, USD 30,000.

Direct materials used: direct materials for Job No. 212, USD 7,800; for Job No. 213, USD 14,400; and for Job No. 214, USD 24,000. Supplies (indirect materials) used amounted to USD 1,200.

Overhead is assigned to jobs at USD 3 per labor-hour, with 8,000 labor-hours to Job 212 and 2,000 labor-hours each to Jobs 213 and 214.

Jobs 212 and 213 were completed and in Finished Goods Inventory at the end of January.

Sales revenues for January were USD 45,000; cost of goods sold was USD 30,000 for Job No. 211 that was in Finished Goods Inventory on 2010 January 1.

Overhead costs incurred other than indirect labor and indirect materials were depreciation, USD 3,000, and utilities, fuel, and miscellaneous, USD 3,000.

a. Prepare journal entries to record the preceding transactions, including the transfer of underapplied or overapplied overhead to Cost of Goods Sold.

b. Assuming selling and administrative expenses were USD 10,000, prepare an income statement for January.

Problem F Speedy Delivery, Inc., transports computer equipment for various computer manufacturers. Speedy applies overhead to jobs using a predetermined overhead rate based on truck miles. Estimated data for 2010 are:

Estimated truck miles	20 million
Estimated overhead for hauling operations (equivalent to manufacturing overhead)	\$12 million

a. Compute the predetermined overhead rate per mile.

b. Assume that in 2010, actual manufacturing overhead for hauling operations amounted to USD 15 million, and 24 million truck miles were driven. Compute the amount of underapplied or overapplied manufacturing overhead for 2010.

c. Prepare the journal entry to transfer underapplied or overapplied overhead to Cost of Goods Sold.

Problem G Costner Company uses an absorption costing system in accounting for the single product it manufactures. The following selected data are for the year 2009:

Sales (10,000 units)	\$360,000
Direct materials used (variable cost)	129,600
Direct labor costs (variable cost)	43,200
Variable manufacturing overhead	12,960
Fixed manufacturing overhead	17,280
Variable selling and administrative expenses	21,600
Fixed selling and administrative expenses	72,000

The company produced 12,000 units and sold 10,000 units. Direct materials and direct labor are variable costs. One unit of direct material goes into each unit of finished goods. Overhead rates are based on a volume of 12,000 units and are USD 1.08 and USD 1.44 per unit for variable and fixed overhead, respectively. The ending inventory is the 2,000 units of finished goods on hand at the end of 2009. There was no inventory at the beginning of 2009.

a. Prepare an income statement for 2009 under variable costing.

b. Prepare an income statement for 2009 under absorption costing.

c. Explain the reason for the difference in net income between a and b.

18.17 Alternate problems

Alternate problem A Pocket Umbrella, Inc., is considering producing a new type of umbrella. This new pocket-sized umbrella would fit into a coat pocket or purse. Classify the following costs of this new product as direct materials, direct labor, manufacturing overhead, selling, or administrative.

- a. Cost of advertising the product.
- b. Fabric used to make the umbrellas.
- c. Maintenance of cutting machines used to cut the umbrella fabric so it will fit the umbrella frame.
- d. Wages of workers who assemble the product.
- e. President's salary.
- f. The salary of the supervisor of the people who assemble the product.
- g. Wages of the product tester who stands in a shower to make sure the umbrellas do not leak.
- h. Cost of market research survey.
- i. Salary of the company's sales managers.
- j. Depreciation of administrative office building.

Alternate problem B Classify the costs listed in Alternate problem A as either product costs or period costs.

Alternate problem C Presley Manufacturing Company is a producer of music compact discs (CDs) and tapes. The following account balances are for the year ended 2009 December 31

Administrative expenses	\$ 60,000
Depreciation expense – Manufacturing equipment	50,000
Direct labor	468,000
Manufacturing supplies expense	40,000
Indirect labor	36,000
Beginning inventories, 2009 January 1:	
Direct materials	14,000
Work in process	20,000
Finished goods	128,000
Ending inventories, 2009 December 31	
Direct materials	44,000
Work in process	56,000
Finished goods	92,000
Direct materials purchases	216,000
Rent expense – Factory	28,000
Sales	1,400,000
Selling expense	72,000
Other manufacturing overhead	126,000

a. Prepare a statement of cost of goods manufactured for Presley Manufacturing Company for 2009.

b. Prepare an income statement for the year ended 2009 December 31.

Alternate problem D Cathy's Catering Company uses a job cost system. Its activities in November 2010, the first month of operations, were as follows:

	Job		
	First-rate	Active life	Precocious
	Universit	home	School
	y		
Direct materials cost (food)	\$54,000	\$36,000	\$81,000
Direct labor cost	\$45,000	\$40,500	\$54,000
Labor-hours	2,900	3,500	3,800

The company applies overhead at a rate of USD 16 per labor-hour. It completed all jobs in November. The total revenue for the three jobs was USD 400,000. The actual overhead for the month was USD 160,000, of which USD 120,000 should be credited to Accounts Payable and USD 40,000 should be credited to Accumulated Depreciation.

Prepare journal entries to record the costs of jobs and to record the transfer of completed jobs to Finished Goods Inventory and to Cost of Goods Sold. Transfer any

underapplied or overapplied overhead to Cost of Goods Sold. The company had no beginning or ending inventories.

Alternate problem E Sullivan Company applied overhead to production using a predetermined overhead rate based on machine-hours. Budgeted data for 2010 are:

Budgeted machine-hours	75,000
Budgeted manufacturing overhead	\$870,000

- Compute the predetermined overhead rate.
- Assume that in 2010, actual manufacturing overhead amounted to USD 997,500, and 86,000 machine-hours were used. Compute the amount of underapplied or overapplied manufacturing overhead for 2010.
- Prepare the journal entry to transfer underapplied or overapplied overhead to Cost of Goods Sold.

18.18 Beyond the numbers—Critical thinking

Business decision case A Companies often do work on a cost-reimbursement basis. That is, Company B reimburses Company A for the cost of doing work for Company B. Suppose your company has a contract that calls for reimbursement of direct materials and direct labor, but not overhead. Following are costs that various organizations incur; they fall into three categories: direct materials (DM), direct labor (DL), or overhead (OH).

Glue used to attach labels to bottles containing a patented medicine.

Compressed air used in operating paint sprayers for Student Painters, a company that paints houses and apartments.

Insurance on a factory building and equipment.

A production department supervisor's salary.

Rent on factory machinery.

Iron ore in a steel mill.

Oil, gasoline, and grease for forklift trucks in a manufacturing company's warehouse.

Services of painters in building construction.

Cutting oils used in machining operations.

Cost of paper towels in a factory employees' washroom.

Payroll taxes and fringe benefits related to direct labor.

The plant electricians' salaries.

Crude oil to an oil refinery.

Copy editor's salary in a book publishing company.

a. Classify each of these items as direct materials, direct labor, or overhead.

b. Assume your classifications could be challenged in a court case. Indicate to your attorneys which of your answers for part a might be successfully disputed by the opposing attorneys. In which answers are you completely confident?

Business decision case B Quality Painters, Inc., uses a job cost system. As of 2010 January 1, its records showed the following inventory balances:

Materials	\$ 7,000
Work in process	50,000
Finished goods	0

The work in process inventory consisted of two jobs:

Job No.		Direct Materials	Direct Labor	Overhead	Total
100	Community housing	\$ 9,000	\$12,000	\$ 4,000	\$25,000
101	Regal apartments	10,000	9,000	6,000	25,000
		\$19,000	\$21,000	\$10,000	\$50,000

Here are data for the company for January:

Materials purchased, USD 90,000.

Direct labor costs: direct labor to Job No. 100, USD 20,000; to Job No. 101, USD 48,000; and to Job No. 102 (a new job), USD 50,000. Indirect labor, USD 10,000.

Direct materials used: direct materials for Job No. 100, USD 15,600; for Job No. 101, USD 28,800; and for Job No. 102, USD 48,000. Supplies (indirect materials) used amounted to USD 4,000.

Overhead is assigned to jobs at USD 5 per labor-hour, with 1,000 labor-hours to Job 100 and 2,000 labor-hours each to Jobs 101 and 102.

All three jobs were completed in January.

Sales revenues for January were USD 350,000 for the three jobs.

Overhead costs incurred other than indirect labor and indirect materials were depreciation, USD 6,000, and utilities, fuel, and miscellaneous, USD 6,000.

Management is concerned about the relationship between costs incurred on jobs and the costs expected to be incurred, and has asked for your help. Here are the expected total costs (direct materials, direct labor, and overhead) for the three jobs:

Job 100	\$ 60,000
Job 101	120,000
Job 102	130,000

These cost estimates cover the entire job, including both costs in beginning Work in Process Inventory and costs incurred during January.

a. Compare the costs incurred on each job, including the costs in beginning Work in Process Inventory and costs incurred during January with the expected costs. Is the company keeping its costs below the expected costs for each job?

b. Prepare an income statement for January 2010 assuming selling and administrative expenses for January were USD 50,000. Don't forget to transfer any underapplied or overapplied overhead balance to Cost of Goods Sold.

c. Is the company profitable (that is, showing net income greater than zero)? What suggestions can you make for management to help increase the company's net income?

Writing assignment C Refer to Presley Manufacturing company, Problem C. Assume the newly hired executive is a whiz at marketing, but a person whose eyes glaze over at the sight of a number. The executive wants you to explain the financial results for the year in words. Essentially, assume the executive has not seen the financial statements prepared. What would you say to convey the message in the financial statements? Keep it short—less than 100 words.

Ethics case – Writing experience D Refer to the Ethical Perspective discussion of Comserv's activities entitled “High pressure sales tactics and creative accounting”. As a salesperson, how would you respond if your boss asked you to backdate contracts from 2010 January 3, to 2009 December 28? What if you were asked to backdate the contracts from 2010 February 1, to 2009 December 28? Assume December 31 is the company's fiscal year-end.

Ethics case E Suzie Garcia, an accountant for a consulting firm, had just received the monthly cost reports for the two jobs she supervises: one for Arrow

Space, Inc., and one for the US government. She immediately called her boss after reading the figures for the Arrow Space job.

"We are going to be way over budget on the Arrow Space contract," she informed her boss. "The job is only about three-fourths complete, but we have spent all the money that we had budgeted for the entire job."

"You had better watch these job costs more carefully in the future," her boss advised. "Meanwhile, charge the rest of the costs needed to complete the Arrow Space job to your US government job. The government will not notice the extra costs. Besides, we get reimbursed for costs on the government job, so we will not lose any money on this problem you have with the Arrow Space contract."

What should Suzie do? Does it matter that Suzie's company is reimbursed for costs on the US government contract? Explain.

Group project – Ethical perspective F Refer to the “An ethical perspective” discussion of Comserv's activities. As a salesperson, suppose your boss asked you to write a side agreement that allowed a customer to back out of a contract, and insisted that you not reveal the side contract to anyone else in your organization. You like your job a lot, and you will probably lose it if you do not comply with your boss's wish. In groups of three, discuss how you would respond to your boss. Try to develop a creative way to handle this situation. Choose a group spokesperson to report to the class.

Group project G In teams of two or three students, interview in person or by speakerphone, a businessperson in your community who uses job costing (for example, businesses that produce custom products such as homes, signs, or landscape design, or business consultants). Ask how this person assigns costs to products and how this information affects business decisions. Keep in mind that many businesspeople use terms other than job costing and manufacturing overhead. Be flexible with your use of accounting terminology in this interview. Each team should write a memorandum to the instructor summarizing the results of the interview. Information contained in the memo should include:

Date:

To:

From:

Subject:

Content of the memo must include the name and title of the person interviewed, name of the company, date of the interview, examples of the use of accounting information for decision making, and any other pertinent information.

Group project H In teams of two or three students, interview the manager of a campus print shop or a print shop in the area about how the company bids on prospective jobs. Does it use cost information from former jobs that are similar to prospective ones, for example? Does it have a specialist in cost estimation who estimates the costs of prospective jobs? Each team should write a memorandum to the instructor summarizing the results of the interview. Information contained in the memo should include:

Date:

To:

From:

Subject:

Content of the memo must include the name and title of the person interviewed, name of the company, date of the interview, and information responding to the questions above.

18.19 Using the Internet—A view of the real world

Visit the website for a high technology company, such as HP, Intel Corporation, or IBM, and locate its annual report. Review the annual report to gain a general understanding of the company's primary business segments and products. Write a report addressing the following questions based on your research. What products or services are provided by the company? How does the financial information provided in the annual report (focus on the income statement) differ from financial information used for managerial accounting purposes? As a manager making business decisions within the company, what additional information would you need? (Remember that the income statement may be referred to using different terminology such as statement of earnings or statement of operations.)

Company

Website

Hewlett Packard

[Http://www.hp.com](http://www.hp.com)

Intel Corporation

[Http://www.intel.com](http://www.intel.com)

IBM

[Http://www.ibm.com](http://www.ibm.com)

Visit the following website for Wells Fargo (a financial institution) and locate its annual report:

<http://www.wellsfargo.com>

Review the annual report to gain a general understanding of the company's primary business segments and products. Write a report addressing the following questions based on your research. What products or services are provided by the company? How does the financial information provided in the annual report (focus on the income statement) differ from financial information used for managerial accounting purposes? As a manager making business decisions within the company, what additional information would you need? (Remember that the income statement may be referred to using different terminology such as statement of earnings or statement of operations.)

Visit the following website for Home Depot (a retail organization) and locate its annual report:

<http://www.homedepot.com>

Review the annual report to gain a general understanding of the company's primary business segments and products. Write a report addressing the following questions based on your research. What products or services are provided by the company? How does the financial information provided in the annual report (focus on the income statement) differ from financial information used for managerial accounting purposes? As a manager making business decisions within the company, what additional information would you need? (Remember that the income statement may be referred to using different terminology such as statement of earnings or statement of operations.)

18.20 Answers to self-test

18.20.1 True-false

False. Managerial accounting is for internal use by managers, not external use, and gives more detailed information than financial accounting.

True. The motors are direct materials, and they are product costs.

False. Because bottling soft drinks is a process, the plant would not use job costing.

False. The answer is the opposite. The estimated total overhead is the numerator, and the expected level of activity is the denominator.

False. Overhead can be applied to jobs during the period.

True. Selling and administrative expenses are part of period costs under both absorption and variable costing methods.

18.20.2 Multiple-choice

b. Indirect materials are included under overhead.

a. Selling and administrative expenses are period costs for financial accounting purposes.

b. A merchandiser uses Merchandise Inventory and Cost of Goods Available for Sale, whereas a manufacturer uses Finished Goods Inventory and Cost of Goods Available for Sale.

d. All of the answers are true.

d. Both (a) and (c) are advantages of using a predetermined overhead rate.

c. $\text{USD } 15 = \frac{(\text{USD } 360,000 + \text{USD } 90,000)}{30,000 \text{ machine-hours}}$.

a.

Manufacturing overhead	22,500	
Various accounts		22,500
Work in process inventory	21,000	
Manufacturing overhead		21,000

Note the predetermined overhead rate times the actual activity is $\text{USD } 0.60 \times 35,000 \text{ machine-hours} = \text{USD } 21,000$.

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