

## CHAPTER 9

# Long-Lived Assets

### KEY POINTS

The following key points are emphasized in this chapter:

- **How the matching principle underlies the methods used to account for long-lived assets.**
- **Major questions addressed when accounting for long-lived assets and how the financial statements are affected.**
- **Major economic consequences associated with the methods used to account for long-lived assets.**
- **Costs that should be included in the capitalized cost of a long-lived asset.**
- **Accounting treatment of postacquisition expenditures.**
- **How the cost of a long-lived asset is allocated over its useful life and the alternative allocation methods.**
- **Disposition of long-lived assets.**
- **The increasing importance of fair market value and issues that must be addressed when using fair market value as a basis for long-lived assets.**

The Pepsi Bottling Group recently reported that its depreciation expense will be lower, boosting the bottom line, due to successful maintenance allowing changes in asset depreciation. Depreciation lives on manufacturing equipment, for example, are being changed to fifteen from ten years. The company said the change would reduce depreciation expense by about \$58 million and increase earnings 22 cents a share. “The primary reason for this is that our extensive maintenance programs have enabled us to extend the operating lives of our assets well beyond their previous book lives,” said company management.

The methods used to account for property, plant, and equipment vary greatly across companies and can have dramatic effects on reported income. These methods are covered in this chapter.

Long-lived assets are used in the operations of a business and provide benefits that extend beyond the current operating period. Included in this category of assets are land, buildings, machinery, equipment, natural resource costs, intangible assets, and deferred costs.

**Land** includes the cost of real estate used in the operations of the company. **Fixed assets**, such as buildings, machinery, and equipment, are often located on this real estate. **Natural resource costs** include the costs of acquiring the rights to extract natural resources. Such costs are very important in the operations of the extractive industries (e.g., mining, petroleum, and natural gas). **Intangible assets** are characterized by rights, privileges, and benefits of possession rather than physical existence. Examples include the costs of acquiring patents, copyrights, trademarks, and goodwill. **Deferred costs** represent a miscellaneous category of intangible assets, often including prepaid expenses that provide benefits for a length of time that extends beyond the current period, organization costs, and other startup costs associated with beginning operations (e.g., legal and licensing fees). These definitions are often firm-specific. Land, for example, represents the inventory of a real estate firm, but it is a long-lived asset for a retailer. Similarly, Boeing carries aircraft in its inventory that when sold becomes a fixed asset on the balance sheet of United Airlines, the purchaser. The methods used to account for land, fixed assets, natural resource costs (often using an account called property, plant, and equipment), and intangible assets and deferred costs are covered in this chapter.

Shareholders, investors, creditors, managers, and auditors are interested in the nature and condition of a company’s long-lived assets because such assets represent the company’s capacity to produce and sell goods and/or services in the future. Planning and executing major capital expenditures for such items as land, buildings, and machinery are some of management’s most important concerns. Long-lived asset turnover (sales/average long-lived assets) is a financial ratio used to assess how efficiently a company uses its long-lived assets. In general, if the ratio is high, the company is generating large amounts of sales with a relatively small investment in long-lived assets. As discussed in the next section, this ratio may be particularly useful when comparing the relative performance of manufacturers and service enterprises.

## THE RELATIVE SIZE OF LONG-LIVED ASSETS

As Figure 9–1 illustrates, investments in noncurrent assets tend to be large for services, manufacturers, and retailers, and relatively small for Internet firms and financial institutions. Services like AT&T must constantly invest in new technology, and restaurant services like Wendy’s/Arby’s continually add and update facilities. Retailers invest heavily in stores (Kroger and Lowe’s), while natural resource production (Chevron)

**FIGURE 9-1**

Property, plant, and equipment plus intangibles as a percentage of total assets

	Property, Plant, and Equipment + Intangibles/Total Assets
<b>Manufacturing:</b>	
General Electric	0.22
Chevron (Oil drilling and refining)	0.60
<b>Retail:</b>	
Kroger (Grocery retail)	0.66
Lowe's (Hardware retail)	0.70
<b>Internet:</b>	
Yahoo! (Internet search engine)	0.49
Cisco (Internet systems)	0.27
<b>General Services:</b>	
AT&T (Telecommunications services)	0.88
Wendy's/Arby's (Restaurant services)	0.87
<b>Financial Services:</b>	
Bank of America (Banking services)	0.06
Goldman Sachs (Investment services)	0.01

relies heavily on property, plant, and equipment. The relative size of the facilities for financial institutions is swamped by investments in securities and loans, and the financial subsidiary of GE (GE Capital), with its large balance of receivables, dilutes the importance of property, plant, and equipment as a percentage of total assets. The main infrastructure for Internet firms (Yahoo and Cisco) is largely electronic, not “bricks and mortar.”



Chevron, Yahoo!, and Goldman Sachs are three well-known U.S. companies—one a major manufacturer, one an Internet company, and one a financial institution. Rank them in terms of how important fixed asset accounting is to their financial statements. Briefly explain.

## LONG-LIVED ASSET ACCOUNTING: GENERAL ISSUES AND FINANCIAL STATEMENT EFFECTS

The matching principle states that efforts (expenses) should be matched against benefits (revenues) in the period when the benefits are recognized. The cost of acquiring a long-lived asset, which is expected to generate revenues in future periods, is, therefore, capitalized in the period of acquisition. As the revenues associated with the long-lived asset are recognized, these costs are **amortized** with a periodic adjusting journal entry. Stated another way, since expenses represent the costs of assets consumed in conducting business, at the end of each accounting period an entry is recorded to reflect the expense associated with the portion of the long-lived asset consumed during that period.

The form of journal entries to capitalize and amortize a piece of equipment follows. Assume that the equipment is purchased on January 1 for \$10,000, and its cost is

amortized evenly over its four-year useful life. Recall that amortization of a fixed asset is called **depreciation** and that the dollar amount of the depreciation expense recognized each year is accumulated in an accumulated depreciation account.

<b>Jan. 1</b>	<b>Equipment (+A)</b>	<b>10,000</b>	
	<b>Cash (-A)</b>		<b>10,000</b>
	<i>Acquired equipment</i>		
<b>Dec. 31</b>	<b>Depreciation Expense (E, -RE)</b>	<b>2,500</b>	
	<b>Accumulated Depreciation (-A)</b>		<b>2,500</b>
	<i>Recognized depreciation during first year</i>		



Both Target Corporation and Carrefour, a giant French retailer that uses IFRS, report large depreciation add-backs in the operating section of the 2008 statement of cash flows. Why.

The preceding description and journal entries indicate implicitly that three basic questions must be answered when accounting for long-lived assets:

1. What dollar amount should be included in the capitalized cost of the long-lived asset?
2. Over what time period should this cost be amortized?
3. At what rate should this cost be amortized?

As the following illustration shows, the answers to these questions can have significant effects on the financial statements.

Assume that Rudman Manufacturing acquired equipment for a purchase price of \$9,000 and paid an additional \$3,000 to have it painted. Figure 9–2 compares the journal entries to record the acquisition and the depreciation charge and the resulting balance sheet value of the equipment in four different cases. In Case 1, Rudman capitalizes the entire \$12,000 cost and depreciates it evenly (\$4,000 per year) over a three-year period. In Case 2, Rudman capitalizes the \$9,000 purchase cost, expenses the \$3,000 painting charge, and depreciates the purchase cost evenly (\$3,000 per year) over a three-year period. In Case 3, Rudman capitalizes the entire \$12,000 cost and depreciates it evenly (\$6,000 per year) over a two-year period. In Case 4, Rudman capitalizes the entire \$12,000 cost and depreciates it over a three-year period using an accelerated rate; that is, greater depreciation charges are recognized in the early years of the asset's life.

Comparing Case 1 to Case 2 illustrates the financial statement effects of varying the amount of capitalized cost. Note that increasing the amount of capitalized cost (Case 1) reduces the total expense recognized in Year 1, but this increases the depreciation expense recognized during each year of the asset's useful life.

Comparing Case 1 to Case 3 illustrates the financial statement effects of varying the estimated useful life. As the life estimate gets shorter (Case 3), the amount of depreciation expense recognized in each year increases. In the extreme case, estimating the useful life of an asset at one year is equivalent to expensing its cost.



Delta Air Lines depreciates most of its airplanes over a 25-year life, while United normally uses a 30-year estimated useful life. Over the useful lives of these assets, how do these differences affect their balance sheet values and the income statement?

**FIGURE 9–2** The effects of depreciation period on the financial statements: Rudman Manufacturing

**CASE 1: \$12,000 cost is capitalized and depreciated evenly over a three-year period.**

YEAR 1		YEAR 2		YEAR 3	
Equipment (+A)	12,000				
Cash (–A)		12,000			
Depr. Exp. (E, –RE)	4,000	Depr. Exp. (E, –RE)	4,000	Depr. Exp. (E, –RE)	4,000
Accum. Depr. (–A)	4,000	Accum. Depr. (–A)	4,000	Accum. Depr. (–A)	4,000
Balance sheet value:*	\$ 8,000	\$4,000		\$0	

**CASE 2: \$9,000 cost is capitalized and depreciated evenly over a three-year period.**

YEAR 1		YEAR 2		YEAR 3	
Equipment (+A)	9,000				
Cash (–A)		9,000			
Maint. Exp. (E, –RE)	3,000				
Cash (–A)		3,000			
Depr. Exp. (E, –RE)	3,000	Depr. Exp. (E, –RE)	3,000	Depr. Exp. (E, –RE)	3,000
Accum. Depr. (–A)	3,000	Accum. Depr. (–A)	3,000	Accum. Depr. (–A)	3,000
Balance sheet value:*	\$ 6,000	\$3,000		\$0	

**CASE 3: \$12,000 cost is capitalized and depreciated evenly over a two-year period.**

YEAR 1		YEAR 2		YEAR 3	
Equipment (+A)	12,000				
Cash (–A)		12,000			
Depr. Exp. (E, –RE)	6,000	Depr. Exp. (E, –RE)	6,000		
Accum. Depr. (–A)	6,000	Accum. Depr. (–A)	6,000		
Balance sheet value:*	\$ 6,000	\$0		\$0	

**CASE 4: \$12,000 cost is capitalized and depreciated over a three-year period at an accelerated rate.**

YEAR 1		YEAR 2		YEAR 3	
Equipment (+A)	12,000				
Cash (–A)		12,000			
Depr. Exp. (E, –RE)	6,000	Depr. Exp. (E, –RE)	4,000	Depr. Exp. (E, –RE)	2,000
Accum. Depr. (–A)	6,000	Accum. Depr. (–A)	4,000	Accum. Depr. (–A)	2,000
Balance sheet value:*	\$ 6,000	\$2,000		\$0	

\*Balance sheet value, also known as book value, equals capitalized cost less accumulated depreciation.

Comparing Case 1 to Case 4 illustrates the financial statement effects of varying the depreciation rate. Using an accelerated rate (Case 4) increases the amount of depreciation expense recognized in the early years, but it gives rise to smaller amounts of depreciation expense in later years.

The differences among the four cases, with respect to the amount of expense recognized and the balance sheet value of the equipment, are summarized in Figure 9–3. Note that the total amount of expense recognized under the four cases is the same

**FIGURE 9-3**  
Comparative  
expense amounts  
and balance  
sheet values

	Year 1	Year 2	Year 3	Total
<b>CASE 1</b>				
Expense	\$4,000	\$4,000	\$4,000	\$12,000
Balance sheet value	8,000	4,000	0	
<b>CASE 2</b>				
Expense	6,000	3,000	3,000	12,000
Balance sheet value	6,000	3,000	0	
<b>CASE 3</b>				
Expense	6,000	6,000	0	12,000
Balance sheet value	6,000	0	0	
<b>CASE 4</b>				
Expense	6,000	4,000	2,000	12,000
Balance sheet value	6,000	2,000	0	

(\$12,000). Varying the capitalized cost, estimated life, and depreciation rate affects only the timing of the expense recognition throughout the three-year period.

Choosing to capitalize and amortize or expense the costs associated with acquiring long-lived assets can have significant effects on the financial statements. When AOL chose to capitalize, instead of expense, its marketing cost, the company boosted earnings by \$130 million. The major railroads, including Burlington Northern, CSX Santa Fe, Norfolk & Western, and Union Pacific, increased profits by an average of 25 percent when they chose to capitalize and amortize, instead of expense, the costs of laying track. The net income of Comserv, a Minneapolis-based maker of software systems, was boosted by \$6.5 million because the company chose to capitalize and amortize, instead of expense, software development costs. Changing the useful-life estimate or adjusting the rate at which a long-lived asset is amortized can also significantly affect the financial statements and important financial ratios. The Pepsi Bottling Group decreased expenses by \$58 million and increased earnings per share by 22 cents when it decided to depreciate the cost of its manufacturing equipment over a longer period of time. Blockbuster Video slowed the amortization period for its tapes from 9 to 36 months, a choice that added 20 percent to its reported income. Burlington Northern once disclosed that the company's net income was reduced by \$336 million when it increased the rate at which it depreciated its railroad assets.

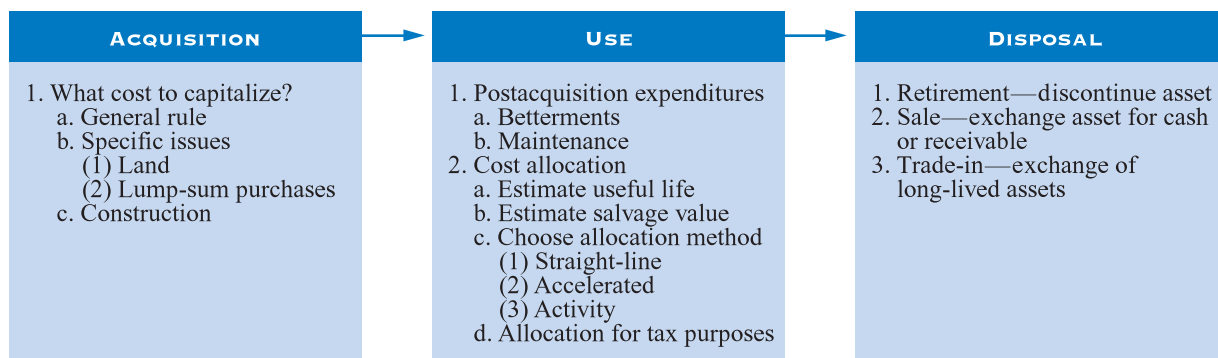


American Airlines once chose to extend the depreciation lives of its aircraft to conform more closely with practices in the airline industry. How did this choice affect American's reported income that year? How would this change affect the statement of cash flows? Briefly explain.

## AN OVERVIEW OF LONG-LIVED ASSET ACCOUNTING

Figure 9-4 summarizes and organizes the topics covered in the remainder of the chapter. As shown at the top of the figure, there are three points in time during the life of a long-lived asset when important accounting issues must be addressed: (1) when

FIGURE 9-4 Accounting for long-lived assets



the long-lived asset is acquired (purchased or manufactured), (2) while the long-lived asset is in use, and (3) when the long-lived asset is disposed of.

### ACQUISITION: WHAT COSTS TO CAPITALIZE?

The acquisition cost of a long-lived asset is determined by either (1) the fair market value (FMV) of the acquired asset or (2) the FMV of what was given up to acquire the asset, whichever is more readily determinable. In almost all cases, the FMV of what was given up is used because cash, which by definition is at FMV, is normally given up in such exchanges. Furthermore, the capitalized cost (i.e., the FMV of what was given up) should include all costs required to bring the asset into serviceable or usable condition and location.<sup>1</sup> Such costs include not only the actual purchase cost of the asset but also costs like freight, installation, taxes, and title fees. For example, suppose that the purchase cost of a piece of equipment is \$25,000, and it costs \$2,000 to have it delivered, \$1,500 to have it installed, and taxes and title fees total \$500 and \$300, respectively. The total capitalized cost of the equipment would then be \$29,300 (\$25,000 + \$2,000 + \$1,500 + \$500 + \$300), and the following journal entry would be entered to record the acquisition, assuming that cash is paid for the equipment.

Equipment (+A)	29,300	
Cash (-A)		29,300
<i>Acquired equipment</i>		



Zimmer, a major manufacturer of orthopedic equipment, increased its investment in property, plant, and equipment by almost \$250 million during 2008. Briefly explain how these costs were accounted for. Where on the statement of cash flows would one find evidence of these additions?

1. Some costs (e.g., storage costs incurred while waiting to put an asset into service) are not required to bring the asset into usable condition and therefore should be expensed.

## The Acquisition of Land

All costs incurred to acquire land and make it ready for use should be included in the land account. They include (1) the purchase price of the land; (2) closing costs, such as title, legal, and recording fees; (3) costs incurred to get the land in condition for its intended use, such as razing old buildings, grading, filling, draining, and clearing (less any proceeds from the sale of salvaged materials); (4) assumptions of any back taxes, liens, or mortgages; and (5) additional land improvements assumed to be permanent, such as landscaping, street lights, sewers, and drainage systems. While the costs incurred to acquire land and prepare it for use are capitalized, *they are not amortized* over future periods. The process of amortization requires the estimate of a useful life. Because land is considered to have an indefinite life, its cost cannot be amortized.



Under IFRS, a special land account called “investment property” is often found on the balance sheet. Such property is not used in the normal course of business, normally generating rental revenue and/or being held to take advantage of price appreciation. Under IFRS, investment property can be accounted for at cost or using mark-to-market accounting, which means that the balance sheet reflects its current market value, and changes in value from one period to the next are reflected in earnings. Under U.S. GAAP, investment property is included in the land account, and must be carried at cost.

## Lump-Sum Purchases

A special problem arises when more than one asset is purchased at a single (lump-sum) price. In such situations, the total purchase cost must be allocated to the individual assets. If the FMVs of the purchased assets can be objectively determined, the total purchase cost can be allocated to each asset on the basis of its relative FMV. This cost allocation scheme is based on the assumption that costs vary in direct proportion to FMV.

To illustrate, assume that ABC Incorporated purchases three assets (inventory, land, and equipment) from Liquidated Limited, a company that is in the process of liquidation. The total price for the assets is \$40,000. The individual FMVs of the three assets and the allocation of the \$40,000 purchase cost to each asset appear in Figure 9–5.

**FIGURE 9–5**  
Cost allocation on the basis of relative FMVs

	FMVs	Allocation Formula	Allocated Cost
Inventory	\$20,000	$[(\$20,000 \div \$50,000) \times \$40,000]$	\$16,000
Land	10,000	$[(\$10,000 \div \$50,000) \times \$40,000]$	8,000
Equipment	20,000	$[(\$20,000 \div \$50,000) \times \$40,000]$	16,000
<b>Total</b>	<u>\$50,000</u>		<u>\$40,000</u>



Note that the cost allocated to each asset is in direct proportion to the asset's portion of the total FMV. The inventory, for example, accounts for 40 percent (\$20,000/\$50,000) of the total FMV and thereby receives 40 percent (\$16,000/\$40,000) of the total costs. The equipment is treated similarly. Land accounts for 20 percent (\$10,000/\$50,000) of the total FMV and receives 20 percent (\$8,000/\$40,000) of the total cost.

Two features of this cost allocation approach are very important. First, it is based on FMVs, which by nature are very subjective and therefore are often expressed in terms of ranges rather than precise estimates. Second, while all three costs in this example are capitalized, each is treated differently in the future. The \$16,000 inventory cost will be converted to cost of goods sold when the inventory is sold, the \$8,000 land cost is not subject to amortization, and the \$16,000 equipment cost will be depreciated over the equipment's useful life. Taken together, these two features indicate that the subjective choice of FMVs can have significant effects on future net income amounts, a fact that management may be able to exploit. For example, if management wishes to maximize income, it can choose from within the FMV ranges values that allocate as much cost as possible to land, which will not be amortized, and as little as possible to inventory, which will be converted to cost of goods sold relatively soon. On the other hand, management can minimize income (e.g., income tax reporting, building hidden reserves, or taking a bath) by allocating as much cost as possible to inventory and as little as possible to land.

To illustrate, assume in the previous example that the FMV of equipment was assessed at \$20,000, but the FMVs of inventory and land were expressed as being somewhere within the following ranges: inventory (\$15,000–\$25,000), land (\$5,000–\$15,000). Figure 9–6 compares the resulting costs under two allocation schemes: (1) “Maximize future income” where the lowest value for inventory (\$15,000) and the highest value for land (\$15,000) are used, and (2) “Minimize future income” where the highest value for inventory (\$25,000) and the lowest value for land (\$5,000) are used.

**FIGURE 9–6**  
Comparing cost  
allocation  
methods

**(1) Maximize Future Income:**

	FMVs	Allocation Formula	Allocated Cost
Inventory	\$15,000	$[(\$15,000 \div \$50,000) \times \$40,000]$	\$12,000
Land	15,000	$[(\$15,000 \div \$50,000) \times \$40,000]$	12,000
Equipment	<u>20,000</u>	$[(\$20,000 \div \$50,000) \times \$40,000]$	<u>16,000</u>
Total	<u>\$50,000</u>		<u>\$40,000</u>

**(2) Minimize Future Income:**

	FMVs	Allocation Formula	Allocated Cost
Inventory	\$25,000	$[(\$25,000 \div \$50,000) \times \$40,000]$	\$20,000
Land	5,000	$[(\$ 5,000 \div \$50,000) \times \$40,000]$	4,000
Equipment	<u>20,000</u>	$[(\$20,000 \div \$50,000) \times \$40,000]$	<u>16,000</u>
Total	<u>\$50,000</u>		<u>\$40,000</u>

The procedure of allocating costs on the basis of FMVs is also used when a company acquires the assets and liabilities of another company (i.e., through the purchase of outstanding stock) and must allocate the purchase price to those assets and liabilities (see Chapter 8 and Appendix 8A). As illustrated in Figure 9–6, such allocations can be very subjective, giving management much reporting discretion in this area.



When Kellogg purchased the outstanding stock of Worthington Foods for \$350 million, the purchase price was allocated to current and noncurrent assets (\$218 million), liabilities (\$62 million), and goodwill (\$194 million). On what basis were these allocations made, and what kind of judgments were necessary to make them?

### Construction of Long-Lived Assets

When companies construct their own long-lived assets, all costs required to get the assets into operating condition must be allocated to the long-lived asset account, including the costs of materials, labor, and overhead used in the construction process. The costs may also include interest on funds borrowed to finance the construction. Note the following excerpt from the 2008 annual report of Federal Express:

*Interest on funds used to finance the acquisition and modification of aircraft . . . construction of certain facilities, and development of certain software up to the date the asset is ready for its intended use is capitalized and included in the cost of the asset if the asset is actively under construction.*

Although determining the costs of materials and labor is relatively straightforward, allocating overhead and interest to the cost of long-lived assets can be difficult and is often arbitrary. Such issues are normally covered in management or intermediate financial accounting courses.



AT&T capitalized over \$3.5 billion in costs incurred to construct new facilities during 2008. The funds to finance this construction were in large part borrowed by AT&T, appearing as liabilities on the balance sheet. When the interest charges on this debt were recorded by AT&T, did the company debit the interest expense account? If so, why; if not, what account was debited?

### POSTACQUISITION EXPENDITURES: BETTERMENTS OR MAINTENANCE?

Costs are often incurred after an acquired or manufactured long-lived asset is placed into service. Such **postacquisition expenditures** serve either to improve the existing asset or merely to maintain it. Costs incurred to improve the asset are called

**betterments**, and costs incurred merely to repair it or maintain its current level of productivity are classified as **maintenance**.

The following guidelines are used to distinguish betterments from maintenance expenditures. In order to be considered a betterment, a postacquisition expenditure must improve the long-lived asset in at least one of four ways:

1. Increase the asset's useful life over that which was originally estimated.
2. Improve the quality of the asset's output.
3. Increase the quantity of the asset's output.
4. Reduce the costs associated with operating the asset.

Betterments are usually infrequent and tend to involve large dollar amounts. Maintenance expenditures, on the other hand, fail to meet any of the criteria mentioned above and tend to be periodic. Also, maintenance items are normally small, but certain expenditures (e.g., replacing a building roof every ten years) can be significant.

Postacquisition expenditures classified as betterments should be capitalized, added to the cost of the long-lived asset, and then amortized over its remaining life. Expenditures classified as maintenance should be treated as current expenses. For example, note the following excerpt from the 2008 annual report of Molson Coors Brewing Company:

*Expenditures for new facilities and improvements that substantially extend the capacity or useful life of an asset are capitalized. . . . Ordinary repairs and maintenance are expensed as incurred.*



The *Baltimore Sun* reported that the famous WorldCom fraud was easy to spot. "The scheme was not complicated: the company's financial officers recorded routine maintenance expenses totaling \$3.9 billion as capital expenditures." Explain how this choice would affect the financial statements in the current and future periods.

Distinguishing between a betterment and a maintenance expenditure, even with the criteria mentioned above, is often difficult in practice, giving management reporting discretion in this area. In many cases, however, materiality plays an important role because postacquisition expenditures are frequently small, and in such situations they are expensed, regardless of their nature. To illustrate the accounting treatment for betterments and maintenance expenditures, assume that Jerry's Delivery Service purchased an automobile on January 1, 2011, for \$10,000. The purchase cost was capitalized, and the useful life of the automobile was estimated to be four years from the date of purchase. Each year, Jerry had the car tuned up and serviced at a cost of \$300. During the second year, the muffler was replaced for \$80, and during the third year, the car was painted at a cost of \$450. At the beginning of the fourth year, Jerry paid \$1,000 to have the engine completely overhauled. The overhaul increased the automobile's expected life beyond the original estimate by an additional year. Figure 9–7 traces the book value, depreciation, and maintenance expenses associated with the automobile over its five-year life.

**FIGURE 9-7**  
Betterments and maintenance expenditures: Jerry's Delivery Service

	2011	2012	2013	2014	2015
<b>Book value (1/1)</b>	\$10,000	\$7,500	\$5,000	\$2,500	\$1,750
<b>Overhaul</b>				1,000	
<b>Less: Depreciation</b>	<u>2,500<sup>b</sup></u>	<u>2,500</u>	<u>2,500</u>	<u>1,750<sup>c</sup></u>	<u>1,750</u>
<b>Book value<sup>a</sup> (12/31)</b>	<u>\$ 7,500</u>	<u>\$5,000</u>	<u>\$2,500</u>	<u>\$1,750</u>	<u>\$ 0</u>
<b>Maintenance expenses:</b>					
<b>Tune-up</b>	300	300	300	300	300
<b>Muffler replacement</b>		80			
<b>Paint job</b>			450		

<sup>a</sup>Book value equals cost less accumulated depreciation.  
<sup>b</sup>2,500 = (\$10,000 ÷ 4 years)  
<sup>c</sup>1,750 = (\$2,500 + \$1,000) ÷ 2 years

Note that all postacquisition costs are treated as expenses except for the overhaul, which increased the automobile's life beyond the original four-year estimate. The \$1,000 cost of the overhaul was capitalized at the beginning of the fourth year and, with the book value (\$2,500) at that time, was depreciated evenly over the remaining two years of the car's useful life.



The 2008 annual report of Exxon Mobil states, "Maintenance and repairs, including planned major maintenance, are expensed as incurred. Major renewals and improvements are capitalized." Which of these costs are considered betterments? Which are considered maintenance? Explain.

## COST ALLOCATION: AMORTIZING CAPITALIZED COSTS

Once the cost of a long-lived asset has been determined, it must be allocated over the asset's useful life. Such allocation is necessary if the costs are to be matched against the benefits produced by the asset. The allocation process requires three steps: (1) estimate a useful life, (2) estimate a salvage value, and (3) choose a cost allocation (depreciation) method.

### Estimating the Useful Life and Salvage Value

Accurately estimating the useful life and salvage value of a long-lived asset is extremely difficult. An important consideration is the **physical obsolescence** of the asset. At what time in the future will the asset deteriorate to the point when repairs are not economically feasible, and what will be the asset's salvage value at that time? It is virtually impossible to predict accurately the condition of an asset very far into the future, let alone predict the **salvage value**, the dollar amount that can be recovered when the asset is sold, traded, or scrapped.



Robert Olstein, a veteran accounting expert, once noted, “Beware of companies that overestimate how much their fixed assets will be worth down the road. Optimistic assumptions allow a company to reduce the amount of depreciation it reports.” Explain what he means. Who is he warning and why?

The problem of predicting useful lives and salvage values is complicated further by technological developments. The usefulness of a long-lived asset is largely determined by technological advancements, which could at any time render certain long-lived assets obsolete. **Technical obsolescence**, in turn, could force the early replacement of a long-lived asset that is still in reasonably good working order.

As a result, generally accepted accounting principles provide no clear guidelines for determining the useful lives and future salvage values of long-lived assets. In practice, many companies assume salvage value to be zero and estimate useful lives by referring to guidelines developed by the Internal Revenue Service. These guidelines, however, were established for use in determining taxable income and need not be followed in the preparation of the financial statements. Consequently, management can use its own discretion when estimating salvage values and useful lives. As long as the estimates seem reasonable and are applied in a systematic and consistent manner, auditors generally allow managers to do what they wish in this area. Sears, for example, depreciates its equipment generally over a five- to ten-year period and its real property over a forty- to fifty-year period. Figure 9–8 shows typical ranges of estimated useful lives for different kinds of fixed assets reported by major U.S. companies.

**FIGURE 9–8**  
Estimated useful  
lives of fixed  
assets

<b>Buildings and improvements</b>	<b>10–50 years</b>
<b>Machinery and equipment</b>	<b>3–20 years</b>
<b>Furniture and fixtures</b>	<b>5–12 years</b>
<b>Automotive equipment</b>	<b>3–6 years</b>

These broad ranges can complicate the decisions of individuals who use financial statements to compare performance across companies. This problem is particularly evident in the airline industry, where the estimated lives used to depreciate aircraft often differ across companies. Delta Air Lines typically depreciates its planes over twenty-five years; other airlines, like United, estimate a life of thirty years for the same 727s that Delta writes off in twenty-five.



Emerson Electronics reports that estimated service lives for buildings range from 30 to 40 years, and for machinery and equipment range from 8 to 12 years. Explain why the ranges are so different for the two asset types, and how Emerson management could manage reported income with the choice of the estimated useful life of a new building.

### Revising the Useful-Life Estimate

Estimating the useful life of a long-lived asset when it is acquired is a very subjective process. After using such assets for several years, companies often find that their

original estimates were inaccurate. For example, Delta Air Lines has increased the estimated useful life of its aircraft more than once. In these situations, the portion of the long-lived asset's depreciation base (cost – salvage value) that has not yet been depreciated is depreciated over the remainder of the revised useful life.

To illustrate, suppose that on January 1, 2006, ABC Airlines purchased aircraft for \$110,000 and estimated the useful life of the aircraft and the salvage value to be ten years and \$10,000, respectively. If the company depreciated equal portions (\$10,000) of the amount subject to depreciation (\$100,000) each year, it would have recognized \$50,000 of accumulated depreciation by the end of 2010, and the aircraft would be reported on the 2010 balance sheet in the following manner:

<b>Aircraft</b>	<b>\$110,000</b>	
<b>Less: Accumulated depreciation</b>	<u>50,000</u>	<b>60,000</b>

Assume that as of January 1, 2011, the company believes that the aircraft will actually be in service through 2021, ten years beyond the present time, and fifteen years from the date of acquisition (2006). In other words, the company changed its original useful-life estimate from ten to fifteen years. At that point, ABC would not make a correcting journal entry to restate the financial statements of the previous periods. Instead, it would simply depreciate the remaining depreciation base (\$60,000 [book value] – \$10,000 [salvage value]) over the remaining life of the aircraft (ten years). The following journal entry would be recorded in the company's books at the end of 2011 and at the end of each year until and including December 31, 2021.

<b>Dec. 31</b>	<b>Depreciation Expense (E, –SE)</b>	<b>5,000</b>	
	<b>Accumulated Depreciation (–A)</b>		<b>5,000</b>
	<i>Recognized depreciation on aircraft (\$50,000/10 yr)</i>		



In late 2009 PepsiCo announced that its earnings should rise 11 percent to 13 percent for 2010, a growth rate considerably higher than in recent quarters. Analysts following the company and its rival Coca-Cola, however, stated that one of the reasons behind the higher projected earnings for PepsiCo was a change to its asset depreciation schedules. Why would the analysts mention the change to depreciation when discussing earnings growth, and how might PepsiCo respond? What steps should an analyst take when comparing the 2010 performance levels of PepsiCo and Coca Cola?

Depreciating the book value of the asset over the remaining useful life, as of the date of the estimate revision, is known as treating the revision *prospectively*. That is, no “catch-up” adjusting entry is recorded to restate the books. Estimate revisions are not considered errors, and therefore, the financial statements as of the time of the revision are not in need of correction. Instead, the new information that led to the revision affects only the manner in which the aircraft is accounted for in the future. However, if the revision gives rise to a reported net income amount that is materially different from what would have been reported without the revision, the company is required to describe the revision in the footnotes. The excerpt below was taken from an annual report of Delta Air Lines.

[T]he Company increased the estimated useful lives of substantially all of its flight equipment. . . . The effect of this change was a decrease of approximately \$130 million in depreciation expense and a \$69 million [after income taxes] increase in net income. . . .

## Cost Allocation (Depreciation) Methods

The useful-life estimate determines the period of time over which a long-lived asset is to be amortized. The salvage value estimate in conjunction with the capitalized cost determines the **depreciation base**<sup>2</sup> (capitalized cost – salvage value): the dollar amount of cost that is amortized over the asset's useful life. The cost allocation methods discussed in this section determine the rate of amortization or, in other words, the amount of cost that is to be converted to an expense during each period of a long-lived asset's useful life. Three basic allocation (depreciation) methods are allowed under generally accepted accounting principles: (1) straight-line, (2) accelerated, and (3) activity.

### THE STRAIGHT-LINE METHOD OF AMORTIZATION (DEPRECIATION)

The discussion and most of the examples so far have assumed that equal dollar amounts of a long-lived asset's cost are amortized during each period of its useful life. This assumption, which is referred to as the **straight-line method**, is used by most companies to depreciate their fixed assets and by almost all companies to amortize their intangible assets.<sup>3</sup> The straight-line method can be chosen for several reasons: (1) management believes that the asset provides equal benefits across each year of its estimated useful life, (2) in comparison with the other methods, it is simple to apply, and (3) it tends to produce higher net income numbers and higher long-lived asset book values in the early years of a long-lived asset's life. The following example illustrates the straight-line method.<sup>4</sup>

Assume that Midland Plastics purchased a van wagon for \$15,000 on January 1, 2008. The life and salvage value of the wagon are estimated to be five years and \$3,000, respectively. Under the straight-line method, the annual depreciation expense would be calculated as shown in Figure 9–9, which also includes the related adjusting journal entry.

**FIGURE 9–9**  
The straight-line method:  
Midland Plastics

#### FORMULA

$$\begin{array}{l} \text{Straight-line depreciation} = (\text{Cost} - \text{Salvage value})^* \div \text{Estimated life} \\ \$2,400 \text{ per year} \qquad \qquad = (\$15,000 - \$3,000) \qquad \qquad \div 5 \text{ years} \end{array}$$

#### JOURNAL ENTRY

Depreciation Expense (E, –RE)	2,400	
Accumulated Depreciation (–A)		2,400
<i>Recognized annual depreciation</i>		

\*Depreciation base

Under the straight-line method, the same dollar amount of depreciation is recognized in each year of the asset's useful life. At \$2,400 per year for five years, the total

2. Depletion base and amortization base are the terms used for natural resource costs and intangibles, respectively.

3. *Accounting Trends and Techniques* (New York: AICPA, 2009) reports that, of the U.S. companies surveyed, 99 percent used the straight-line method to depreciate at least some of their fixed assets. The straight-line method is used predominantly to depreciate buildings.

4. The information from this example is also used in the illustration of the accelerated method that follows.

amount of depreciation taken would be \$12,000, the depreciation base. At the end of the wagon's estimated life, its book value (\$15,000 - \$12,000) is equal to its estimated salvage value (\$3,000).



In the footnotes to its 2008 financial statements Target reported that depreciation was computed using the straight-line method over estimated useful lives. Fixtures and equipment were depreciated over useful lives ranging from 3 to 15 years, and the company reported \$4.3 billion of fixtures and equipment on its 2008 balance sheet. Compute an estimate of the amount of depreciation Target recorded during 2008 on its fixtures and equipment.

### DOUBLE-DECLINING-BALANCE METHOD

The next method discussed is the double-declining-balance method, an accelerated method of amortization. It is called an **accelerated method** because greater amounts of the capitalized cost are allocated to the earlier periods of the asset's life than to the later periods. Accelerated methods are used by some companies to depreciate fixed assets when preparing financial reports: Boeing, Inc., for example, uses double-declining-balance as one of its depreciation methods.<sup>5</sup>

To illustrate the **double-declining-balance method**, assume once again the facts of the preceding example. Figure 9-10 shows the general formula and calculations for each year.

Under the double-declining-balance method, each year's depreciation is computed by multiplying 2 by the book value of the asset (cost - accumulated depreciation) and dividing the result by  $N$ , the estimated useful life.<sup>6</sup> Note that salvage value is not part

FIGURE 9-10

The double-declining-balance method:  
Midland Plastics

#### FORMULA

**Double-Declining-Balance Depreciation** =  $(2 \times \text{Book Value}) \div N$

where **Book value** = cost - accumulated depreciation  
 $N$  = the estimated useful life

#### CALCULATIONS

2008:	$(2 \times \$15,000) \div 5 =$	\$ 6,000
	Accumulated depreciation = \$6,000	
2009:	$[2 \times (\$15,000 - \$6,000)] \div 5 =$	3,600
	Accumulated depreciation = \$9,600 (\$6,000 + \$3,600)	
2010:	$[2 \times (\$15,000 - \$9,600)] \div 5 =$	2,160
	Accumulated depreciation = \$11,760 (\$9,600 + \$2,160)	
2011:	Reduce book value (\$15,000 - \$11,760) to salvage value (\$3,000)	240
	Accumulated depreciation = \$12,000 (\$11,760 + \$240)	
2012:	No depreciation recognized because book value cannot be reduced below salvage value	0
	<b>Total depreciation expense recognized</b>	<u>\$12,000</u>

5. Another accelerated method used by a few companies (e.g., General Electric) is called sum-of-the-years'-digits. Compared to double-declining-balance, it is a less extreme form of accelerated depreciation.

6. The formula for the double-declining-balance method can also be expressed as  $([\text{cost} - \text{accumulated depreciation}] \times [2 \times \text{the straight-line rate}])$ . The straight-line rate is equal to the percentage of the depreciation base charged each year under the straight-line method ( $1/N$ ). Using the numbers in the example above, this formula appears as follows:  $(\$15,000 - \text{accumulated depreciation}) \times 40$  percent.



of the general formula. However, the book value of the asset cannot be reduced below the asset's estimated salvage value. In 2011, for example, only the amount of depreciation (\$240) necessary to bring the asset's book value (\$15,000 - \$11,760) to its estimated salvage value (\$3,000) was recognized. For this same reason, no depreciation expense was recognized in 2012.

### STRAIGHT-LINE AND DOUBLE-DECLINING-BALANCE: A COMPARISON

This section compares the financial statement effects of the two cost-allocation methods discussed above. The general formulas, the depreciation expenses, and the related book values for each year of the estimated useful life under each of the two methods appear in Figure 9-11. This comparison uses the same information given in the previous examples.

FIGURE 9-11

Depreciation methods compared

	Straight-Line			Double-Declining-Balance		
	SL = $(C - SV) \div N$			$\frac{2 \times BV}{N}$		
	EXPENSE	BOOK VALUE		EXPENSE	BOOK VALUE	
2008	2,400	15,000		6,000	15,000	
		<u>- 2,400</u>	12,600		<u>- 6,000</u>	9,000
2009	2,400	15,000		3,600	15,000	
		<u>- 4,800</u>	10,200		<u>- 9,600</u>	5,400
2010	2,400	15,000		2,160	15,000	
		<u>- 7,200</u>	7,800		<u>- 11,760</u>	3,240
2011	2,400	15,000		240	15,000	
		<u>- 9,600</u>	5,400		<u>- 12,000</u>	3,000
2012	2,400	15,000		0	15,000	
		<u>- 12,000</u>	3,000		<u>- 12,000</u>	3,000

The straight-line method results in the same amount of depreciation (\$2,400) in each of the five years. The accelerated method shows greater amounts of depreciation in the early periods of the asset's life (2008 and 2009) and lesser amounts of depreciation in the later periods (2011 and 2012). Both methods recognize total depreciation of \$12,000 over the five-year period and thus depreciate the long-lived asset only to its salvage value (\$3,000).

Choosing between the two methods can have a significant effect on the timing of reported income. Assume that Midland Plastics, which purchased the wagon in the preceding examples, has revenues of \$12,000 and expenses other than depreciation of \$5,000 in each of the five years, 2008-2012. Figure 9-12 contains the income numbers for each of the two methods for each of the five years.

FIGURE 9-12

The comparative effects on net income of different depreciation methods

Methods	2008	2009	2010	2011	2012	Total
Straight-line	\$4,600	\$4,600	\$4,600	\$4,600	\$4,600	\$23,000
Double-declining-balance	1,000	3,400	4,840	6,760	7,000	23,000
<b>Note: The net income numbers were determined in the following manner:</b>						
Net income = \$12,000 (revenues) - \$5,000 (other expenses) - depreciation expense						

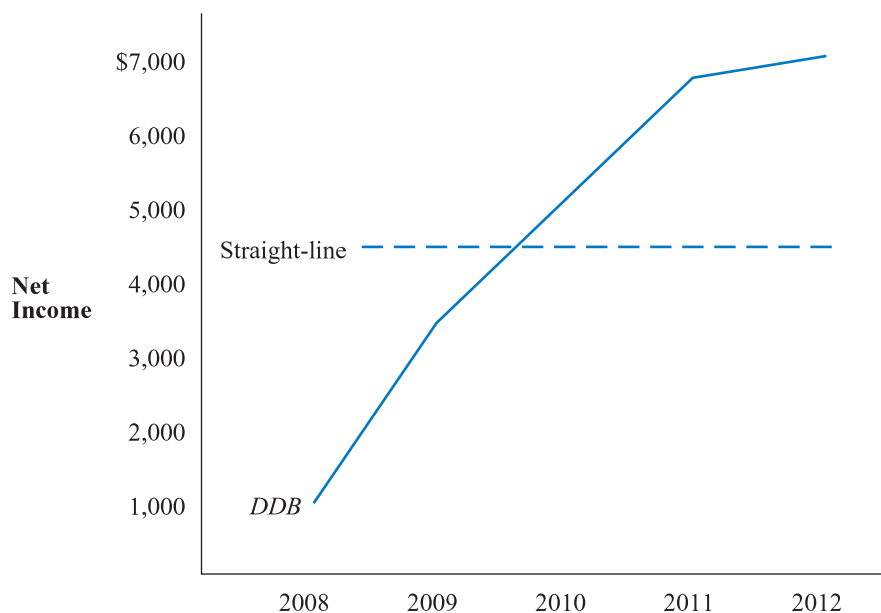


When Hewlett-Packard adopted the straight-line method of depreciation for all assets placed into service after a certain date, but continued with the use of accelerated methods for assets placed into service prior to that date, the company justified the change by claiming that straight-line is a better application of matching and that the new method more closely conforms to industry practices. How could straight-line be a better example of matching, and what advantage comes from conforming to industry practices?

Note first that the total income recognized across the five-year periods is the same (\$23,000) under each method because each method recognizes \$12,000 (\$15,000 – \$3,000) of depreciation expense over the life of the asset. However, the amount of depreciation recognized in each period differs, giving rise to different income patterns over the life of the asset. The graph in Figure 9–13 compares these income patterns.

**FIGURE 9–13**

Effects of depreciation methods on net income



Note: DDB = Double-declining-balance.

Note that compared to double-declining-balance, net income under the straight-line method is higher in the early periods and lower in the later periods of the asset's estimated useful life. In the early periods, the double-declining-balance method produces low levels of net income that increase rapidly over the life of the asset.



Three major competitors in the aerospace industry include Boeing, Lockheed Martin, and Northrop Grumman use both accelerated and straight-line methods for different assets. To depreciate fixed assets, Boeing uses primarily accelerated methods, Lockheed Martin uses accelerated for the first half of the assets' lives followed by straight-line, and Tristar uses straight-line. Discuss difficulties that are encountered by analysts who attempt to assess the relative performance of these three companies.

### THE ACTIVITY (UNITS-OF-PRODUCTION) METHOD AND NATURAL RESOURCE DEPLETION

The **activity method**<sup>7</sup> allocates the cost of a long-lived asset to future periods on the basis of its activity. This method is used primarily in the mining, oil, and gas industries to **deplete** the costs associated with acquiring the rights to and extracting natural resources. The following excerpt, for example, was taken from the annual report of Pennzoil, a large oil and gas mining company.

*Provision for depreciation, depletion, and amortization is determined on a field-by-field basis using the units-of-production method.*

The estimated life under the activity method is expressed in terms of units of activity (e.g., miles driven, units produced, barrels extracted) instead of years, as is done under the previous methods. In periods when an asset is very active (e.g., production is high), a relatively large amount of the cost is amortized. In periods when the asset is less active, relatively fewer costs are amortized.

To illustrate, assume that a company purchases mining properties for \$1 million in cash. It estimates that the properties will yield 500,000 saleable tons of ore, and the company mines 10,000 tons during the first year of production. The computation of the depletion rate and the journal entries that would be made to record this series of events appear in Figure 9–14.

**FIGURE 9–14**

Depletion rate and related journal entries

#### DEPLETION RATE

$$\$1,000,000 \div 500,000 \text{ estimated tons} = \$2 \text{ per ton}$$

#### JOURNAL ENTRIES

Mineral Deposits (+A)	1,000,000	
Cash (–A)		1,000,000
<i>Acquired right to extract ore</i>		
Depletion Expense (E, –SE)	20,000	
Mineral Deposits (or Accumulated Depletion) (–A)		20,000
<i>Recognized depletion for first year</i>		
<i>(10,000 tons × \$2 per ton)</i>		



ConocoPhillips, the large energy company, depreciates its fixed assets as follows: Property, plant, and equipment on the oil- and gas-producing properties are depreciated by the units-of-production method (activity method), while all other fixed assets are depreciated by the straight-line method. For those assets using straight-line, a 25-year useful life is used for refining assets, and 45-year useful life is used for pipeline assets. Why does ConocoPhillips use different methods of depreciation? What is unique about its business that might encourage management to adopt different methods of depreciation and different lines for different asset types? Which measurement principles of financial accounting are particularly applicable here?

7. Referred to as the *units-of-production method* in *Accounting Trends and Techniques* (New York: AICPA, 2006), p. 362.

## Cost Allocation Methods and the Matching Principle

Recall that the matching principle states that efforts (expenses) should be matched against the benefits (revenues) they produce. In terms of this principle, the straight-line method assumes that the revenues generated by the depreciated asset are constant across the asset's life; the accelerated method assumes that such revenues are high in early periods and low in later periods; and the activity method assumes that revenues are generated in proportion to the asset's activity. While each of these methods may represent the best application of the matching principle for certain assets, the activity method is probably the most consistent overall. Presumably, the more active an asset is, the more benefits it should produce. The extent to which a given amortization method is consistent with the matching principle is an important factor that should be considered by management when choosing an allocation method. Such consistency helps to improve the quality and usefulness of the reported financial numbers. However, other economic factors, discussed in the next section, are also considered when making such decisions.



Under IFRS, depreciation accounting is very similar to U.S. GAAP. However, unlike U.S. GAAP, management has the option of periodically revaluing property, plant, and equipment to fair market value, if it can be reliably measured. Changes in fair market value are not reflected on the income statement, but rather affect a shareholder's equity account (the IFRS version of the statement of comprehensive income is called the statement of recognized income and expenses). Interestingly, very few companies exercise this option.

## How Does Management Choose an Acceptable Cost Allocation Method?

Management may choose a given cost allocation method for a variety of economic reasons. Perhaps the most obvious is that the method has a significant and desired effect on important financial ratios, such as earnings per share, that are used by shareholders, investors, and creditors to evaluate management performance. When RTE Corporation, an electrical equipment manufacturer, more than doubled earnings per share by changing its depreciation method, its controller justified the action by stating: "We realize that compared to our competitors, our (past) conservative (accelerated) method of depreciation may have hurt us with investors because of its negative impact on net earnings." In a similar context, Inland Steel's controller once commented, "Why should we put ourselves at a disadvantage by depreciating more conservatively (i.e., accelerated methods) than other steel companies do?"

Note, however, that changing accounting methods, such as switching the depreciation method, to inflate net income in an effort to positively influence the assessments of investors and creditors may not be an effective strategy. When IBM shifted from the accelerated to the straight-line method, it increased reported earnings by \$375 million. Did its share value increase? Some evidence suggests that stock market prices do not react positively to such changes, and many accountants question whether credit-rating services, like Dun & Bradstreet, adjust their ratings. In fact, knowledgeable shareholders, investors, and creditors may interpret a change to a less conservative depreciation method (e.g., from accelerated to straight-line) as a negative signal, indicating that management may be attempting to hide poor performance that it anticipates in the future. It is also true that the use of accelerated methods can lead to the creation of "hidden reserves," giving management greater ability to manage reported financial numbers in the future.

Management may also consider compensation contracts based on net income and debt covenants when choosing a depreciation method. Compared to accelerated methods, straight-line, for example, would tend to produce greater amounts of net-income-based compensation in the early periods of an asset's useful life. Similarly, the depreciation method chosen may affect whether a company violates a debt covenant.



Delta Air Lines operates under debt covenants where future borrowing may be restricted, subject to the performance of the company. Explain how the choice of a depreciation method could determine whether this covenant is violated.

### Depreciation Methods for Income Tax Purposes

Management is not required to choose the same depreciation method for income tax purposes that it uses for financial reporting. Indeed, many companies cannot use for financial reporting purposes the depreciation methods that they are allowed to use for tax purposes. Most companies, such as Sundstrand Corporation (aerospace) and Merck & Company, Inc. (pharmaceuticals), use the straight-line method for financial reporting and an accelerated method for tax purposes. *Forbes* reports:

*Like most businesses, Anheuser-Busch keeps two sets of books, one for tax purposes and one for its owners. [The company] uses accelerated depreciation for taxes but straight-line for reporting to investors.*

Using accelerated depreciation for tax purposes gives rise to significant tax savings for these companies. In a single year, for example, Anheuser-Busch normally saves millions of dollars in taxes by using accelerated depreciation instead of straight-line for tax purposes.

We have shown that estimating useful lives and salvage values in addition to choosing among alternative depreciation methods gives management considerable flexibility in reporting the amount of depreciation on the financial statements. However, the current rules specified in the **Internal Revenue Code**, which cover depreciation for tax purposes, are much less flexible.

According to tax law, a fixed asset is placed into one of eight categories, and each category is assigned a minimum allowable useful life and a depreciation method, as indicated in Figure 9–15.

**FIGURE 9–15**  
Depreciation rules  
for income tax  
purposes

Category	Estimated Life	Allowable Depreciation Method
1	3 years	Double-declining-balance
2	5 years	Double-declining-balance
3	7 years	Double-declining-balance
4	10 years	Double-declining-balance
5	15 years	150% declining-balance*
6	20 years	150% declining-balance*
7	27.5 years	Straight-line
8	31.5 years	Straight-line

\*Formula –  $[1.5 \times (\text{cost} - \text{accumulated depreciation})] \div \text{life}$

Automobiles, for example, are placed in Category 2, which allows them to be depreciated over a five-year life, using the double-declining-balance method. Equipment and machinery are normally included in Categories 1, 2, 3, or 4 and therefore are depreciated over lives ranging from 3 to 10 years, using the double-declining-balance method. Apartments, buildings, and warehouses are generally classified in Category 7 or 8; both categories are subject to the straight-line method over an estimated life of either 27.5 or 31.5 years.

For purposes of determining taxable income, management should use the depreciation strategy that provides the greatest economic benefit for the company, which normally means that management should choose the shortest allowable life and the most extreme form of accelerated depreciation. These choices are preferred for tax purposes because they save tax dollars in the early years of the asset's life and thereby minimize the present value of the stream of income tax payments.



During the fiscal year ending May 31, 2009, FedEx Corporation, which uses accelerated depreciation for tax purposes, recognized \$3.9 billion of tax-deductible depreciation expense. Had the company used straight-line depreciation, it would have recognized only about \$1.8 billion of depreciation. For that year the company's effective income tax rate was 37.6 percent. How much money did the company save in taxes by using accelerated, instead of straight-line, depreciation?

To illustrate, refer back to Figure 9–12, which compares net income numbers produced by the straight-line and double-declining-balance methods of depreciation. Note that the total income recognized under the two methods is the same (\$23,000). Now assume a corporate income tax rate of 30 percent. The income tax payments reported in Figure 9–16 would then be due under each of the methods for each of the five years. The table also provides the present value of each stream of tax payments, assuming a 10 percent discount rate.<sup>8</sup>

**FIGURE 9–16** Income tax payments (Tax rate equals 30 percent of income)

Method	2008	2009	2010	2011	2012	Total	Present Value
Straight-line	\$1,380	\$1,380	\$1,380	\$1,380	\$1,380	\$6,900	\$5,231
Double-declining-balance	300	1,020	1,452	2,028	2,100	6,900	4,896

The tax payments included in Figure 9–16 are simply the income numbers in Figure 9–12 multiplied by the 30 percent tax rate. The total tax payments are equal for each method (\$6,900), but the present values of the tax payments are not. The double-declining-balance method has a lower present value (\$4,896), which means that the present value of the tax cost is less under double-declining-balance. Thus, the depreciation method chosen for tax purposes should be the one that recognizes the greatest amount of depreciation in the early years of an asset's life.

8. Appendix A, at the end of the text, covers the time value of money and the concept of present value.



The 2006 annual report of FedEx indicated that the company won a dispute with the Internal Revenue Service over the treatment of costs required to work on jet engines in the company's fleet of airplanes. FedEx had typically deducted the expenses immediately, characterizing them as routine jet engine maintenance costs. The IRS, on the other hand, argued that the expenditures should be capitalized and depreciated over a seven-year period. Explain the nature of this dispute, and why FedEx might want to deduct these costs.

## DISPOSAL: RETIREMENTS, IMPAIRMENTS, SALES, AND TRADE-INS

Long-lived assets are acquired at cost, amortized as they are used in the operation of a business, and eventually disposed of. The disposal can take one of three forms: retirement, sale, or trade-in. The accounting procedures followed in all three cases have much in common. The depreciation is recorded to the date of the disposal, the cost and accumulated depreciation (or *net cost*, as in the case of intangibles and natural resources) of the long-lived asset are removed from the books, and any receipt or payment of cash or other assets is recorded when the asset is disposed of.<sup>9</sup> A gain or loss on the exchange is recognized in the amount of the difference between the book value of the asset and the net value of the receipt. Such gains and losses are usually found in the "other revenues and expenses" section of the income statement, but some manufacturers report them in cost of goods sold. Consider, for example, the following excerpt from the 2008 annual report of Kimberly-Clark Corporation:

*When property is sold or retired, the cost of the property and related accumulated depreciation are removed from the consolidated balance sheet and any gain or loss on the transaction is included in income.*

## Retirement and Impairment of Long-Lived Assets

It is not unusual for companies to retire, close, or abandon their long-lived assets. **Retirement** of an asset can be due to obsolescence, the lack of a market for the asset in question, or closure by a regulatory body. On several occasions throughout their history, for example, the large U.S. automakers closed a number of plants in an effort to control costs. In such cases, the original cost and accumulated depreciation of the long-lived asset are simply written off the books. No gain or loss is recognized if the asset is fully depreciated at the time of the retirement. A loss is recognized if the asset is not yet fully depreciated.

Assume, for example, that Ajax and Brothers retired two pieces of equipment that were purchased ten years ago. Item 1 was purchased for \$10,000 and was depreciated over eight years with no expected salvage value. At the time of its retirement, it was fully depreciated (i.e., accumulated depreciation was \$10,000). Item 2 was purchased for \$13,000 and was expected to have a \$1,000 salvage value after its useful life of

9. Long-lived assets are rarely acquired or disposed of on the first or last day of the accounting period. In practice, therefore, companies must consider whether they wish to compute depreciation for partial periods. This text does not cover such computations for two reasons. First, many companies follow either of two policies: (1) recognize a full year of depreciation in the year of acquisition and zero depreciation in the year of disposition, or (2) recognize zero depreciation in the year of acquisition and a full year of depreciation in the year of disposition. Such policies eliminate the need to compute depreciation for partial periods. Second, computing depreciation for a partial period can get somewhat involved, especially under the accelerated methods, and we leave such discussion to intermediate accounting textbooks.

twelve years. At the time of its retirement, the accumulated depreciation account was equal to \$10,000. The journal entries accompanying the retirement of the two pieces of equipment are as follows:

<b>Accumulated Depreciation (+A)</b>	<b>10,000</b>	
<b>Equipment (−A)</b>		<b>10,000</b>
<i>Retired Item 1</i>		
<b>Loss on Retirement (Lo, −RE)</b>	<b>3,000</b>	
<b>Accumulated Depreciation (+A)</b>	<b>10,000</b>	
<b>Equipment (−A)</b>		<b>13,000</b>
<i>Retired Item 2</i>		

No gain or loss is recognized on the retirement of Item 1 because an asset with a book value of zero was simply abandoned. The \$3,000 loss on the retirement of Item 2 is recognized because the disposal of an asset with a book value of \$3,000 generated no benefit.

Accounting for asset retirements is highly subjective and controversial. Generally accepted accounting principles require that when the value of an asset is “permanently impaired,” it should be written down, but recent guidelines are subject to judgment, leaving management much discretion over the amount and timing of such write-downs. Simply, it is very difficult to determine exactly when an asset has been permanently impaired and by how much. In addition, these write-downs can be huge. General Motors, Chrysler, Ford, United, Sony, and Kyocera have each recorded multibillion-dollar asset write-downs in recent years. Almost no industry avoided huge impairment write-downs during the worldwide 2008–2009 recession. As part of an overall strategy to restructure company operations, management frequently chooses to record such write-downs in particularly poor years, enabling the company to “take the hit” when it does the least harm. This “taking a bath” strategy recognizes losses immediately that would normally be recorded as expenses (e.g., depreciation) in future years which, in turn, can improve future reported profits. The *Wall Street Journal* once reported that the FASB “cracked down on corporate America’s habit of seizing upon restructurings as an occasion to take a bushel of write-offs all at once, making an earnings turnaround look speedier and more significant when it happens.”<sup>10</sup>



Under IFRS, impairment charges on property, plant, and equipment are also recorded and reduce earnings. However, the criteria for when such charges should be recorded differ from U.S. GAAP, and the result is that under IFRS more frequent, but smaller, impairment charges are recognized. Also, under IFRS, recoveries from impairment charges recorded in prior periods serve to boost asset values and net income. These recoveries are not recognized under U.S. GAAP.

Management may also choose to record large “permanent impairment” write-downs in particularly good years. Polaroid, for example, recorded such a write-down in the same year it recognized a multibillion-dollar gain from a well-known legal settlement against Kodak for patent infringement. This reporting decision could be interpreted as “building a hidden reserve,” which may enable Polaroid to “smooth” reported income over time. General Electric was once cited in the *Wall Street Journal* for using such write-offs frequently to “offset one-time gains.”

10. Recently, the FASB passed a financial reporting standard that set criteria for asset write-downs. While these criteria may have reduced abuses, they are still very subjective.





When Eli Lilly, a major pharmaceutical, booked a \$945 million restructuring and impairment charge on its income statement, it consisted primarily of two parts: asset impairments and employee termination severance costs, both of which resulted from shifting operations and closing plants in various parts of the world. The statement of cash flows included a \$797 million add-back to net income for the restructuring charge. Discuss the general form of the journal entry made to record the restructuring charge, and why the statement cash flows included part of the charge as an add-back to net income.

### Sale of Long-Lived Assets

Accounting for the sale of a long-lived asset is essentially the same as accounting for its retirement, except that cash is received in the exchange. For example, Computer Services purchased office furniture on March 1, 2008, for \$24,000. At the time of the purchase, the company estimated the useful life of the furniture to be ten years and the salvage value to be \$4,000, and it used the straight-line method of depreciation. On July 1, 2011 (three years and four months later), Computer Services remodeled its office and sold all the original furniture for \$13,000. The company policy on recognizing depreciation for partial periods is to recognize no depreciation in the year of acquisition and a full year's depreciation in the year of disposition. The relevant calculations and the related journal entries appear in Figure 9–17.

**FIGURE 9–17**

The sale of a long-lived asset: Computer Services

	Depreciation Computations	Depreciation Expense	Accumulated Depreciation
2008	(Year of acquisition)	\$ 0	\$ 0
2009	$(\$24,000 - \$4,000) \div 10$ years	2,000	2,000
2010	$(\$24,000 - \$4,000) \div 10$ years	2,000	4,000
2011	(Year of disposition)	2,000	6,000
<b>JOURNAL ENTRIES</b>			
2011			
July 1	Depreciation Expense (E, –RE)		2,000
	Accumulated Depreciation (–A)		2,000
	<i>Recognized depreciation in year of disposition</i>		
1	Cash (+A)		13,000
	Accumulated Depreciation (+A)		6,000
	Loss on Sale (Lo, –RE)		5,000
	Furniture (–A)		24,000
	<i>Sold long-lived asset</i>		



In the operating section of its 2008 statement of cash flows, Target included a \$33 million “loss on disposal of property and equipment” as an add-back to net earnings. Explain why and how a gain on disposal of property and equipment would be reported on the statement of cash flows.

On the date of sale, the depreciation is updated and the sale recorded. The loss on the sale (\$5,000) represents the difference between the updated book value (\$24,000 – \$6,000) and the cash proceeds (\$13,000).



In May 2007 the *Wall Street Journal* reported that Japanese equipment manufacturer Konica Minolta returned to profitability in 2007 after it exited the camera and photo industries and concentrated on high-quality color printers. Current profitability was given a boost from the sale of fixed assets used in the exited business segments. How can the sale of a business segment give profits a boost? Would you expect this profitability boost to persist?

### Trade-Ins of Long-Lived Assets

With a **trade-in**, two or more long-lived assets are exchanged, and cash is often received or paid. The methods used to account for such transactions depend on whether the exchanged assets are similar or dissimilar. This text limits its coverage to exchanges of **dissimilar assets**, those that are of a different general type, perform different functions, and are employed in different lines of business. The methods used to account for exchanges of similar assets are normally covered in intermediate accounting textbooks.

In general, the accounting procedures described in the section on retirements and the section on sales of long-lived assets also apply when dissimilar assets are exchanged.<sup>11</sup> That is, the depreciation of the asset given up is updated, its capitalized cost and accumulated depreciation are written off the books, and the receipt or payment of cash is recorded. However, a problem arises when accounting for exchanges because it is difficult to determine the dollar amount at which the asset received should be valued on the balance sheet. This problem, in turn, makes it equally difficult to measure the gain or loss that is recognized on the exchange.

The asset received in a trade-in should be valued on the balance sheet at either (1) the FMV of the assets given up or (2) the FMV of the assets received, whichever is clearly more evident and objectively determinable. Applying this rule is often difficult because the list price of an asset does not necessarily reflect its FMV, and determining the FMV of the asset given up is normally very subjective. Often the accountant must consult industry publications or obtain data on recent transactions involving similar assets to determine FMVs.

To illustrate, Mastoon Industries exchanged a delivery truck, which originally cost \$17,000 (accumulated depreciation = \$9,000) for a new printing press. The dealer agreed to accept the truck plus \$12,000. Based on a list price of \$18,000 for the printing press, the dealer claims to be granting a \$6,000 (\$18,000 – \$12,000) trade-in allowance on the truck. However, the accountant for Mastoon finds that recent sales of comparable printing presses have realized, on average, \$16,000, and a publication of used truck prices indicates that the value of the truck is approximately \$4,000.

Given these facts, there are two acceptable ways to value the printing press on the balance sheet of Mastoon, each leading to the same result: (1) the FMV of the assets given up (\$16,000 = \$12,000 cash + \$4,000 value of truck) or (2) the FMV of the

11. Keep in mind that a sale is simply the exchange of a long-lived asset for cash, a dissimilar asset.

asset received (\$16,000, determined from recent sales). The resulting journal entry follows:

<b>Printing Press (+A)</b>	<b>16,000</b>	
<b>Accumulated Depreciation (+A)</b>	<b>9,000</b>	
<b>Loss on Trade-In (Lo, -RE)</b>	<b>4,000</b>	
<b>Truck (-A)</b>		<b>17,000</b>
<b>Cash (-A)</b>		<b>12,000</b>

*Traded truck and cash for a press*

Note also that the list price (\$18,000) was not used as the FMV of the printing press. List prices are nothing more than invitations to negotiate, and astute buyers can often bargain for lower prices. Is it normally economically prudent, for example, to pay the list price for a new automobile? Moreover, since the actual FMV of the printing press seems to be \$16,000 instead of \$18,000, a better estimate of the trade-in allowance on the truck is \$4,000 (\$16,000 - \$12,000), rather than \$6,000 (\$18,000 - \$12,000). It is common for dealers, especially in the automobile industry, to lead customers to believe that they are receiving more for their trade-ins than they actually are.



Honeywell International reported the sale of four major business assets, recognizing losses on three of the sales (\$131 million, \$83 million, and \$35 million) and a gain of \$125 million on the fourth. Company footnotes disclose that Honeywell collected proceeds on these sales of \$435 million in cash and investment securities. Discuss the general form of the entries made to record these sales, and how they affected the financial statements.

## INTANGIBLE ASSETS

In Chapter 5 we noted that the value of a company as measured by the balance sheet (total assets - liabilities) rarely reflects its market capitalization value (value of a company as measured by the stock market). As of September 30, 2009, for example, the balance sheet value of Emerson Electric was \$8.6 billion, while the stock market valued the company at \$30.1 billion. The difference, \$21.5 billion in this example, is often referred to as “intangibles,” referring to those features about the company that are valued by the market but ignored by the balance sheet. These intangibles include the quality of a company’s management, the value of its brands, good relationships with its customers and suppliers, and other factors that are important to the company’s future but very difficult to measure. Certainly, the absence of these kinds of “assets” is a balance sheet weakness, and many argue that for a variety of companies, especially those in the Internet sector where “knowledge” is a company’s most important asset, that weakness is quite significant. At present, neither U.S. GAAP nor IFRS allows the recognition of these kinds of assets. The principle of objectivity is just too strict. Consequently, analysts reviewing companies traded on U.S. markets must be content to rely on financial statements that do not capture some very important information.

In this section we discuss intangible assets, but only those that can be measured objectively. They are characterized by the rights, privileges, and benefits of possession rather than by physical existence. Some accountants also suggest that intangible

assets have a higher degree of uncertainty than tangible assets. Among other items, intangibles include the costs of acquiring copyrights, patents, trademarks, trade names, licenses, and goodwill. In general, the costs of acquiring intangible assets should be capitalized, and professional standards divide intangibles into two categories: those with definite lives (e.g., copyrights, patents, trademarks) and those with indefinite lives (e.g., goodwill). Those with definite lives should be amortized over their legal or useful lives, whichever is shorter. Most companies use the straight-line method for both reporting and tax purposes. Those with indefinite lives, similar to land, are not subject to amortization but must annually be considered for a possible impairment write-down.



Under IFRS, intangible assets are also recorded on the balance sheet at cost. However, intangibles—except for goodwill—can be periodically revalued to fair market value if an active market for the intangible asset exists. The change in value, as for property, plant, and equipment, is not reflected on the income statement, but rather in shareholders' equity. Under IFRS, revaluing intangibles is an option, not a requirement. Under U.S. GAAP, revaluation is not an option.

## COPYRIGHTS, PATENTS, AND TRADEMARKS

Copyrights are exclusive rights granted by law to control literary, musical, or artistic works. They are granted for seventy years beyond the life of the creator. Patents are granted by the U.S. Patent Office, and they give the holders exclusive rights to use, manufacture, or sell a product or process for a period of twenty years. A trademark or trade name is a word, phrase, or symbol that distinguishes or identifies a particular enterprise or product. The right to use a trademark is also granted by the U.S. Patent Office exclusively to the holder. The trademark lasts for a period of ten years but can be renewed indefinitely. Kleenex, Pepsi-Cola, Excedrin, and Wheaties are just a few examples of trade names that are so familiar that they are now a part of our culture.

## THE COSTS OF DEVELOPING COMPUTER SOFTWARE

*Statement of Financial Accounting Standards No. 86* specifies that the costs of developing and producing computer software products that will be available for sale or lease should be capitalized and amortized over their economic lives. Prior to this standard, all such costs incurred prior to the development of a prototype were expensed, and many small software development companies claimed that this practice understated net income, making it very difficult to attract outside capital. This standard had a significant impact on the financial statements of many companies involved in the development of computer software. For example, consider the excerpt below from a financial report of Wang Laboratories, Inc. Note that the net effect of the change increased net income by \$19.3 million.

*The Company adopted a change of accounting for costs of computer software. The change was made in accordance with provisions of Statement of Financial Accounting*

*Standards No. 86, which specifies that certain costs incurred in the development of computer software to be sold or leased to customers are to be capitalized and amortized over the economic life of the software product. Total costs capitalized during the year approximated \$21.1 million, of which \$1.8 million has been amortized and charged to expense.*

## GOODWILL

When one company purchases another for a dollar amount that is greater than the net FMV of the purchased company's assets and liabilities, goodwill is recognized on the purchasing company's balance sheet. Goodwill is a common asset on the balance sheets of major U.S. companies. *Accounting Trends and Techniques* (2009) reports that of the companies surveyed, 89 percent disclosed goodwill on their balance sheets. For many companies, such as Cisco Systems, Marriott Corporation, and General Electric, goodwill is quite significant. Importantly, goodwill is only recognized when it is acquired in an arm's-length transaction. It is never accrued on the balance sheet. The nature of goodwill and the methods used to account for it are discussed and illustrated in Chapter 8.



In 2008 Flowers Foods acquired the common stock of Holsum Holdings, which operates two bakeries in the Phoenix area. The purchase price was \$144 million, and \$65 million of that amount was allocated to intangible assets (other than goodwill), which appeared on the 2008 consolidated balance sheet of Flowers Foods. Of the \$65 million in intangible assets, over \$43 million was allocated to an account called "customer relationships." This intangible asset does not appear on the balance sheet of Holsum. What do you think this account refers to, and why does it appear on the balance sheet of Flowers Foods but not Holsum?

## ORGANIZATIONAL COSTS

Organizational costs represent another subjective area in accounting for intangible assets. These costs are incurred prior to the start of a company's operations, typically including fees for underwriting, legal and accounting services, licenses, titles, and promotional expenditures. It is relatively clear that such costs are incurred to generate future revenues, and therefore, it seems that organizational costs should be capitalized. However, the service potential of such an asset cannot be associated with any future revenue in particular, and thus it is difficult to determine how it should be amortized. In a sense, organizational costs are of value to the company throughout its entire life. Does that mean that they should be left on the balance sheet indefinitely? Conceptually it may, but, similar to research and development costs discussed below, professional standards require that they be expensed.

## RESEARCH AND DEVELOPMENT COSTS

Research and development (R&D) costs are incurred to generate revenue in future periods through the creation of new products or processes. Such costs are significant for many major U.S. manufacturers. In 2008, for example, Eli Lilly and

Company invested \$3.8 billion in research and development, which amounted to about 19 percent of sales.

The matching principle suggests that R&D costs should be capitalized and amortized over future periods. However, it is difficult to match specific research and development expenditures with the creation of specific products or processes. Some R&D expenditures are for basic research, others lead to failures, and still others provide only indirect benefits or benefits that could not have been foreseen when the expenditure was incurred.

Concerned with the wide variety of practices used by companies to capitalize and amortize R&D expenditures, the FASB published *SFAS No. 2* in 1974. This pronouncement required that expenditures for most types of R&D costs be expensed in the year incurred, rather than capitalized and amortized as intangible assets. While this pronouncement promoted uniformity of accounting practices in the area of R&D, relieved pressures on auditors and managers to subjectively determine which R&D costs should be capitalized, and reduced some of management's ability to manipulate the financial statements, it is definitely inconsistent with the matching principle. In line with this standard, many R&D costs that will clearly benefit future periods are being immediately expensed. As with organizational costs, accounting for R&D costs represents an example of theoretical measurement principles being compromised in the interest of practical considerations.

The requirement to expense all R&D costs can have significant effects on the financial statements. Had Abbott Laboratories, for example, been allowed to capitalize half of its R&D expenditures in 2008, its net income would have increased by nearly \$900 million. There is also some evidence suggesting that the negative effects on net income and other important financial ratios of *SFAS No. 2* serve to discourage companies from making R&D expenditures. In one particular case, for example, Boeing reduced its R&D expenditures in one year by \$500 million. Some believe that the requirement to expense R&D may have been part of the cause.



Under IFRS, under some circumstances internally generated development costs are capitalized and amortized. Such costs are expensed under U.S. GAAP.

## IFRS VS. U.S. GAAP: REVALUATIONS TO FAIR MARKET VALUE

One very important way in which IFRS differs from U.S. GAAP involves the use of fair market value as a basis for valuation on the balance sheet and, as shown in this chapter, there is no better example of this difference than in the area of long-lived assets. Under U.S. GAAP, long-lived assets must be accounted for at original cost less accumulated depreciation (amortization), and if the market value of the asset permanently falls below the balance sheet carrying value, an impairment charge must be recorded, and cannot be reversed in later periods if the value of the asset recovers. Under IFRS, companies can either follow the U.S. GAAP method or they can periodically revalue their long-lived assets to fair market value—recognizing not only impairments, but also increases and recoveries of asset values. In essence, U.S. GAAP tends to follow a conservative “lower-of-cost-or-market” valuation principle, where market price reductions are recognized but market price increases are not. IFRS, by contrast, allows managers the option to more closely follow a pure market valuation principle, where both market value increases and decreases are recognized.

Interestingly, while IFRS companies have the option to follow a market value approach, most choose not to. Active markets often do not exist for long-lived assets because assets like property, plant, and equipment, as well as intangibles, are frequently customized for the specific needs of the company, resulting in limited markets for these kinds of assets. The lack of an active market discourages revaluations by making it difficult to find reliable market values. Further, asset write-ups increase the depreciation base, which in turn increases future depreciation expenses and lowers future reported profits—normally unattractive to management. With respect to market value accounting, the only area where most IFRS companies depart from the U.S. GAAP approach is that they tend to recognize recoveries of impairments recorded in prior periods.

As discussed in Chapter 8, U.S. GAAP now includes a provision—the fair value option—that allows companies to revalue financial instruments (not long-lived assets) to market value, with the change in market values being reflected in income (mark-to-market accounting). Recall as well that special disclosures (Levels 1, 2, and 3) are required to describe in more detail the basis for the market value estimates, and these disclosures signal the extent to which the estimates are reliable.

Both U.S. GAAP and IFRS appear to be moving toward more market-value-based accounting, and away from historical cost. This is a very important movement, but it may well be a long journey. There is no easy answer to which is better—a balance sheet consisting of assets reflecting useful, but relatively unreliable, market values or a balance sheet consisting of assets reflecting less useful, but very reliable, historical costs. Further, if market values are represented on the balance sheet, should the change in market value from one period to the next be reflected in earnings (and ultimately retained earnings), or should it skip the income statement and be reflected only in shareholders' equity (and comprehensive income)?

### ROE EXERCISE: MANAGING LONG-LIVED ASSETS AND RETURN ON EQUITY

The ROE model, introduced and illustrated in Appendix 5A, provides a framework linking the management of a company's operating, investing, and financing activities to its return on the shareholders' investment (return on equity). For many companies (e.g., manufacturers, services, and companies that grow via acquisition) the management of long-lived assets is an important investment activity.

Long-lived asset turnover ( $\text{sales} \div \text{average long-lived assets}$ ) is a measure of the extent to which the investment in long-lived assets generates sales volume. An increase in this ratio (i.e., increasing the level of sales per dollar invested in long-lived assets) puts upward pressure on total asset turnover, which puts upward pressure on return on assets (ROA), which in turn puts upward pressure on return on equity (ROE). Put simply, generating a large amount of sales with a small investment in long-lived assets is better for the shareholders than generating a small amount of sales with a large investment in long-lived assets. Consequently, an important role of management is to ensure that all long-lived assets (property, plant, and equipment and intangibles) are efficiently helping to generate the sales of goods and/or services. As indicated in the ROE model, effective management in this area can lead to higher shareholder returns.

## ROE ANALYSIS

Access the Web site (<http://www.wiley.com/college/pratt>) and conduct an ROE analysis on Dow Chemical versus Dupont, and/or Kroger versus SuperValu, all of which carry significant investments in long-lived assets, paying special attention to how the management of the companies' various long-lived assets affects asset turnover, ROA, and ROE.

## REVIEW PROBLEM

Norby Enterprises purchased equipment on January 1, 2009, for \$8,000. It cost \$1,500 to have the equipment shipped to the plant and \$500 to have it installed. The equipment was estimated to have a five-year useful life and a salvage value of \$1,000. On January 1, 2012, the equipment was overhauled at a cost of \$1,000, and the overhaul extended its estimated useful life by an additional year (from five to six years). On January 1, 2013 the equipment and \$13,000 cash were traded for a dissimilar piece of equipment with a FMV of \$15,000. Norby uses the straight-line method of depreciation. The computations and journal entries related to the acquisition, depreciation, overhaul, and disposal of the equipment appear in Figure 9–18.

FIGURE 9–18 Solution to review problem: Norby Enterprises

Description/Date	Journal Entry		Accumulated Depreciation	Book Value <sup>a</sup>	
Acquisition of equipment (1/1/09)	Equipment (+A) Cash (−A)	10,000 <sup>b</sup>	10,000	0	10,000
Depreciation <sup>c</sup> (12/31/09)	Depreciation Expense (E, −RE) Accumulated Depreciation (−A)	1,800	1,800	1,800	8,200
Depreciation <sup>c</sup> (12/31/10)	Depreciation Expense (E, −RE) Accumulated Depreciation (−A)	1,800	1,800	3,600	6,400
Depreciation <sup>c</sup> (12/31/11)	Depreciation Expense (E, −RE) Accumulated Depreciation (−A)	1,800	1,800	5,400	4,600
Overhaul (1/1/12)	Equipment (+A) Cash (−A)	1,000	1,000	5,400	5,600
Depreciation <sup>d</sup> (12/31/12)	Depreciation Expense (E, −RE) Accumulated Depreciation (−A)	1,533	1,533	6,933	4,067
Trade-in (1/1/13)	Equipment (new) (+A) Accumulated Depreciation (+A) Loss on Trade-In (Lo, −RE) Equipment (old) (−A) Cash (−A)	15,000 6,933 2,067	11,000 13,000		

<sup>a</sup>Book value = Equipment cost − accumulated depreciation  
<sup>b</sup>Equipment cost: \$8,000 purchase + \$1,500 shipping + \$500 installation = \$10,000  
<sup>c</sup>Depreciation expense before overhaul:  $(\$10,000 \text{ cost} - \$1,000 \text{ salvage}) \div 5\text{-year life} = \$1,800$   
<sup>d</sup>Depreciation expense after overhaul:  $(\$4,600 \text{ book value} + \$1,000 \text{ overhaul} - \$1,000 \text{ salvage}) \div 3\text{-year remaining life} = \$1,533$



## SUMMARY OF KEY POINTS

- *How the matching principle underlies the methods used to account for long-lived assets.*

Long-lived assets are used in the operations of the business, providing benefits that extend beyond the current accounting period. Included are land (not held for resale), buildings, machinery, equipment, costs incurred to acquire the right to extract natural resources, and intangible assets.

According to the matching principle, efforts (expenses) should be matched against benefits (revenues) in the period when the benefits are recognized. Since the benefits provided by long-lived assets extend beyond the current period, the costs of acquiring long-lived assets are capitalized in the period of acquisition and then amortized as their useful lives expire.

- *Major questions that are addressed when accounting for long-lived assets and how the financial statements are affected.*

Accounting for most long-lived assets consists primarily of answering three questions: (1) What dollar amount should be included in the capitalized cost of the long-lived asset? (2) Over what time period should this cost be amortized? (3) At what rate should this cost be amortized? These questions are addressed for all long-lived assets except land and goodwill, which is not subject to amortization.

Answering these questions in various ways can have significant effects on the timing of asset and income recognition. Capitalizing instead of expensing a cost defers expense recognition, giving rise to higher asset values and net income in the period of acquisition. Similarly, allocating the cost of a long-lived asset over a long period of time defers expense recognition and creates higher asset and income values in the early years of the asset's life. However, these financial statement effects are a matter of timing, not magnitude. That is, a method giving rise to higher asset and income values in the early years of an asset's life will create lower asset and income values in the later years.

- *Major economic consequences associated with the methods used to account for long-lived assets.*

The methods used to account for long-lived assets can have significant economic effects. The amount of cost to capitalize, the estimated useful life, the chosen amortization method, and the timing and amount of permanent write-downs can have significant effects on the timing of net income and important financial ratios. These numbers are used by interested parties to evaluate management and assess earning power and solvency, and to determine credit ratings. They are also used in compensation contracts and debt covenants to control and direct management behavior.

- *Costs that should be included in the capitalized cost of a long-lived asset.*

The acquisition cost of a long-lived asset is determined by either (1) the FMV of the acquired asset or (2) the FMV of what was given up to acquire the asset, whichever is more readily determinable. In almost all cases, the FMV of what was given up is used because cash, which by definition is at FMV, is normally given up in such exchanges. Furthermore, the capitalized cost (i.e., the FMV of what was given up) should include all costs required to bring the asset into serviceable or usable condition and location. This includes not only the cost of purchasing a long-lived asset, but also costs such as freight, installation, taxes, title fees, idle time while the asset is being installed, the costs of preparing land for use in the business, indirect overhead costs incurred while manufacturing a long-lived asset, and interest costs on borrowed funds used to construct long-lived assets. When long-lived assets are purchased as part of a group of assets for a single, lump-sum price, the overall price is allocated to each asset on the basis of its relative FMV.

- *Accounting treatment of postacquisition expenditures.*

Postacquisition expenditures are costs incurred subsequent to the acquisition or manufacture of a long-lived asset. Costs incurred to improve the asset (as defined by a set of criteria) are called

*betterments* and should be capitalized as part of the cost of the asset and amortized over its remaining life. Betterments are usually infrequent and tend to involve relatively large dollar amounts. Costs incurred to repair an asset or maintain its current level of productivity are classified as maintenance and are immediately expensed. Maintenance expenditures tend to be periodic and relatively small. It is often difficult to distinguish between a betterment and a maintenance expenditure, so management has much reporting discretion in this area.

● *How the cost of a long-lived asset is allocated over its useful life and the alternative allocation methods.*

To allocate the cost of a long-lived asset over its useful life, three issues must be addressed: (1) the useful life must be estimated, (2) the salvage value must be estimated, and (3) a cost allocation method must be chosen. The useful-life estimate defines the period of time over which the asset's cost is to be amortized. The capitalized cost less the salvage value defines the amortization base, the total amount of cost to be amortized. The cost allocation method determines the amount of cost to be amortized each period.

Three basic cost-allocation methods are considered systematic and reasonable: (1) straight-line, (2) accelerated, and (3) activity. The straight-line method recognizes equal amounts of depreciation each period throughout the life of the asset. Accelerated methods, including double-declining-balance, recognize larger amounts of depreciation in the early periods of an asset's life and smaller amounts in the later periods. The activity method bases the amount of amortization each period on the activity of the asset during that period. The life of the asset is expressed in terms of a unit of activity, and as each unit is produced, a portion of the asset's cost is amortized. This method is normally used to deplete the costs associated with mining natural resources.

● *Disposition and impairment of long-lived assets.*

Long-lived assets are disposed of through retirement, sale, or trade-in. When a long-lived asset is retired, depreciation is updated, the original cost and accumulated depreciation of the asset are written off the books, and a loss is recognized if the asset is not fully depreciated as of the time of the retirement. Determining when and how to write down such assets is very subjective, and long-lived assets should be periodically subjected to an impairment test to see if they need to be written down to market value.

When long-lived assets are sold for cash, depreciation is updated, cash is debited, the original cost and accumulated depreciation are written off the books, and a gain or loss, which represents the difference between the book value of the asset and the proceeds, is recognized on the transaction.

When two dissimilar assets and cash are exchanged, depreciation is updated, the cash receipt or payment is recorded, the original cost and accumulated depreciation of the asset given up are written off the books, the asset received is given a dollar value, and a gain or loss is recognized on the transaction. The general rule for valuing the asset received is to use the FMV of the assets given up (cash and the asset given up) or the FMV of the asset received, whichever is more objectively determinable.

● *The increasing importance of fair market value and issues that must be addressed when using fair market value as a basis for long-lived assets.*

IFRS relies more heavily on fair market value accounting than U.S. GAAP, while U.S. GAAP appears to be moving in this direction with the passage of the fair value option for financial instruments (see Chapter 8). This movement is motivated primarily by the belief that fair market values are more useful for decision making than historical costs. However, fair market values are less reliable, and when they are used to value balance sheet assets, it is important that they be accompanied by disclosures describing how they were determined. Also, when using fair market value for balance sheet assets, a major question arises concerning how to treat the changes in value from one period to the next: Should they be reflected on the income statement (and ultimately retained earnings), or should they not be reflected on the income statement and represented only in shareholders' equity (and comprehensive income)?

## KEY TERMS

*Note: Definitions for these terms are provided in the glossary at the end of the text.*

Accelerated method (p. 399)	Internal Revenue Code (p. 404)
Activity method (p. 402)	Land (p. 385)
Amortized (p. 386)	Maintenance (p. 394)
Betterments (p. 394)	Natural resource costs (p. 385)
Deferred costs (p. 385)	Physical obsolescence (p. 395)
Deplete (p. 402)	Postacquisition expenditures (p. 393)
Depreciation (p. 387)	Retirement (p. 406)
Depreciation base (p. 398)	Salvage value (p. 395)
Dissimilar assets (p. 409)	Straight-line method (p. 398)
Double-declining-balance method (p. 399)	Technical obsolescence (p. 396)
Fixed assets (p. 385)	Trade-in (p. 409)
Intangible assets (p. 385)	

## ETHICS in the Real World

“With a simple bookkeeping change, companies can turn profits into losses—and vice versa. In many cases, the changes are perfectly justified, but the practice creates big opportunities for abuse.”

So began a *Forbes* article that focused on the difficulty involved with determining the depreciation and/or amortization rates for long-lived assets and the level of discretionary judgment used by management in the area. Major U.S. companies, such as Cineplex Odeon, Blockbuster, General Motors, IBM, and Delta Air Lines, are cited in the article for the wide variety of methods they use. Blockbuster once changed the amortization period for its videotapes from nine to thirty-six months, adding nearly 20 percent to its reported income; GM added \$2.55 to its earnings-per-share number by adjusting the way in which it

amortizes its tools and dies; IBM increased its “bottom line” by \$375 million by changing from accelerated to straight-line; and Delta depreciates its planes over fifteen years, while most of the rest of the airline industry uses a twenty- to twenty-five-year useful life. In each case, the policies were disclosed and within the guidelines of GAAP; the article notes further that “when it comes to amortization and depreciation, GAAP provides only the vaguest of guidelines.”

However, the SEC chief accountant suggests that the disclosures are not adequate: “When a company says it’s depreciating its plant over three to forty years, we don’t know the intimate details and there is no practical way we could. I’d like accountants to take more responsibility for it.”

**ETHICAL ISSUE** Is it ethical for management to use methods to account for long-lived assets that are within the guidelines of GAAP but fail to provide disclosure that is sufficient for shareholders to understand the financial condition and performance of the company?

## INTERNET RESEARCH EXERCISE

The chapter points out that many companies are aggressively recognizing asset impairments, and some suspect that the companies are doing so as a way to manage earnings. The FASB recently established a standard to reduce these practices. Identify the number of this standard, when it was passed, and briefly describe its contents. Begin your search at [www.fasb.org/st/](http://www.fasb.org/st/).

## BRIEF EXERCISES

### REAL DATA

#### BE9-1

Change in  
depreciation method

A footnote to the financial statements of Allegheny Teledyne Incorporated stated the following:

*The straight-line method of depreciation was adopted for all property placed into service after July 1, 1996. Buildings and equipment acquired prior to that time are accounted for under accelerated methods. The company believes that the new method will more appropriately reflect its financial results by better allocating costs of new property over the useful lives of these assets. In addition, the new method conforms more closely to that prevalent in the industries in which Allegheny operates.*

- What impact will the new method have on Allegheny's net income?
- Briefly discuss some of the reasons that may have caused Allegheny to change the method of depreciation.
- Where else in the annual report could one find evidence that Allegheny changed its method of depreciation?

### REAL DATA

#### BE9-2

Depreciation  
and amortization

The Boeing Company reported in its 2008 annual report \$1,325 million in depreciation expense and \$117 million in amortization expense for the year ending December 31, 2008.

- Describe how the recognition of depreciation and amortization affects the basic accounting equation.
- As reported in the footnotes, Boeing's accumulated depreciation balance grew during the year from \$12,280 million to \$12,795 million. The historic cost of property, plant, and equipment was \$21,579 and \$21,042 in 2008 and 2007, respectively. During 2008 the company purchased property, plant, and equipment for a total of \$1,674 million and collected proceeds of \$34 million on sales of property, plant, and equipment. Compute the gain or loss on the sale of property, plant, and equipment in 2008. On which financial statement would this appear, and how would these transactions affect the statement of cash flows?

### REAL DATA

#### BE9-3

Acquisition of  
fixed assets

The footnote below was taken from the 2008 annual report of Johnson & Johnson (dollars in millions).

	2008	2007
<b>Land and land improvements</b>	\$ 886	\$ 756
<b>Buildings and building equipment</b>	7,720	7,913
<b>Machinery and equipment</b>	15,234	14,554
<b>Construction in progress</b>	3,552	3,243
	<u>\$27,392</u>	<u>\$26,466</u>
<b>Less accumulated depreciation</b>	13,027	12,281
	<u>\$14,365</u>	<u>\$14,185</u>

- Approximately how much did Johnson & Johnson invest in land during 2008?
- Why did accumulated depreciation increase during 2008?
- Johnson & Johnson uses the straight-line method of depreciation. If the company used an accelerated method, what effect would that decision have on the balance sheet?
- What dollar amount appeared on Johnson & Johnson's 2008 balance sheet for property, plant, and equipment?

### REAL DATA

#### BE9-4

IFRS, long-lived assets,  
and the statement  
of cash flows

In the operating section of its 2009 IFRS-based statement of cash flows, Kyocera, a Japanese telecommunications firm, reported the following (in millions of yen):

	2009
<b>Net income</b>	<b>298,040</b>
...	...
<b>Depreciation and amortization</b>	<b>985,626</b>
...	...
<b>Loss on impairment of PP&amp;E and intangibles</b>	<b>27,576</b>
...	...
<b>Gain on sale of PP&amp;E and intangibles</b>	<b>(83,980)</b>
...	...
<b>Net cash provided by operating activities</b>	<b>987,818</b>

- Describe the basic form of the entries recorded by Kyocera related to the three adjustments listed above to the operating section of the statement of cash flows.
- Explain why these amounts appear on the statement of cash flows, and why depreciation and amortization and the loss on impairment of PP&E and intangibles are positive numbers, while the gain on the sale of PP&E and intangibles is a negative number.
- Where on the statement of cash flows could you find the proceeds from the sales of PP&E and intangibles during 2009?
- If Kyocera followed U.S. GAAP instead of IFRS, would you expect to see similar adjustments to the operating section of the statement of cash flows?

## EXERCISES

### E9-1

Determining the capitalized cost and depreciation base

Lowery, Inc. purchased new plant equipment on January 1, 2011. The company paid \$920,000 for the equipment, \$62,000 for transportation of the equipment, and \$10,000 for insurance on the equipment while it was being transported. The company also estimates that over the equipment's useful life it will require additional power, which will cause utility costs to increase \$90,000. The equipment has an estimated salvage value of \$50,000.

- What amount should the company capitalize for this equipment on January 1, 2011?
- What is the depreciation base of this equipment?
- What amount will be depreciated over the life of this equipment?

### E9-2

Allocating cost on the basis of relative market value

AJB Real Estate purchased a ten-acre tract of land for \$320,000. The company divided the land into four lots of two and one-half acres each. Lot 1 had a beautiful view of the mountains and was valued at \$160,000. Lot 2 had a stream running through it and was valued at \$120,000. Lots 3 and 4 were each valued at \$60,000. Assume that each lot is sold for the values indicated. Compute the profit on each of the four sales.

### E9-3

Which costs are subject to depreciation?

Firton Brothers purchased for \$90,000 a tract of land that included an abandoned warehouse. The warehouse was razed, and the site was prepared for a new building at a cost of \$10,000. Scrap materials from the warehouse were sold for \$7,000. A building was then constructed for \$140,000, a driveway and parking lot were laid for \$32,000, and permanent landscaping was completed for \$4,000. Firton Brothers depreciates fixed assets over a twenty-year period using the straight-line method.

- Compute the amount of cost to be placed in the land, land improvements, and building accounts.
- Assuming a salvage value of zero, compute the depreciation expense associated with the items above for the first year.

**E9-4**

Betterments or  
maintenance?

The following items represent common postacquisition expenditures incurred on machinery:

- a. Lubrication service
- b. Painting costs
- c. Cleaning expenditures
- d. Rewiring costs to increase operating speed
- e. Repairs
- f. Replacement of defective parts
- g. An overhaul to increase useful life
- h. Cost of a muffler to reduce machine noise
- i. Costs of redesign to increase output

Identify each item as a betterment or a maintenance item.

**E9-5**

How the matching  
principle affects the  
timing of income  
recognition

The condensed balance sheet as of December 31, 2011, for Van Den Boom Enterprises follows:

<b>Assets</b>		<b>Liabilities and Shareholders' Equity</b>	
<b>Current assets</b>	<b>\$40,000</b>	<b>Liabilities</b>	<b>\$35,000</b>
<b>Land</b>	<b><u>50,000</u></b>	<b>Shareholders' equity</b>	<b><u>55,000</u></b>
		<b>Total liabilities and shareholders' equity</b>	<b><u>\$90,000</u></b>
<b>Total assets</b>	<b><u>\$90,000</u></b>		

Revenues and expenses (other than amortization) are predicted to be \$65,000 and \$20,000, respectively, for 2012, 2013, and 2014. All revenues and expenses are received or paid in cash. On January 1, 2012, Van Den Boom pays \$40,000 cash for an item.

- a. Assume that Van Den Boom Enterprises engaged in operating activities only during 2012, 2013, and 2014. Prepare income statements for 2012, 2013, and 2014 and the balance sheet as of December 31 for 2012, 2013, and 2014, assuming the \$40,000 cash payment is treated in each of the following ways:
  - (1) Immediately expensed.
  - (2) Capitalized and amortized evenly over two years.
  - (3) Capitalized and amortized evenly over three years.
- b. Compute the total income recognized over the three-year period under each assumption above.
- c. What is interesting about the December 31, 2011, balance sheet prepared under all three assumptions?

**E9-6**

The effect of  
estimated useful life  
on income  
and dividends

Stork Freight Company owns and operates fifteen planes that deliver packages worldwide. The planes were purchased on January 1, 2008, for \$1 million each. The company estimates that the planes will be scrapped after twelve years. Stork Freight uses straight-line depreciation.

- a. Assume that in a typical year the company generates revenues of \$50 million and operating expenses (excluding depreciation expense) of \$25 million. Prepare an income statement for a typical year.
- b. Assume that the company had originally estimated the useful life at six years instead of twelve. Prepare an income statement for a typical year. What is the percent change in net income?
- c. Assume that the company policy is to pay dividends in the amount of 30 percent of net income. Compute the difference in the dividend payment between the two cases above.

**E9-7**

Revising the  
estimated life

Portland Products purchased a machine on January 1, 2008, for \$60,000 and estimated its useful life and salvage value at five years and \$12,000, respectively. On January 1, 2011, the company added three years to the original useful-life estimate.

- a. Compute the book value of the machine as of January 1, 2011, assuming that Portland uses the straight-line method of depreciation.
- b. Prepare the journal entry entered by the company to record depreciation on December 31, 2011.

**E9-8**

Different amortization methods achieve different objectives

The controller of Elton Furniture Store is currently trying to decide what depreciation method to use for a particular fixed asset. The controller has prepared the following list of possible objectives that might be accomplished through a depreciation method. Which method(s):

- most closely matches the asset's cost with the benefits resulting from the asset's use?
- allocates the cost of the asset over the asset's useful life?
- generates the largest net income in the last year of the asset's useful life?
- does not directly use the asset's salvage value in computing the depreciation expense?
- is best for tax purposes (i.e., minimizes the present value of future tax payments)?
- recognizes an equal charge to expense every period?
- generates the largest depreciation expense in the asset's last year?
- does not allow the asset's book value to drop below the asset's salvage value?

Consider each objective independently, and indicate the depreciation method(s) that achieve each objective.

**E9-9**

Computing depreciation and choosing a depreciation method

Benick Industries purchased a new lathe on January 1, 2011, for \$300,000. Benick estimates that the lathe will have a useful life of four years and that the company will be able to sell it at the end of the fourth year for \$60,000.

- Compute the depreciation expense that Benick Industries would record for 2011, 2012, 2013, and 2014 under each of the following methods:
  - Straight-line depreciation
  - Double-declining-balance depreciation
- If you were the president of Benick Industries, what might you consider when choosing a depreciation method for financial reporting purposes? Why?

**E9-10**

Depreciation calculations and journal entries

Stockton Corporation purchased a new computer system on January 1, 2011, for \$300,000 cash. The company also incurred \$25,000 in installation costs and \$10,000 to train its employees on the new system. The computer system has an estimated useful life of five years and an estimated salvage value of \$70,000.

- Prepare the entry to record the acquisition of the computer system.
- Calculate the depreciation expense recognized each year over the life of the system for each of the following assumptions:
  - Stockton uses straight-line depreciation.
  - Stockton uses double-declining-balance depreciation.
- Provide the journal entry recorded by Stockton at the end of 2011 under the double-declining-balance method.

**E9-11**

The activity method of depreciation

Apex Trucking purchased a truck for \$100,000 on January 1, 2011. The useful life of the truck was estimated to be either five years or 200,000 miles. Salvage value was estimated at \$20,000. Over the actual life of the truck, it logged the following miles:

<b>Year 1</b>	<b>48,000 miles</b>
<b>Year 2</b>	<b>35,000 miles</b>
<b>Year 3</b>	<b>40,000 miles</b>
<b>Year 4</b>	<b>25,000 miles</b>
<b>Year 5</b>	<b>35,000 miles</b>
<b>Year 6</b>	<b>10,000 miles</b>

At the end of the sixth year, the truck was sold for \$12,000.

Prepare the journal entries to record depreciation over the life of the truck and its sale, assuming these methods:

- Activity method
- Straight-line method

**E9-12**

Depletion and matching

Natural Extraction Industries paid \$4 million for the right to drill for oil on a tract of land in western Texas. Engineers estimated that this oil deposit would produce 100,000 barrels of crude oil.

- During the first year of operations, Natural Extraction extracted 30,000 barrels of oil. Prepare the entry to record depletion for the first year.
- During the second year, the company extracted 50,000 barrels. Prepare the entry to record depletion for the second year.
- What dollar amount would Natural Extraction report on its balance sheet at the end of the second year for oil deposits?

**E9-13**

An error in recording the acquisition of a fixed asset

Lewis Real Estate purchased a new photocopier machine on January 1, 2011, for \$120,000. The company's bookkeeper made the following entry to record the acquisition:

<b>Depreciation Expense (E, -RE)</b>	<b>120,000</b>	
<b>Cash (-A)</b>		<b>120,000</b>

The photocopier machine has an estimated useful life of four years and an estimated salvage value of \$20,000. Lewis Real Estate did not make any adjusting entry on December 31, 2011, or in any subsequent year associated with the photocopier machine. Furthermore, the company never discovered the error.

- Assume that Lewis Real Estate uses the straight-line method to depreciate its fixed assets. Compute the values for the following chart:

<b>Year</b>	<b>Depreciation Expense per Company's Books</b>	<b>Correct Depreciation Expense</b>	<b>Annual Difference</b>	<b>Cumulative Difference</b>
<b>2011</b>				
<b>2012</b>				
<b>2013</b>				
<b>2014</b>				

- In what direction and by how much will the accumulated depreciation account be misstated as of December 31, 2013?
- In what direction and by how much will the retained earnings account be misstated *prior* to closing entries on December 31, 2013?
- In what direction and by how much will the retained earnings account be misstated *after* closing entries on December 31, 2013?

**E9-14**

Fixed asset sales

Savory Enterprises reported the following information regarding the company's fixed assets in the footnotes to the company's 2011 financial statements:

<b>Office furniture</b>	<b>\$500,000</b>	
<b>Less: Accumulated depreciation</b>	<b><u>300,000</u></b>	<b>200,000</b>

- Assume that Savory Enterprises sells all of its office furniture for \$235,000 in cash on January 1, 2012. Prepare the entry to record the sale.
- Assume that Savory Enterprises sells all of its office furniture for \$185,000 in cash on January 1, 2012. Prepare the entry to record the sale.

**E9-15**

Retiring, selling, and trading in a fixed asset

Paris Company purchased equipment on January 1, 2009, for \$25,000. The estimated useful life of the equipment is five years, the salvage value is \$5,000, and the company uses the double-declining-balance method to depreciate fixed assets.

- Provide the journal entry assuming the equipment is scrapped after three years.
- Provide the journal entry assuming the equipment is scrapped after five years.
- Provide the journal entry assuming the equipment is sold for \$8,000 after three years.
- Provide the journal entry assuming, at the end of the fifth year, the equipment and \$28,000 cash are traded in for a dissimilar asset with an objectively determined FMV of \$30,000.



**E9-16**Reverse T-account  
analysis

The following financial information below was taken from the records of White Bones, Inc.

	2011	2010
<b>BALANCE SHEET</b>		
<b>Equipment</b>	\$37,500	\$32,700
<b>Less: Accumulated depreciation</b>	<u>17,600</u>	<u>14,300</u>
<b>Net book value</b>	<u>\$19,900</u>	<u>\$18,400</u>
<b>INCOME STATEMENTS</b>		
<b>Depreciation expense</b>	\$ 7,200	\$ 6,800
<b>Gain on sale of equipment</b>	2,100	0

*Note:* The company purchased equipment for \$12,000 during 2011.

- How much cash was collected on the sale of equipment during 2011?
- Reconstruct the entry that recorded the sale of equipment during 2011.

**REAL DATA****E9-17**Inferring  
information from  
the financial  
statements

The information was taken from the 2008 annual report of Intel, a world-leading supplier to the Internet economy (dollars in millions).

	2008	2007
<b>Property, plant, and equipment</b>	\$48,088	\$46,052
<b>Less: Accumulated depreciation</b>	(30,544)	(29,134)
<b>Depreciation expense</b>	4,360	4,546
<b>Investments in property, plant, and equipment</b>	\$ 5,197	\$ 5,000

- From which of the financial statements was each figure taken?
- Estimate the cost of property, plant, and equipment sold during 2008.
- Estimate the accumulated depreciation associated with the property, plant, and equipment sold during 2008.
- Assume that the property, plant, and equipment was sold during 2008 for \$100 million cash. Estimate the gain or loss recognized on the sale. On what financial statement(s) would this amount appear?

**E9-18**Reverse T-account  
analysis

The following financial information was taken from the records of Frederickson and Pepper.

	2011	2010
<b>BALANCE SHEET</b>		
<b>Equipment</b>	\$26,900	\$23,400
<b>Less: Accumulated depreciation</b>	<u>10,500</u>	<u>9,800</u>
<b>Net book value</b>	<u>\$16,400</u>	<u>\$13,600</u>
<b>INCOME STATEMENT</b>		
<b>Depreciation expense</b>	\$ 3,800	\$ 3,500
<b>Loss on sale of equipment</b>	900	0
<b>STATEMENT OF CASH FLOWS</b>		
<b>Cash received on sale of equipment</b>	\$ 4,300	\$ 0

- Reconstruct the entry that recorded the sale of equipment during 2011.
- How much equipment was purchased during 2011?

**E9-19**Intangible assets:  
Expense or capitalize  
and amortize?

Swift Corporation incorporated on January 1, 2011, and incurred \$45,000 in organization costs.

- Should Swift Corporation capitalize or expense these costs? Defend your answer.
- If these costs are capitalized, over what period of time should they be amortized? Provide the amortization journal entry for a single year if the maximum period of time is chosen.

- c. What arguments could be used to justify capitalizing organization costs but not allocating them to future periods?
- d. Assume that during 2011, Swift acquired a patent for \$65,000. Should this cost be expensed or capitalized? Why one and not the other?
- e. Assume that during 2011, Swift invested \$220,000 to research and develop new products. Should these costs be expensed or capitalized?
- f. What arguments could be used to justify capitalizing research and development costs, and if capitalized, how should these costs be amortized to future periods?

**E9-20**

The capitalized  
cost of a patent

The following information was taken from the internal financial records of Southern Robotics regarding a patent filed in 2011 for a new robotics arm used for manufacturing:

1. Legal and filing fees of \$50,000 were paid during 2011 for filing the patent.
2. Legal fees of \$200,000 were incurred and paid during 2012 to defend the patent against infringement by another company.

The patent was granted on December 31, 2011. The company estimated that the patent would provide an economic benefit to the company for five years. It is company policy not to amortize intangible assets in the year of acquisition.

- a. Assume that Southern Robotics successfully defended its patent against the infringement.
  - (1) What amount should Southern Robotics report for this patent on the company's December 31, 2011, balance sheet?
  - (2) What amount should Southern Robotics report for this patent on the company's December 31, 2012, balance sheet?
  - (3) Prepare the entry to amortize the patent on December 31, 2012.
- b. Assume that Southern Robotics was unsuccessful in defending its patent against the infringement.
  - (1) What amount should Southern Robotics report for this patent on the company's December 31, 2011, balance sheet?
  - (2) What amount should Southern Robotics report for this patent on the company's December 31, 2012, balance sheet?
  - (3) Prepare the entry to write off the patent.

**REAL DATA****E9-21**

Recognition of  
goodwill

When Bristol-Myers Squibb purchased DuPont Pharmaceuticals from E.I. DuPont de Nemours for \$7.8 billion in cash, it acquired assets with a fair market value of \$5.1 billion and assumed the liabilities of DuPont Pharmaceuticals valued at \$1.1 billion.

**REQUIRED:**

- a. How much goodwill was recognized on the acquisition?
- b. Describe how this transaction affected the basic accounting equation.

**REAL DATA****E9-22**

U.S. GAAP/IFRS  
differences regarding  
fair market value

In the footnotes to its IFRS-based 2008 financial statements, European Aeronautical Defense and Space Company (EADS), parent company for Airbus, includes a description of a long-lived asset account called "investment property," which is leased to a third party. The historical cost of the property is 212 and accumulated depreciation is 125, leading to a balance sheet value of 87 (all in million euros). The footnote also reports that an estimate of the fair market value of the property is 88 million euros.

- a. Describe the differences between U.S. GAAP and IFRS regarding how this type of property is accounted for.
- b. How has EADS chosen to account for the investment property?
- c. What adjustment would EADS make to the 2008 financial statements if it chose to carry the investment property on its balance sheet at fair market value?

## PROBLEMS

### P9-1

How much  
to capitalize?

Stonebrecker International recently purchased new manufacturing equipment. The equipment cost \$1 million. The company also incurred additional costs related to the acquisition of the equipment. The total cost to transport the equipment to Stonebrecker's plant was \$80,000, half of which was paid by Stonebrecker. The company also paid \$8,000 to insure the equipment while it was being transported to its plant. The initial installation costs totaled \$20,000. After installing the equipment, however, it was discovered that the floor under the equipment would have to be reinforced. Materials and direct labor to reinforce the floor totaled \$15,000. While the equipment was being installed and the floor was being reinforced, the plant workers could not perform their normal functions. The cost to Stonebrecker of the employee downtime was \$10,000. Stonebrecker estimates that the equipment will have a salvage value of \$100,000 in ten years.

#### REQUIRED:

- What dollar amount should Stonebrecker capitalize on its books for this equipment?
- Prepare the journal entry to capitalize the equipment.
- What is the depreciation base of this equipment?
- Over the life of this equipment, what dollar amount will be depreciated under the straight-line method? Under the double-declining-balance method?

### P9-2

Lump-sum purchases  
and cost allocations

The JHP Company purchased a building, some office equipment, two cranes, and some land on January 1, 2011, for a total of \$1 million cash. JHP has obtained the following appraisals of these assets:

Asset	FMV on 1/1/11	Estimated Life	Estimated Salvage Value
Building	\$300,000	20 years	\$75,000
Office equipment	150,000	3 years	35,000
Crane	75,000	5 years	15,000
Crane	75,000	5 years	15,000
Land	600,000	Indefinite	

JHP Company uses the straight-line method to depreciate fixed assets.

#### REQUIRED:

- Prepare the journal entry to record the purchase.
- Prepare the journal entry to record depreciation expense for each type of asset for the year ended December 31, 2011.
- Assuming that all of these assets are still held as of December 31, 2014, present these fixed assets as they would be shown on the December 31, 2014, balance sheet.

### P9-3

Determining  
capitalized cost  
and depreciation

Gidley, Inc. purchased a piece of equipment on January 1, 2011. The following information is available for this purchase:

Purchase price	\$950,000
Transportation	\$100,000 <sup>a</sup>
Installation	\$130,000 <sup>b</sup>
Salvage value	\$50,000
Useful life	4 years

<sup>a</sup>Included in the transportation cost is \$1,000 for insurance covering the shipment of the equipment to Gidley.

<sup>b</sup>Included in the cost of installation is \$80,000 in wages paid to employees who helped install the equipment.

**REQUIRED:**

- Compute the cost of the fixed asset that should be capitalized.
- Prepare the entry to record depreciation expense for the year ended December 31, 2011, assuming the company uses each of the following:
  - Double-declining-balance depreciation method
  - Straight-line depreciation method
- Assuming that the equipment was sold on January 1, 2012, for \$250,000, prepare the entry to record the sale of the equipment using each of the following methods:
  - Double-declining-balance depreciation method
  - Straight-line depreciation method

**P9-4**

Expensing what should be capitalized can misstate net income

Westmiller Construction Company purchased a new truck on December 31, 2009, for \$48,000. The truck has an estimated useful life of three years and an estimated salvage value of \$12,000. When the truck was purchased, the company's accountant mistakenly made the following entry:

<b>Depreciation Expense—Truck (E, –RE)</b>	<b>48,000</b>	
<b>Cash (–A)</b>		<b>48,000</b>

Over the life of the truck, the company made no other entries associated with it.

**REQUIRED:**

- What entry should Westmiller Construction Company have made on December 31, 2009?
- Assuming that the straight-line method of depreciation should have been used and that the error was not discovered, in what direction and by how much was net income misstated in 2009 and 2010?
- Assuming that the double-declining-balance method of depreciation should have been used and that the error was not discovered, in what direction and by how much was net income misstated in 2009 and 2010?

**P9-5**

Accounting for betterments and maintenance costs

McCartney Manufacturing purchased a dryer for \$100,000 on January 1, 2008. The estimated life of the dryer is five years, and the salvage value is estimated to be \$10,000. McCartney uses the straight-line method of depreciation.

On January 1, 2012, McCartney paid \$160,000 to have the dryer overhauled, which increased the speed of the dryer and extended its estimated useful life to December 31, 2015. Each year, McCartney pays \$1,000 to have the dryer serviced. On November 12, 2012, a major repair was required at a cost of \$5,000. Salvage value is still estimated to be \$10,000.

**REQUIRED:**

- Provide the journal entry on January 1, 2008, to record the purchase of the dryer.
- How should the service and repair costs be treated on McCartney's books?
- Compute the depreciation expense that would be recognized during each year of the dryer's eight years of useful life.

**P9-6**

Accounting for betterments

Hulteen Hardware purchased a new building on January 1, 2007, for \$1.5 million. The company expects the building to last twenty-five years and expects to be able to sell it then for \$150,000. During 2012, the building was painted at a cost of \$5,000. Almost ten years after acquiring the building, the roof was destroyed by a storm. The company had a new roof constructed at a cost of \$200,000. The new roof was completed on January 1, 2017, and it extended the estimated life of the building by five years, to a total of thirty years. All other estimates are still accurate. Hulteen Hardware uses the straight-line method to depreciate the cost of all fixed assets.

**REQUIRED:**

- Prepare the entry to record the purchase of the building, assuming that the company paid cash.
- Prepare the entry to record the purchase of the new roof on January 1, 2017.
- Prepare the entry to record depreciation expense for the year ended December 31, 2017.
- Prepare the journal entry that would be recorded if the building was sold for \$1.2 million on December 31, 2022.

**P9-7**

Revising the estimated useful life

Burke Copy Center purchased a machine on January 1, 2006, for \$180,000 and estimated its useful life and salvage value at ten years and \$30,000, respectively. On January 1, 2011, the company added three years to the original useful-life estimate.

**REQUIRED:**

- Compute the book value of the machine as of January 1, 2011, assuming that Burke recognizes the depreciation using straight-line.
- Prepare the journal entry to record depreciation entered by the company on December 31, 2011, assuming that Burke uses straight-line.

**REAL DATA****P9-8**

Effects on an accounting change

Effective January 1, 2003, Zimmer Holdings changed the method it used to account for hand-held instruments used by orthopedic surgeons. Prior to that date the cost of these instruments was carried as a prepaid expense, and when used, the cost was converted to an expense as part of selling, general, and administrative expenses. The new method recognizes these instruments as long-lived assets, and the costs are now included in property, plant, and equipment, and depreciated over a five-year period using the straight-line method. The effect of the change was to increase reported earnings \$26.8 million.

**REQUIRED:**

Explain how this accounting change affected the basic accounting equation, and how it affects the computation of the current ratio and the fixed assets turnover ratio.

*Note:* Knowledge of the time value of money is necessary for this problem (see Appendix A). Kimberly Sisters purchased equipment for \$80,000 on January 1, 2011. Kimberly can use the double-declining-balance method for tax purposes but does not understand why it should be preferred over straight-line. The following information is available:

<b>Estimated useful life</b>	<b>4 years</b>
<b>Estimated salvage value</b>	<b>\$20,000</b>
<b>Expected revenues over each of the next four years</b>	<b>\$100,000</b>
<b>Expected expenses (excluding depreciation) over each of the next four years</b>	<b>\$60,000</b>
<b>Tax rate (percent of net income)</b>	<b>35 percent</b>

**REQUIRED:**

- Which of the two methods will give rise to the greater amount of depreciation over the life of the equipment? Support your answer with computations.
- Which of the two methods will result in the payment of less taxes over the life of the equipment? Support your answer with computations.
- Why is the double-declining-balance method preferred for tax purposes?
- Assume a discount rate of 10 percent. How much money would be saved by using double-declining-balance instead of straight-line?

**P9-10**

The effect of depreciation on taxes, bonuses, and dividends

Bently Poster Company pays income taxes on net income at the rate of 32 percent. The company pays a bonus to its officers of 8 percent of net income after taxes and pays dividends to its shareholders in the amount of 75 percent of net income after taxes. On January 1, 2011, the company purchased a fixed asset for \$400,000. Such assets are usually depreciated over a ten-year period. Salvage value is expected to be zero. Assume that the bonus payment is not included as an expense in the calculation of taxable income and reported income.

**REQUIRED:**

Assume that revenues and expenses (excluding depreciation) for 2011 are \$250,000 and \$140,000, respectively. Compute the tax, bonus, and dividend payment for 2011 if the company uses the following:

- The straight-line method of depreciation
- The double-declining-balance method of depreciation
- The straight-line method of depreciation, assuming a five-year useful life

**P9-11**

Natural resources:  
Different methods  
of cost allocation  
depend on the  
nature of the asset

Garmen Oil Company recently discovered an oil field on one of its properties in Texas. In order to extract the oil, the company purchased drilling equipment on January 1, 2011, for \$800,000 cash and also purchased a mobile home on the same date for \$54,000 cash to serve as on-site headquarters. The drilling equipment has an estimated useful life of twelve years but will be abandoned when the company shuts down this well. The mobile home has an estimated useful life of seven years and an estimated salvage value of \$5,000. The company expects to use the mobile home on other drilling sites after work on this site is completed.

Company geologists estimated correctly that the well would produce two million barrels of oil. Actual production from the well for 2011, 2012, and 2013 was 600,000 barrels, 750,000 barrels, and 650,000 barrels, respectively. All extracted barrels were immediately sold. This well is now dry, and Garmen Oil has shut it down.

**REQUIRED:**

- Prepare the entry to record the purchase of the drilling equipment and the mobile home.
- Prepare the entries to record depletion expense for the drilling equipment using the activity method for 2011, 2012, and 2013.
- Prepare the entries to record depreciation expenses for 2011, 2012, and 2013 for the mobile home using the straight-line method. Why are different methods used to allocate the costs of the drilling equipment and the mobile home?
- Assume that Garmen Oil discovered that the well was dry at the end of 2012 (i.e., the well produced only 1,350,000 barrels of oil). Repeat parts (b) and (c).

**P9-12**

Selling and trading  
in fixed assets

Webb Net Manufacturing purchased a new net weaving machine on January 1, 2009, for \$500,000. The new machine has an estimated life of five years and an estimated salvage value of \$100,000. It is company policy to use straight-line depreciation for all of its machines.

**REQUIRED:**

- Assume that Webb Net Manufacturing sells this machine on January 1, 2012, for \$325,000. Prepare the entry to record this transaction.
- Assume that Webb Net Manufacturing sells this machine on June 30, 2012, for \$320,000. Prepare the entry or entries to record this transaction.
- Assume that Webb Net Manufacturing trades in this machine for a tract of land on January 1, 2012. The list price of the land is \$250,000, and it has an appraised value of \$210,000. The company is granted a trade-in allowance on the machine of \$75,000 and pays an additional \$175,000 in cash for the land. The net weaving machine is appraised at \$75,000. Prepare the entry to record the trade-in, assuming that the land is valued as follows:
  - The FMV of the asset received.
  - The FMV of the assets given up.

**P9-13**

Recognizing  
goodwill

On January 1, 2011, Diversified Industries purchased Specialists, Inc. for \$1.8 million. The balance sheet of Specialists, Inc. at the time of purchase follows:

<b>Assets</b>		<b>Liabilities and Shareholders' Equity</b>	
Current assets	\$650,000	Liabilities	\$250,000
Long-lived assets	<u>330,000</u>	Shareholders' equity	<u>730,000</u>
		<b>Total liabilities and</b>	
<b>Total assets</b>	<b><u>\$980,000</u></b>	<b>shareholders' equity</b>	<b><u>\$980,000</u></b>

The total FMV of the individual assets of Specialists is \$1.35 million, and the liabilities are valued on the balance sheet at FMV.

**REQUIRED:**

- How can the FMV of Specialists' assets exceed the value of the assets on the balance sheet?
- Why would Diversified pay more for Specialists than the FMV of the assets less the liabilities?

(continued)

- c. Provide the journal entry to record the purchase.
- d. In the recent past goodwill was amortized over a period of time not to exceed forty years. Provide an argument to challenge this position.

**REAL DATA****P9-14**

Goodwill accounting

When Zimmer Holdings purchased the common stock of Centerplus AG, a Swiss manufacturer of medical devices, for \$3.4 billion, the fair market value of the assets acquired and liabilities assumed was estimated to be \$2.3 billion and \$1 billion, respectively.

- a. Compute the goodwill acquired in the transaction.
- b. Discuss why Zimmer paid significantly more for Centerplus than was indicated by the fair market value of Centerplus's net assets.

**ISSUES FOR DISCUSSION****REAL DATA****ID9-1**

Lump-sum sales and purchase

MGM Grand, Inc. purchased two Las Vegas casinos and the adjoining land for a total of \$167 million. Soon afterwards, the company agreed to sell one of the casinos and 58.7 acres of adjacent land for \$110 million.

**REQUIRED:**

- a. What issues need to be addressed in order to determine the gain or loss resulting from the sale of one of the casinos? How should the cost of the sold casino be established?
- b. Assume that each casino had a cost of \$75 million and the adjacent land originally cost \$17 million. Provide the journal entry prepared by MGM Grand to record the sale.
- c. Explain how the casino and the land would each be valued on the balance sheet of the purchasing company.
- d. Assume that an appraiser assesses the value of the land without the hotel to be \$43 million. Compute the annual depreciation charge recognized by the purchasing company if it depreciates buildings using the straight-line rate over a period of twenty-five years. Assume no salvage value.

**REAL DATA****ID9-2**

Capitalizing marketing costs

Seattle FilmWorks capitalizes the costs of its direct mailings to prospective customers, expensing them over three years rather than in the year they're incurred. There's nothing wrong with this practice per se. If the customers netted by mailing come back with repeat business year after year, you really have booked an asset. But there is no guarantee that the first-time customer will become a regular. Consequently, large dollar amounts of marketing costs sit on the company's balance sheet as an asset.

This situation was familiar to America Online shareholders. By spreading its marketing expenses over several years, AOL was able to create artificially high earnings. The company finally changed its accounting policy. Result: A \$385 million write-off.

**REQUIRED:**

Discuss the trade-offs involved with capitalizing marketing costs from a matching standpoint and from the perspectives of management, the shareholders, and the auditors.

**REAL DATA****ID9-3**

Capital acquisitions

Steel manufacturer V&M Star announced in early 2010 that it would spend \$650 million to expand its Youngstown, Ohio, plant. The company indicated that funding from the federal government's stimulus bill, passed in response to the 2008–2009 recession, played an instrumental role in its decision to expand its existing facilities.

**REQUIRED:**

- a. What issues must be considered when deciding whether to capitalize or expense the \$650 million?
- b. Under what conditions could the \$650 million cost be expensed even if it improved instead of maintained the plant?

- c. Assume that the \$650 million cost is capitalized and that the expenditure extends the useful life of the existing facility. Explain how V&M will compute depreciation on its initial facility over its remaining useful life.

## REAL DATA

## ID9-4

U.S. GAAP/IFRS  
differences

In the footnotes to the IFRS-based 2008 financial statements of European Aeronautical Defense and Space Company (EADS), parent company for Airbus, research and development (R&D) expenses were reported at 2,699 million euros. Also included in the footnotes is a chart describing the activity during 2008 in an intangible asset account called “capitalized development costs,” which shows the following (in million euros):

<b>Beginning balance</b>	<b>957</b>
<b>Increases</b>	<b>31</b>
<b>Amortization</b>	<b>(107)</b>
<b>Ending balance</b>	<b>881</b>

**REQUIRED:**

- Explain the nature of the account called “capitalized development costs,” and how EADS is accounting for R&D.
- How would this account be treated if EADS followed U.S. GAAP?
- Estimate the amount of R&D expense EADS would have recognized during 2008 if it had followed U.S. GAAP.
- Estimate the overall effect on 2008 net income of using IFRS vs. U.S. GAAP to account for R&D costs.

## REAL DATA

## ID9-5

Expense vs.  
capitalize

The 2008 annual report of Cisco Systems discloses that the company expenses all advertising and research and development costs, while capitalizing all software development costs.

**REQUIRED:**

Describe the effect of these two accounting treatments on the financial statements, discuss these treatments in terms of the nature of these particular costs and the matching principle, and comment on management incentives that might influence Cisco Systems to favor one or the other accounting treatment.

## REAL DATA

## ID9-6

Capital spending  
and profits

The *Wall Street Journal* once reported that hospitals plan to boost the amount of money spent on new property, plant, and equipment to meet increased demand from the aging demographics of the United States. The article stated that the increased capital spending “could squeeze already thin profits.”

**REQUIRED:**

- Discuss how hospital profits can be affected by increases in capital spending.
- Discuss which financial statements would show the effects of increased capital spending.
- How could you justify an increase in capital spending in terms of its potential effect on return on shareholders’ equity?

## REAL DATA

## ID9-7

Asset impairments

The footnotes to the 2008 financial statements of McDonald’s Corporation contain the following statement:

*In accordance with SFAS No. 144, Accounting for the Impairment or Disposal of Long-lived Assets, long-lived assets are reviewed for impairment annually . . . and . . . if an individual restaurant is determined to be impaired, the loss is measured by the excess of the carrying amount of the restaurant over its fair value as determined by an estimate of discounted future cash flows.*

**REQUIRED:**

- Discuss the circumstances that could indicate that a McDonald’s restaurant may be impaired.
- Describe how McDonald’s records an impairment charge.
- How could management use the concept of an impairment charge to manage earnings?



## REAL DATA

## ID9-8

Corporate restructuring

After being asked how General Electric has maintained such consistent earnings growth over the past decade, Dennis Dammerman, the company's chief financial officer, said, "We're the best company in the world." However, the *Wall Street Journal* offered another explanation. It noted that over a ten-year period General Electric recorded six discretionary restructuring charges, ranging in magnitude from \$147 million to over \$1 billion—totaling \$3.95 billion. Coincidentally, in each of the years when a restructuring charge was recognized, GE booked a sizable one-time gain. In one year, for example, the company recognized an \$858 million one-time gain due to changes in accounting methods for taxes and inventory while taking a \$1,027 million restructuring write-off. In another year, GE matched a \$1 billion restructuring charge against the \$1.4 billion one-time gain it recognized on the sale of an aerospace unit to Martin Marietta. "To smooth out fluctuations, GE frequently offsets one-time gains from big asset sales with restructuring charges; that keeps earnings from rising so high that they can't be topped the following year. GE also times sales of some equity stakes and even acquisitions to produce profit gains when needed."

**REQUIRED:**

- Determine what reporting strategy GE seems to be using, and explain how it works.
- Explain how discretionary restructuring charges help GE to implement that reporting strategy and why the company would want to pursue it.
- The *Wall Street Journal* reported that "investors love restructurings" and that such charges seem to boost stock prices. Yet the FASB later cracked down on this popular corporate practice. Explain why investors might love restructurings, why stock prices seem to rise when they are announced, and why the FASB acted to limit such behavior.

## REAL DATA

## ID9-9

Current values?

U.S. accounting standards at one time contained a requirement that certain large companies disclose current values for inventories and fixed assets. Such disclosure included dollar amounts for cost of goods sold and depreciation that were based on current instead of historical cost. This requirement, however, was quickly abandoned in response to heated controversy.

**REQUIRED:**

- Build an argument against requiring current values on the balance sheet.
- Consider the usefulness of historical costs for decision-making purposes, and build a case for requiring current values on the balance sheet.
- Which of the two arguments do you find most convincing?

## REAL DATA

## ID9-10

Subjective asset write-downs

A few years ago Kellogg, a maker of cereals and foods, hit its targeted earnings-per-share growth of 11 percent, and its stock price was up 25 percent. In the fourth quarter of that year, the company took a significant "one-time" charge against earnings when it wrote down assets—mostly property, plant, and equipment—from its overseas operations. Interestingly, this write-down was the ninth such charge in the past eleven quarters. Some analysts believe that Kellogg was using these charges to manage earnings and estimated that the company's earnings should actually have been 24 percent below the previous year.

**REQUIRED:**

- Describe how Kellogg could use asset write-downs to manage earnings.
- Explain why auditors may be less inclined to object to subjective asset write-downs compared to asset overstatements.
- What is the FASB's position on asset impairments?

## REAL DATA

## ID9-11

Asset write-offs

Burlington Northern released first quarter 2007 earnings below those of the same period for 2006. While revenues increased, mainly due to higher prices, earnings were down due to increased expenses, including a charge for the write-off of an outdated technology system.

## REAL DATA

## ID9-12

U.S. GAAP/IFRS  
differences**REQUIRED:**

- Describe how the write-off of a technology system would affect the basic accounting equation and the financial statements.
- What factors could lead to a company determining that its technology was overvalued?
- Discuss how management might be able to manage earnings through such a write-off.

Until 2007 companies using IFRS with securities traded on the U.S. stock exchanges were required to include a statement that reconciled IFRS-based net income and shareholders' equity with U.S. GAAP-based net income and shareholders' equity in their Form 20-F filings with the SEC. These reconciliations provided useful information to analysts wanting to compare the financial performance of companies using IFRS to companies using U.S. GAAP. Nokia, the well-known communication company based in Finland, reported such reconciliations from 1994 to 2006. Some of the more significant items listed on the reconciliation included development costs and impairments. Over the 12-year period 1994–2006, for example, the accumulated adjustment (in millions of euros) from IFRS-based income to U.S. GAAP-based income was –102 and –47 for development costs and impairments of intangible assets (not including goodwill), respectively.

**REQUIRED:**

Discuss the differences between IFRS and U.S. GAAP with respect to long-lived asset accounting, and comment on how these differences could lead to the adjustments for development costs and impairments reported by Nokia.

## REAL DATA

## ID9-13

The SEC Form  
10-K of NIKE

The SEC Form 10-K of NIKE is reproduced in Appendix C.

**REQUIRED:**

Review the NIKE SEC Form 10-K, and answer the following questions:

- What percentage of total assets do property, plant, and equipment and long-lived assets in total make up?
- What is the largest category of property, plant, and equipment?
- How large is the depreciation and amortization expense relative to sales, and why is it listed on the statement of cash flows?
- What method and estimated lives does NIKE use for its property, plant, and equipment?
- What is the company's largest intangible asset?
- What is NIKE's policy on asset impairments?
- What event led to the large impairment change, and why are impairments listed on both the income statement and statement of cash flows?
- How much did NIKE invest in property, plant, and equipment during 2008, and how much cash did it receive from disposals of property, plant, and equipment?