

CHAPTER 9: REPORTING AND ANALYZING LONG-LIVED ASSETS



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LEARNING OBJECTIVES

After studying this chapter, you should be able to:

- [1 Describe how the historical cost principle applies to plant assets.](#)
- [2 Explain the concept of depreciation.](#)
- [3 Compute periodic depreciation using the straight-line method, and contrast its expense pattern with those of other methods.](#)
- [4 Describe the procedure for revising periodic depreciation.](#)
- [5 Explain how to account for the disposal of plant assets.](#)
- [6 Describe methods for evaluating the use of plant assets.](#)
- [7 Identify the basic issues related to reporting intangible assets.](#)
- [8 Indicate how long-lived assets are reported in the financial statements.](#)



Feature Story: A TALE OF TWO AIRLINES

So, you're interested in starting a new business. Have you thought about the airline industry? Is your only experience with airlines as a passenger? Don't let that stop you. Today, the most profitable airlines in the industry are not well-known majors like **American Airlines** and **United**. In fact, most giant, older airlines are either bankrupt or on the verge of bankruptcy. In a recent year, five major airlines representing 24% of total U.S. capacity were operating under bankruptcy protection.

Not all airlines are hurting. The growth and profitability in the airline industry today is found at relative newcomers like **Southwest Airlines** and, more recently, **JetBlue Airways**. These and other new airlines compete primarily on ticket prices. During a recent five-year period, the low-fare airline market share increased by 47%, reaching 22% of U.S. airline capacity.

Southwest was the first upstart to make it big. It did so by taking a different approach. It bought small, new, fuel-efficient planes. Also, instead of the "hub-and-spoke" approach used by the majors, it opted for direct, short hop, no frills flights. It was all about controlling costs—getting the most out of its efficient new planes.

JetBlue, founded by former employees of Southwest, was recently ranked as the number 1 airline in the United States by the airline rating company **SkyTrax**. Management initially attempted to differentiate JetBlue by offering amenities not found on other airlines, such as TVs in every seatback, while adopting Southwest's low-fare model. This approach was successful during JetBlue's early years, as it enjoyed both profitability and rapid growth. However, more recently the company has had to take aggressive steps to rein in costs in order to return to profitability.

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In the past, upstarts such as **Valujet** chose a different approach. They bought planes that were 20 to 30 years old (known in the industry as *zombies*). By buying used planes, Valujet was able to add one or two planes a month to its fleet—an unheard of expansion. Valujet started with a \$3.4 million investment and grew to be worth \$630 million in its first three years.

But with fuel costs at record high levels, airlines are no longer in the market for old planes. In fact, the old **Boeing 727**, which until very recently was a mainstay of nearly every airline, is no longer used for passenger flights because it couldn't be operated efficiently. Today, success in the airline business comes from owning the newest and most efficient equipment, and knowing how to get the most out of it.



INSIDE CHAPTER 9...

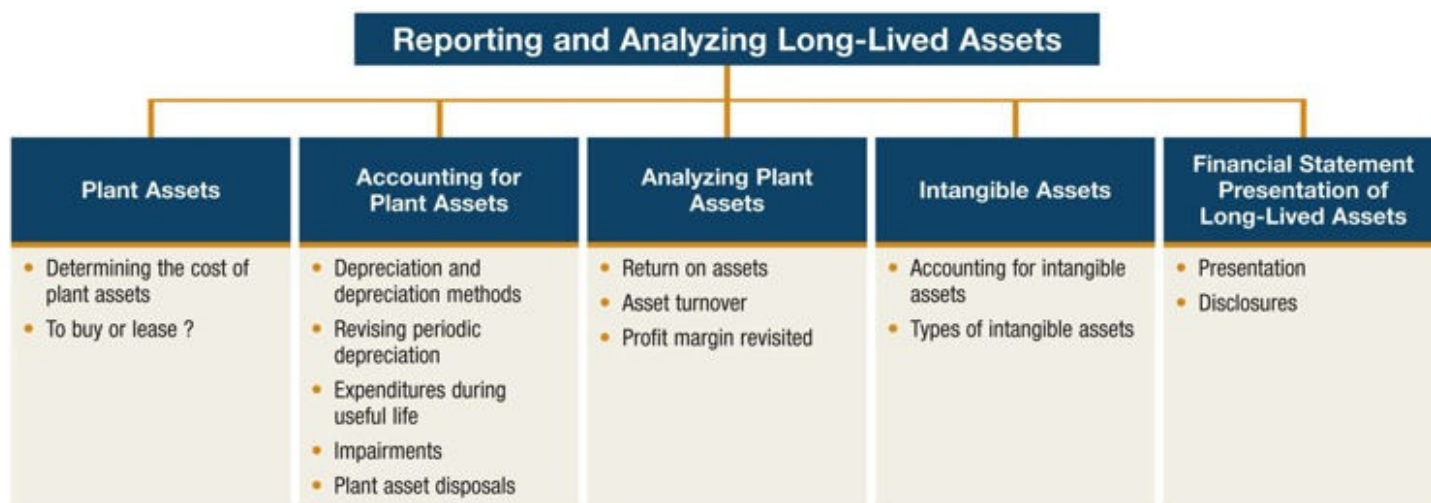
- **Many U.S. Firms Use Leases** ([p. 452](#))
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PREVIEW OF CHAPTER 9

For airlines and many other companies, making the right decisions regarding long-lived assets is critical because these assets represent huge investments. Management must make many ongoing decisions about long-lived assets—what assets to acquire and when, how to finance them, how to account for them, and when to dispose of them.

In this chapter, we address these and other issues surrounding long-lived assets. The discussion is in two parts: plant assets and intangible assets. **Plant assets** are the property, plant, and equipment (physical assets) that commonly come to mind when we think of what a company owns. Companies also have many important **intangible assets**. These assets, such as copyrights and patents, lack physical substance but can be extremely valuable and vital to a company's success.

The content and organization of this chapter are as follows.



Plant Assets

LEARNING OBJECTIVE 1

Describe how the historical cost principle applies to plant assets.

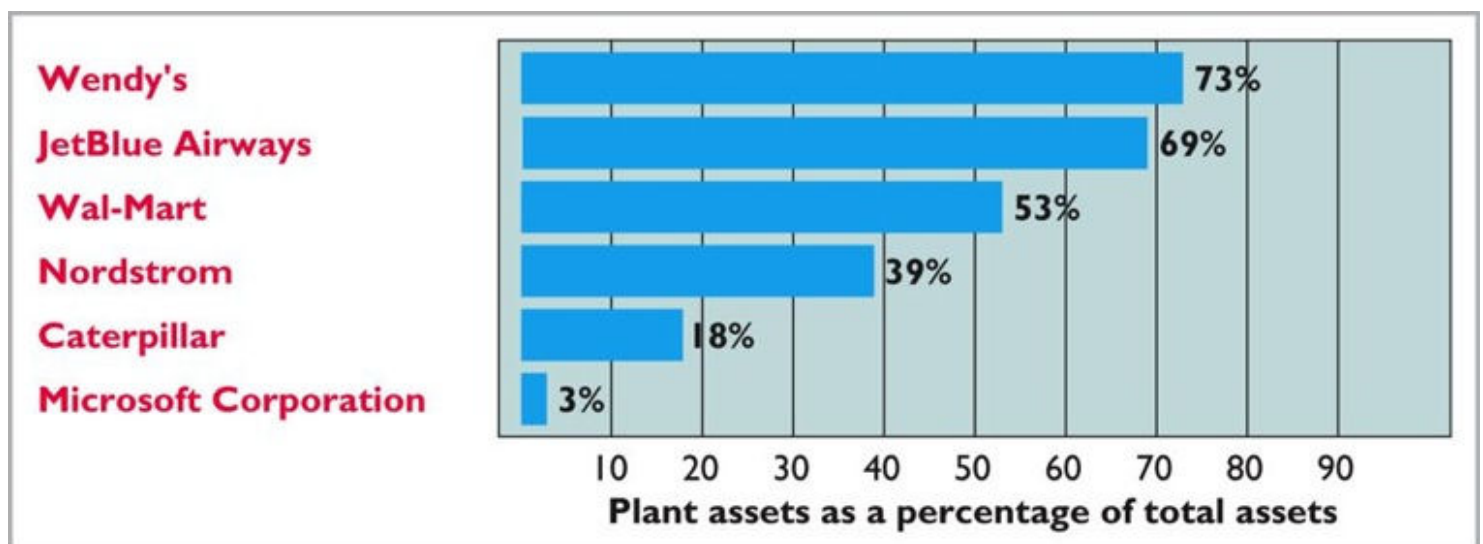
Plant assets are resources that have physical substance (a definite size and shape), are used in the operations of a business, and are not intended for sale to customers. They are called various names—property, plant, and equipment; plant and equipment; and fixed assets. By whatever name, these assets are expected to provide service to the company for a number of years. Except for land, plant assets decline in service potential (ability to produce revenue) over their useful lives.

Plant assets are critical to a company's success because they determine the company's capacity and therefore its ability to satisfy customers. With too few planes, for example, **JetBlue Airways** and **Southwest Airlines** would lose customers to their competitors. But with too many planes, they would be flying with empty seats. Management must constantly monitor its needs and acquire assets accordingly. Failure to do so results in lost business opportunities or inefficient use of existing assets and is likely to show up eventually in poor financial results.

It is important for a company to (1) keep assets in good operating condition, (2) replace worn-out or outdated assets, and (3) expand its productive assets as needed. The decline of rail travel in the United States can be traced in part to the failure of railroad companies to maintain and update their assets. Conversely, the growth of air travel in this country can be attributed in part to the general willingness of airline companies to follow these essential guidelines.

For many companies, investments in plant assets are substantial. [Illustration 9-1](#) shows the percentages of plant assets in relation to total assets in various companies in a recent year.

Illustration 9-1: Percentages of plant assets in relation to total assets



DETERMINING THE COST OF PLANT ASSETS

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The **historical cost principle** requires that companies record plant assets at cost. Thus, JetBlue Airways and Southwest Airlines record their planes at cost. **Cost consists of all expenditures necessary to acquire an asset and make it ready for its intended use.** For example, when Boeing buys equipment, the purchase price, freight costs paid by Boeing, and installation costs are all part of the cost of the equipment.

Determining which costs to include in a plant asset account and which costs not to include is very important. If a cost is not included in a plant asset account, then it must be expensed immediately. Such costs are referred to as **revenue expenditures**. On the other hand, costs that are not expensed immediately but are instead included in a plant asset account are referred to as **capital expenditures**. JetBlue reported capital expenditures of \$480 million during 2011.

This distinction is important; it has immediate, and often material, implications for the income statement. Some companies, in order to boost current income, have **improperly capitalized expenditures** that they should have expensed. For example, suppose that a company improperly capitalizes to a building account \$1,000 of maintenance costs incurred at the end of the year. (That is, the costs are included in the asset account Buildings rather than being expensed immediately as Maintenance and Repairs Expense.) If the company is allocating the cost of the building as an expense (depreciating it) over a 40-year life, then the maintenance cost of \$1,000 will be incorrectly spread across 40 years instead of being expensed in the current year. As a result, the company will understate current-year expenses by approximately \$1,000, and will overstate current-year income by approximately \$1,000. Thus, determining which costs to capitalize and which to expense is very important.

Cost is measured by the cash paid in a cash transaction or by the **cash equivalent price** paid when companies use noncash assets in payment. **The cash equivalent price is equal to the fair value of the asset given up or the fair value of the asset received, whichever is more clearly determinable.** Once cost is established, it becomes the basis of accounting for the plant asset over its useful life. Current fair value is not used to increase the recorded cost after acquisition. We explain the application of the historical cost principle to each of the major classes of plant assets in the following sections.

International Note

IFRS is flexible regarding asset valuation. Companies revalue to fair value when they believe this information is more relevant.

Land

Companies often use land as a building site for a manufacturing plant or office site. The cost of land includes (1) the cash purchase price, (2) closing costs such as title and attorney's fees, (3) real estate brokers' commissions, and (4) accrued property taxes and other liens on the land assumed by the purchaser. For example, if the cash price is \$50,000 and the purchaser agrees to pay accrued taxes of \$5,000, the cost of the land is \$55,000.

All necessary costs incurred in making land **ready for its intended use** increase (debit) the Land account. When a company acquires vacant land, its cost includes expenditures for clearing, draining, filling, and grading. If the land has a building on it that must be removed to make the site suitable for construction of a new building, the company includes all demolition and removal costs, less any proceeds from salvaged materials, in the Land account.

To illustrate, assume that Hayes Company acquires real estate at a cash cost of \$100,000. The property contains an old warehouse that is razed at a net cost of \$6,000 (\$7,500 in costs less \$1,500 proceeds from salvaged materials). Additional expenditures are for the attorney's fee \$1,000 and the real estate broker's commission \$8,000. Given these factors, the cost of the land is \$115,000, computed as shown in [Illustration 9-2](#).

Illustration 9-2: Computation of cost of land

Land

Cash price of property	\$ 100,000
------------------------	------------

Net removal cost of warehouse	6,000
-------------------------------	-------

Attorney's fee	1,000
----------------	-------

Real estate broker's commission	<u>8,000</u>
---------------------------------	--------------

Cost of land	\$115,000
---------------------	------------------

When Hayes records the acquisition, it debits Land and credits Cash for \$115,000.

Land Improvements

Land improvements are structural additions made to land, such as driveways, parking lots, fences, landscaping, and underground sprinklers. The cost of land improvements includes all expenditures necessary to make the improvements ready for their intended use. For example, the cost of a new company parking lot includes the amount paid for paving, fencing, and lighting. Thus, the company would debit the total of all of these costs to Land Improvements.

Land improvements have limited useful lives, and their maintenance and replacement are the responsibility of the company. As a result, companies expense (depreciate) the cost of land improvements over their useful lives.

Buildings

Buildings are facilities used in operations, such as stores, offices, factories, warehouses, and airplane hangars. Companies charge to the Buildings account all necessary expenditures relating to the purchase or construction of a building. When a building is **purchased**, such costs include the purchase price, closing costs (attorney's fees, title insurance, etc.), and real estate broker's commission. Costs to make the building ready for its intended use consist of expenditures for remodeling rooms and offices and replacing or repairing the roof, floors, electrical wiring, and plumbing. When a new building is **constructed**, its cost consists of the contract price plus payments made by the owner for architects' fees, building permits, and excavation costs.

In addition, companies add certain interest costs to the cost of a building. Interest costs incurred to finance a construction project are included in the cost of the asset when a significant period of time is required to get the asset ready for use. In these circumstances, interest costs are considered as necessary as materials and labor. However, the inclusion of interest costs in the cost of a constructed building is **limited to interest costs incurred during the construction period**. When construction has been completed, subsequent interest payments on funds borrowed to finance the construction are recorded as increases (debits) to Interest Expense.

Equipment

Equipment includes assets used in operations, such as store check-out counters, office furniture, factory machinery, and delivery trucks. **JetBlue Airways'** equipment includes aircraft, in-flight entertainment systems, and trucks for ground operations. The cost of equipment consists of the cash purchase price, sales taxes, freight charges, and insurance during transit paid by the purchaser. It also includes expenditures required in assembling, installing, and

testing the unit. However, companies treat as expenses the costs of motor vehicle licenses and accident insurance on company trucks and cars. Such items are annual recurring expenditures and do not benefit future periods. Two criteria apply in determining the cost of equipment: (1) the frequency of the cost—one time or recurring, and (2) the benefit period—the life of the asset or one year.

To illustrate, assume that Lenard Company purchases a delivery truck at a cash price of \$22,000. Related expenditures are sales taxes \$1,320, painting and lettering \$500, motor vehicle license \$80, and a three-year accident insurance policy \$1,600. The cost of the delivery truck is \$23,820, computed as shown in [Illustration 9-3](#).

Illustration 9-3: Computation of cost of delivery truck

Delivery Truck	
Cash price	\$ 22,000
Sales taxes	1,320
Painting and lettering	<u>500</u>

Cost of delivery truck \$23,820

Lenard treats the cost of a motor vehicle license as an expense and the cost of an insurance policy as a prepaid asset. Thus, the company records the purchase of the truck and related expenditures as follows.

Equipment	23,820
License Expense	80
Prepaid Insurance	1,600
Cash	25,500

(To record purchase of delivery truck and related expenditures)

A	=	L	+	SE
+23,820				
				-80 Exp
+1,600				
-25,500				
Cash Flows				
-25,500				



For another example, assume Merten Company purchases factory machinery at a cash price of \$50,000. Related expenditures are sales taxes \$3,000, insurance during shipping \$500, and installation and testing \$1,000. The cost of the factory machinery is \$54,500, computed as in [Illustration 9-4](#).

Illustration 9-4: Computation of cost of factory machinery

Factory Machinery	
Cash price	\$ 50,000
Sales taxes	3,000
Insurance during shipping	500
Installation and testing	<u>1,000</u>
Cost of factory machinery	\$54,500

Thus, Merten records the purchase and related expenditures as follows.

Equipment	54,500
Cash	54,500

(To record purchase of factory machinery and related expenditures)

A	=	L	+	SE
+54,500				
-54,500				
Cash Flows				
-54,500				



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TO BUY OR LEASE?

In this chapter, we focus on purchased assets, but we want to expose you briefly to an alternative—leasing. A lease is a contractual agreement in which the owner of an asset (the [lessor](#)) allows another party (the [lessee](#)) to use the asset for a period of time at an agreed price. In many industries, leasing is quite common. For example, one-third of heavy-duty commercial trucks are leased.

Some advantages of leasing an asset versus purchasing it are:

- **1. Reduced risk of obsolescence.** Frequently, lease terms allow the party using the asset (the lessee) to exchange the asset for a more modern one if it becomes outdated. This is much easier than trying to sell an obsolete asset.
- **2. Little or no down payment.** To purchase an asset, most companies must borrow money, which usually requires a down payment of at least 20%. Leasing an asset requires little or no down payment.
- **3. Shared tax advantages.** Startup companies typically earn little or no profit in their early years, and so they have little need for the tax deductions available from owning an asset. In a lease, the lessor gets the tax advantage because it owns the asset. It often will pass these tax savings on to the lessee in the form of lower lease payments.
- **4. Assets and liabilities not reported.** Many companies prefer to keep assets and especially liabilities off their books. Reporting lower assets improves the return on assets (discussed later in this chapter). Reporting fewer liabilities makes the company look less risky. Certain types of leases, called [operating leases](#), allow the lessee to account for the transaction as a rental, with neither an asset nor a liability recorded.

Airlines often choose to lease many of their airplanes in long-term lease agreements. In recent financial statements, [JetBlue Airways](#) stated that it leased 60 of its 169 planes under operating leases. Because operating leases are accounted for as rentals, these 60 planes were not presented on its balance sheet.

Under another type of lease, a [capital lease](#), lessees show both the asset and the liability on the balance sheet. The lessee accounts for capital lease agreements in a way that is very similar to debt-financed purchases: The lessee shows the leased item as an asset on its balance sheet, and the obligation owed to the lessor as a liability. The lessee depreciates the leased asset in a manner similar to purchased assets. Only four of JetBlue's aircraft were held under capital leases. We discuss leasing further in [Chapter 10](#).



Accounting Across the Organization: Many U.S. Firms Use Leases



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Who does the most leasing? Interestingly, major banks such as **Continental Bank**, **J.P. Morgan Leasing**, and **US Bancorp Equipment Finance** are the major lessors. Also, many companies have established separate leasing companies, such as **Boeing Capital Corporation**, **Dell Financial Services**, and **John Deere Capital Corporation**. As an example of the magnitude of leasing, leased planes account for nearly 40% of the U.S. fleet of commercial airlines. **Lease Finance Corporation** in Los Angeles owns more planes than any airline in the world.

In addition, leasing is becoming increasingly common in the hotel industry. **Marriott**, **Hilton**, and **InterContinental** are increasingly choosing to lease hotels that are owned by someone else.



Why might airline managers choose to lease rather than purchase their planes? (See [page 499](#).)

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***Do it!:* COST OF PLANT ASSETS**

Assume that Drummond Corp. purchases a delivery truck for \$15,000 cash plus sales taxes of \$900 and delivery costs of \$500. The buyer also pays \$200 for painting and lettering, \$600 for an annual insurance policy, and \$80 for a motor vehicle license. Explain how the company should account for each of these costs.

Action Plan

- ● Identify expenditures made in order to get delivery equipment ready for its intended use.
- ● Expense operating costs incurred during the useful life of the equipment.

Solution

The first four payments (\$15,000 purchase price, \$900 sales taxes, \$500 delivery, and \$200 painting and lettering) are expenditures necessary to make the truck ready for its intended use. Thus, the cost of the truck is \$16,600. The payments for insurance and the license are operating expenses incurred during the useful life of the asset.

Related exercise material: [BE9-1](#), [BE9-2](#),  [9-1](#), [E9-1](#), [E9-2](#), and [E9-3](#).



Accounting for Plant Assets

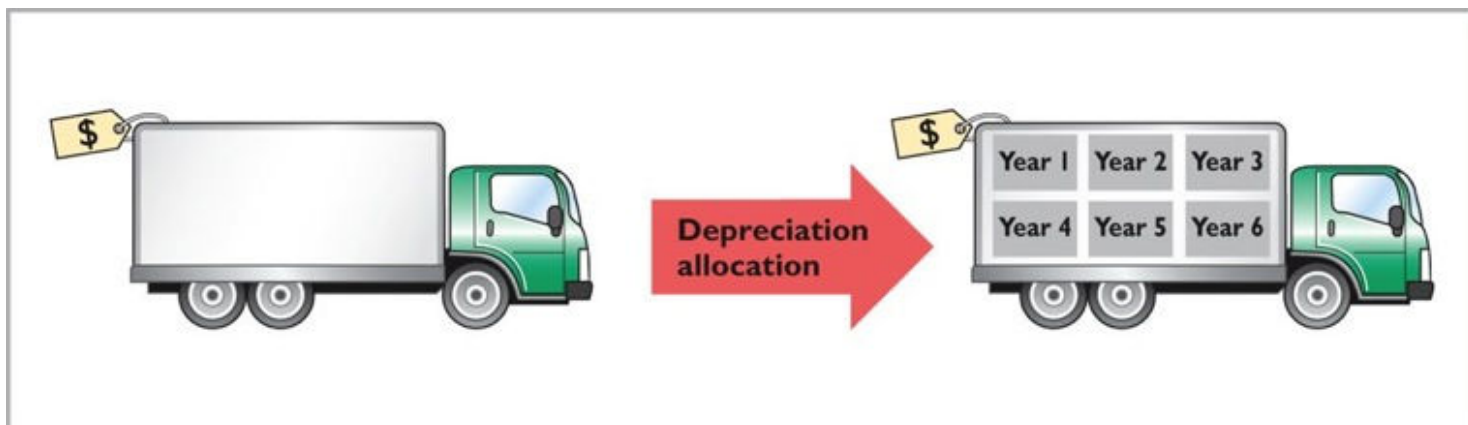
DEPRECIATION

As explained in [Chapter 4](#), [depreciation](#) is the process of allocating to expense the cost of a plant asset over its useful (service) life in a rational and systematic manner. Such cost allocation is designed to properly match expenses with revenues. (See [Illustration 9-5](#).)

LEARNING OBJECTIVE 2

Explain the concept of depreciation.

Illustration 9-5: Depreciation as a cost allocation concept



Depreciation affects the balance sheet through accumulated depreciation, which companies report as a deduction from plant assets. It affects the income statement through depreciation expense.

It is important to understand that **depreciation is a cost allocation process, not an asset valuation process**. No attempt is made to measure the change in an asset's fair value during ownership. Thus, the **book value**—cost less accumulated depreciation—of a plant asset may differ significantly from its **fair value**. In fact, if an asset is fully depreciated, it can have zero book value but still have a significant fair value.

Helpful Hint

Remember that depreciation is the process of *allocating cost* over the useful life of an asset. It is not a measure of value.

Depreciation applies to **three classes of plant assets**: land improvements, buildings, and equipment. Each of these classes is considered to be a **depreciable asset** because the usefulness to the company and the revenue-producing ability of each class decline over the asset's useful life. Depreciation **does not apply to land** because its usefulness and revenue-producing ability generally remain intact as long as the land is owned. In fact, in many cases, the usefulness of land increases over time because of the scarcity of good sites. Thus, **land is not a depreciable asset**.

Helpful Hint

Land does not depreciate because it does not wear out.

During a depreciable asset's useful life, its revenue-producing ability declines because of wear and tear. A delivery truck that has been driven 100,000 miles will be less useful to a company than one driven only 800 miles.

A decline in revenue-producing ability may also occur because of obsolescence. **Obsolescence** is the process by which an asset becomes out of date before it physically wears out. The rerouting of major airlines from Chicago's Midway Airport to Chicago-O'Hare International Airport because Midway's runways were too short for giant jets is an example. Similarly, many companies replace their computers long before they originally planned to do so because improvements in new computers make their old computers obsolete.

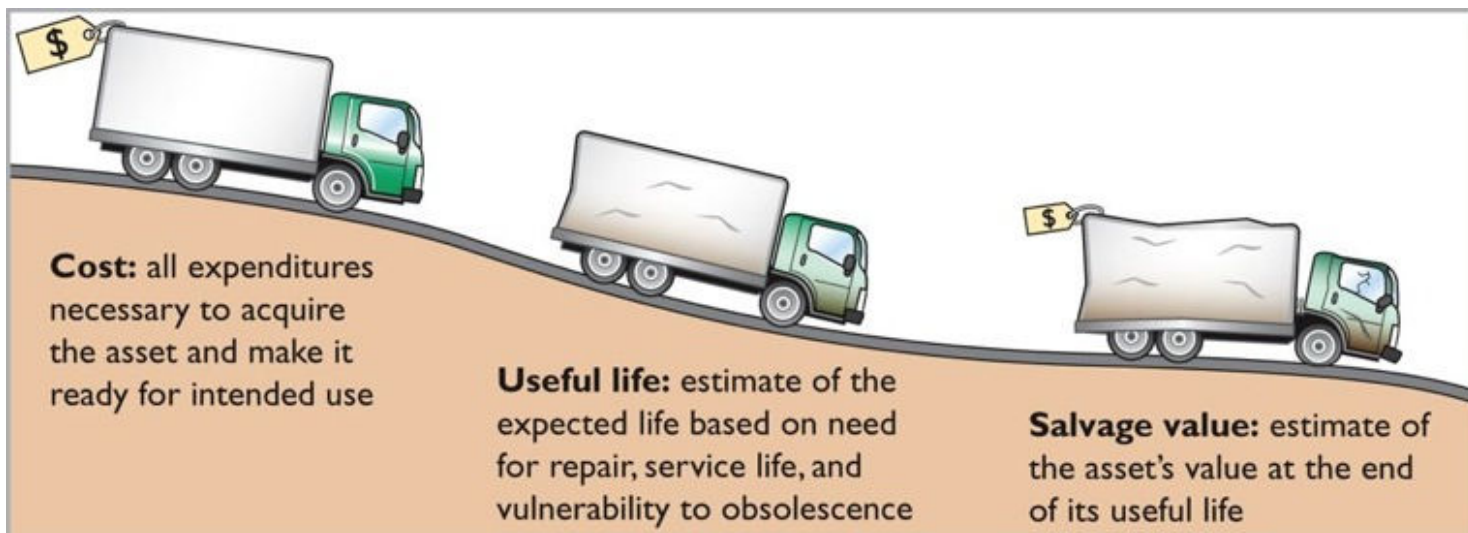
Recognizing depreciation for an asset does not result in the accumulation of cash for replacement of the asset. The balance in Accumulated Depreciation represents the total amount of the asset's cost that the company has charged to expense to date; **it is not a cash fund**.

Ethics Note

When a business is acquired, proper allocation of the purchase price to various asset classes is important since different depreciation treatment can materially affect income. For example, buildings are depreciated, but land is not.

Three factors affect the computation of depreciation, as shown in [Illustration 9-6](#).

Illustration 9-6: Three factors in computing depreciation



Helpful Hint

Depreciation expense is reported on the income statement. Accumulated depreciation is reported on the balance sheet as a deduction from plant assets.

- 1. **Cost.** Earlier in the chapter, we explained the considerations that affect the cost of a depreciable asset. Remember that companies record plant assets at cost, in accordance with the historical cost principle.
- 2. **Useful life.** Useful life is an estimate of the expected productive life, also called service life, of the asset for its owner. Useful life may be expressed in terms of time, units of activity (such as machine hours), or units of output. Useful life is an estimate. In making the estimate, management considers such factors as the intended use of the asset, repair and maintenance policies, and vulnerability of the asset to obsolescence. The company's past experience with similar assets is often helpful in deciding on expected useful life.
- 3. **Salvage value.** Salvage value is an estimate of the asset's value at the end of its useful life for its owner. Companies may base the value on the asset's worth as scrap or on its expected trade-in value. Like useful life, salvage value is an estimate. In making the estimate, management considers how it plans to dispose of the asset and its experience with similar assets.

DEPRECIATION METHODS

LEARNING OBJECTIVE 3

Compute periodic depreciation using the straight-line method, and contrast its expense pattern with those of other methods.

Although a number of methods exist, depreciation is generally computed using one of three methods:

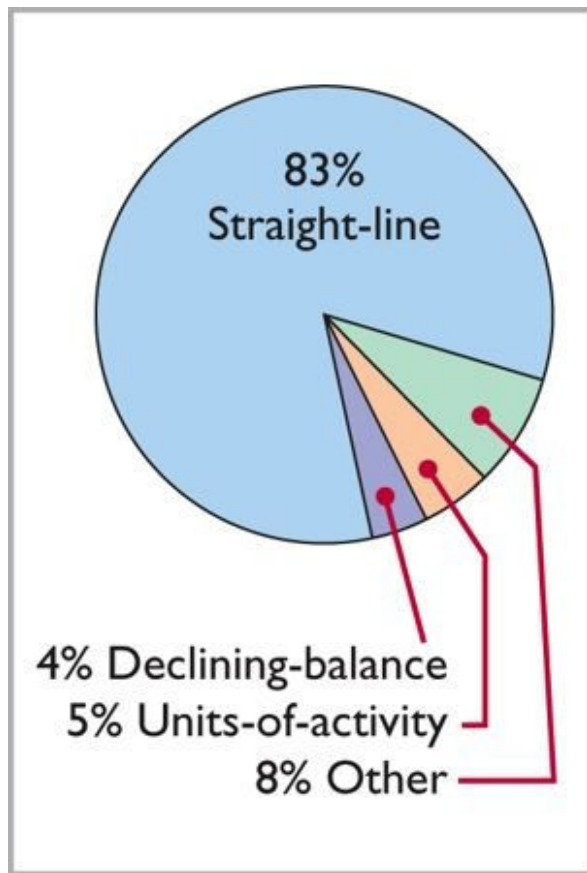
- 1. Straight-line
- 2. Declining-balance
- 3. Units-of-activity

Like the alternative inventory methods discussed in [Chapter 6](#), each of these depreciation methods is acceptable under generally accepted accounting principles. Management selects the method it believes best measures an asset's contribution to revenue over its useful life. Once a company chooses a method, it should apply that method consistently over the useful life of the asset. Consistency enhances the ability to analyze financial statements over multiple years.

[Illustration 9-7](#) shows the distribution of the primary depreciation methods in a sample of the largest U.S. companies. Clearly, straight-line depreciation is the most widely used approach. In fact, because some companies use more than one method, **straight-line depreciation is used for some or all of the depreciation taken by more than 95% of U.S. companies**. For this reason, we illustrate procedures for straight-line depreciation and discuss the alternative depreciation approaches only at a conceptual level. This coverage introduces you to the basic idea of depreciation as an allocation concept without entangling you in too much procedural detail. (Also, note that many hand-held calculators are preprogrammed to perform the basic depreciation methods.) Details on the alternative approaches are presented in [Appendix 9A](#) ([pages 476–478](#)).

Our illustration of depreciation methods, both here and in the appendix, is based on the following data relating to a small delivery truck purchased by Bill's Pizzas on January 1, 2014.

Illustration 9-7: Use of depreciation methods in major U.S. companies



Cost	\$13,000
Expected salvage value	\$1,000
Estimated useful life (in years)	5

Straight-Line

Under the [straight-line method](#), companies expense an equal amount of depreciation each year of the asset’s useful life. Management must choose the useful life of an asset based on its own expectations and experience.

To compute the annual depreciation expense, we divide depreciable cost by the estimated useful life. [Depreciable cost](#) represents the total amount subject to depreciation; it is calculated as the cost of the plant asset less its salvage value. [Illustration 9-8](#) shows the computation of depreciation expense in the first year for Bill’s Pizzas’ delivery truck.

Illustration 9-8: Formula for straight-line method



Alternatively, we can compute an annual **rate** at which the company depreciates the delivery truck. In this case, the rate is 20% (100% ÷ 5 years). When an annual rate is used under the straight-line method, the company applies the percentage rate to the depreciable cost of the asset, as shown in the **depreciation schedule** in [Illustration 9-9](#).

Illustration 9-9: Straight-line depreciation schedule

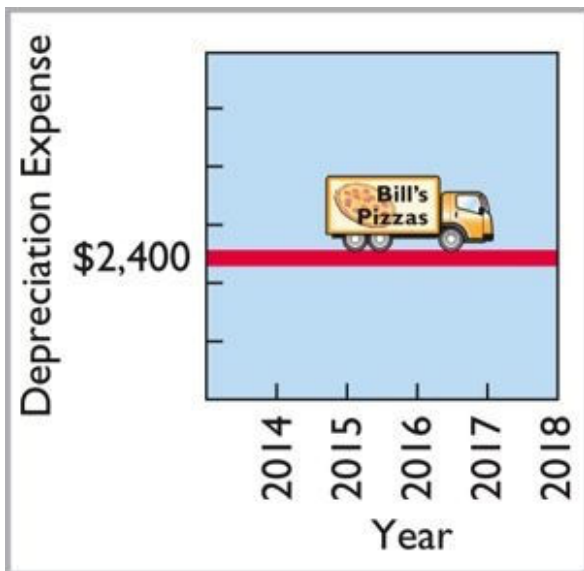
BILL'S PIZZAS						
Computation					End of Year	
Year	Depreciable Cost	× Depreciation Rate	=	Accumulated Depreciation Expense	Accumulated Depreciation	Book Value
2014	\$12,000	20%		\$ 2,400	\$ 2,400	\$10,600*
2015	12,000	20		2,400	4,800	8,200

BILL'S PIZZAS

Computation				End of Year	
Year	Depreciable Cost	× Depreciation Rate	= Accumulated Depreciation Expense	Accumulated Depreciation	Book Value
2016	12,000	20	2,400	7,200	5,800
2017	12,000	20	2,400	9,600	3,400
2018	12,000	20	<u>2,400</u>	12,000	1,000
Total					

*

\$13,000 – \$2,400



Note that the depreciation expense of \$2,400 is the same each year. The book value at the end of the useful life is equal to the estimated \$1,000 salvage value.

What happens when an asset is purchased **during** the year, rather than on January 1 as in our example? In that case, it is necessary to **prorate the annual depreciation** for the portion of a year used. If Bill's Pizzas had purchased the delivery truck on April 1, 2014, the company would use the truck for 9 months in 2014. The depreciation for 2014 would be $\$1,800$ ($\$12,000 \times 20\% \times \frac{9}{12}$ of a year).

As indicated earlier, the straight-line method predominates in practice. For example, such large companies as Campbell Soup, Marriott, and General Mills use the straight-line method. It is simple to apply, and it matches expenses with revenues appropriately when the use of the asset is reasonably uniform throughout the service life. The types of assets that give equal benefits over useful life generally are those for which daily use does not affect productivity. Examples are office furniture and fixtures, buildings, warehouses, and garages for motor vehicles.

Declining-Balance

The **declining-balance method** computes depreciation expense using a constant rate applied to a declining book value. This method is called an **accelerated-depreciation method** because it results in higher depreciation in the early years of an asset's life than does the straight-line approach. However, because the total amount of depreciation (the depreciable cost) taken over an asset's life is the same **no matter what approach** is used, the declining-balance method produces a decreasing annual depreciation expense over the asset's useful life. In early years, declining-balance depreciation expense will exceed straight-line, but in later years, it will be less than straight-line. Managers might choose an accelerated approach if they think that an asset's utility will decline quickly.

Companies can apply the declining-balance approach at different rates, which result in varying speeds of depreciation. A common declining-balance rate is double the straight-line rate. Using that rate, the method is referred to as the **double-declining-balance method**.

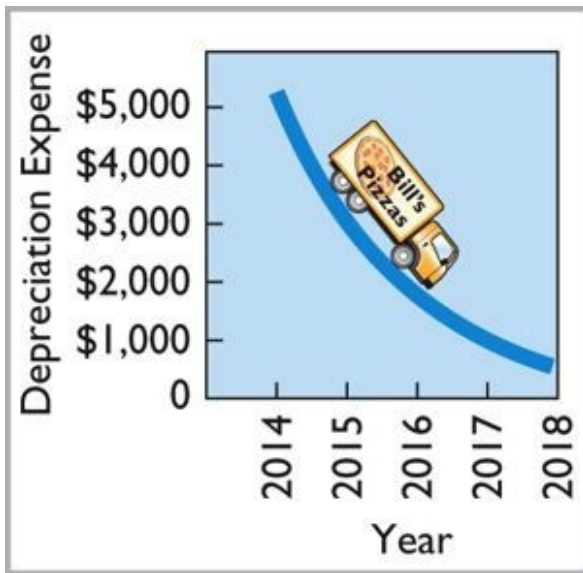
If we apply the double-declining-balance method to Bill's Pizzas' delivery truck, assuming a five-year life, we get the pattern of depreciation shown in **Illustration 9-10**. **Illustration 9A-2, page 477, presents the computations behind these numbers**. Again, note that total depreciation over the life of the truck is \$12,000, the depreciable cost.

Illustration 9-10: Declining-balance depreciation schedule

BILL'S PIZZAS

Year	Annual Depreciation Expense	End of Year	
		Accumulated Depreciation	Book Value
2014	\$ 5,200	\$ 5,200	\$7,800
2015	3,120	8,320	4,680
2016	1,872	10,192	2,808
2017	1,123	11,315	1,685
2018	685	12,000	1,000

Total \$12,000



Units-of-Activity

As indicated earlier, useful life can be expressed in ways other than a time period. Under the [units-of-activity method](#), useful life is expressed in terms of the total units of production or the use expected from the asset. The units-of-activity method is ideally suited to factory machinery: Companies can measure production in terms of units of output or in terms of machine hours used in operating the machinery. It is also possible to use the method for such items as delivery equipment (miles driven) and airplanes (hours in use). The units-of-activity method is generally not suitable for such assets as buildings or furniture because activity levels are difficult to measure for these assets.

Applying the units-of-activity method to the delivery truck owned by Bill's Pizzas, we first must know some basic information. Bill's expects to be able to drive the truck a total of 100,000 miles. [Illustration 9-11](#) shows depreciation over the five-year life based on an assumed mileage pattern. [Illustration 9A-4, page 478](#), presents the computations used to arrive at these results.

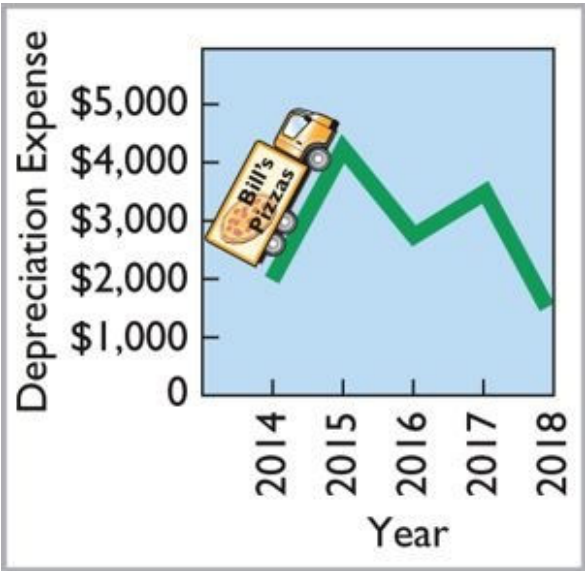
Illustration 9-11: Units-of-activity depreciation schedule

BILL'S PIZZAS

Year	Units of Activity (miles)	Annual Depreciation Expense	End of Year	
			Accumulated Depreciation	Book Value
2014	15,000	\$ 1,800	\$ 1,800	\$11,200
2015	30,000	3,600	5,400	7,600
2016	20,000	2,400	7,800	5,200

BILL’S PIZZAS

Year	Units of Activity (miles)	Annual Depreciation Expense	End of Year	
			Accumulated Depreciation	Book Value
2017	25,000	3,000	10,800	2,200
2018	<u>10,000</u>	<u>1,200</u>	12,000	1,000
Total	100,000	\$12,000		



As the name implies, under units-of-activity depreciation, the amount of depreciation is proportional to the activity that took place during that period. For example, the delivery truck was driven twice as many miles in 2015 as in 2014, and depreciation was exactly twice as much in 2015 as it was in 2014.

Do it!: STRAIGHT-LINE DEPRECIATION

On January 1, 2014, Iron Mountain Ski Corporation purchased a new snow grooming machine for \$50,000. The machine is estimated to have a 10-year life with a \$2,000 salvage value. What journal entry would Iron Mountain Ski Corporation make at December 31, 2014, if it uses the straight-line method of depreciation?

Action Plan

- Calculate depreciable cost (Cost – Salvage value).
- Divide the depreciable cost by the asset’s estimated useful life.

Solution BY: jromero0950@email.phoenix.edu. Printing is for personal, private use only. No part of this book may be reproduced or transmitted without publisher's prior permission. Violators will be prosecuted.

$$\text{Depreciation expense} = \frac{\text{Cost} - \text{Salvage value}}{\text{Useful life}} = \frac{\$50,000 - \$2,000}{10} = \$4,800$$

Iron Mountain would record the first year's depreciation as follows.

Dec. 31 Depreciation Expense 4,800

Accumulated Depreciation—Equipment 4,800

(To record annual depreciation on snow grooming machine)

Related exercise material: [BE9-3](#), [BE9-4](#), **Do it!** [9-2](#), and [E9-5](#).



Management's Choice: Comparison of Methods

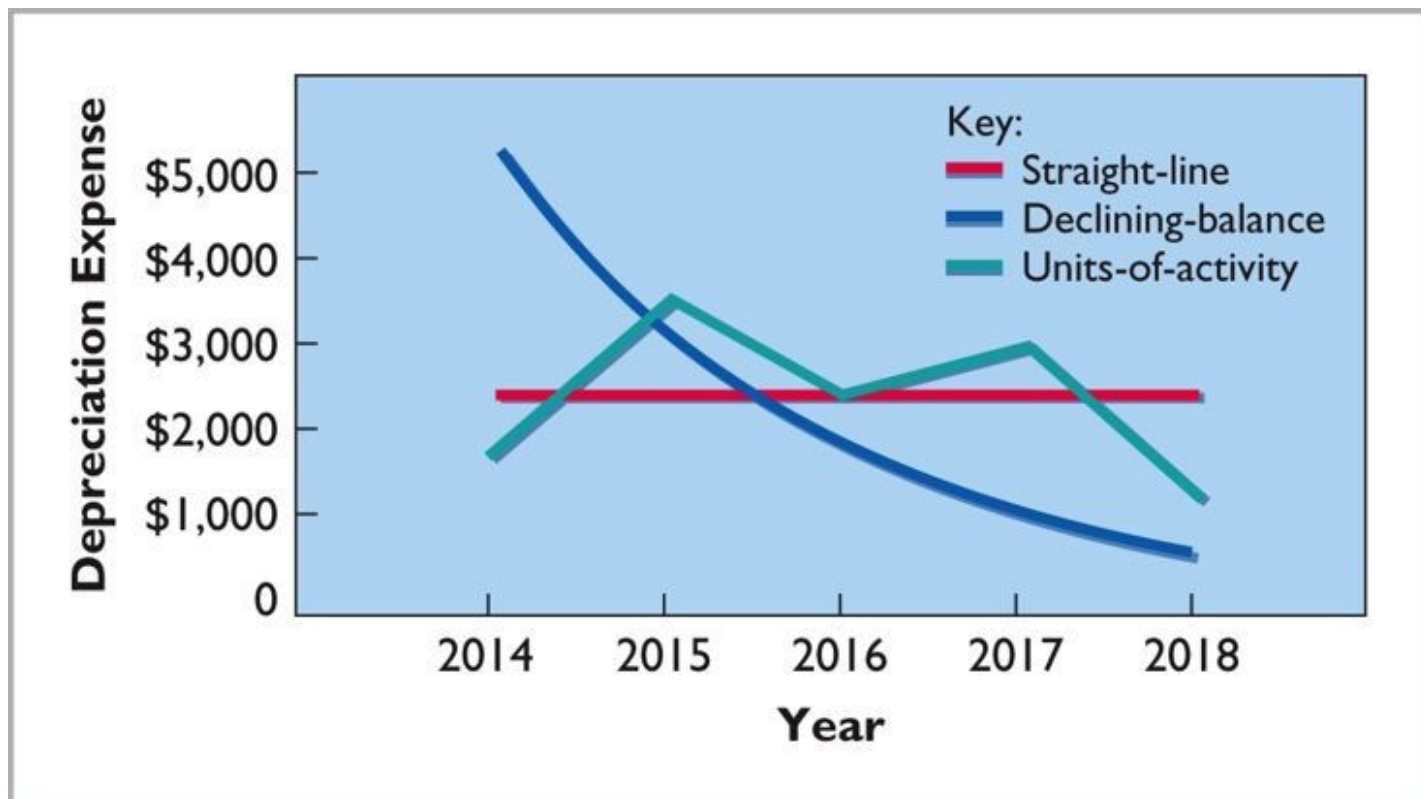
[Illustration 9-12](#) (page 458) compares annual and total depreciation expense for Bill's Pizzas under the three methods.

Illustration 9-12: Comparison of depreciation methods

Year	Straight-Line	Declining-Balance	Units-of-Activity
2014	\$ 2,400	\$ 5,200	\$ 1,800
2015	2,400	3,120	3,600
2016	2,400	1,872	2,400
2017	2,400	1,123	3,000
2018	<u>2,400</u>	<u>685</u>	<u>1,200</u>
	\$12,000	\$12,000	\$12,000

Annual depreciation expense varies considerably among the methods, but **total depreciation expense is the same, (\$12,000) for the five-year period.** Each method is acceptable in accounting because each recognizes the decline in service potential of the asset in a rational and systematic manner. [Illustration 9-13](#) graphs the depreciation expense pattern under each method.

Illustration 9-13: Patterns of depreciation



Depreciation and Income Taxes

The Internal Revenue Service (IRS) allows corporate taxpayers to deduct depreciation expense when computing taxable income. However, the tax regulations of the IRS do not require the taxpayer to use the same depreciation method on the tax return that it uses in preparing financial statements.

Helpful Hint

Depreciation per financial statements is usually different from depreciation per tax returns.

Consequently, many large corporations use straight-line depreciation in their financial statements in order to maximize net income; at the same time, they use a special accelerated-depreciation method on their tax returns in order to minimize their income taxes. For tax purposes, taxpayers must use on their tax returns either the straight-line method or a special accelerated-depreciation method called the **Modified Accelerated Cost Recovery System (MACRS)**.

Depreciation Disclosure in the Notes

Companies must disclose the choice of depreciation method in their financial statements or in related notes that accompany the statements. [Illustration 9-14](#) shows excerpts from the “Property and equipment” notes from the financial statements of **Southwest Airlines**.



SOUTHWEST AIRLINES

Notes to the Financial Statements

Property and equipment Depreciation is provided by the straight-line method to estimated residual values over periods ranging from 20 to 25 years for flight equipment and 5 to 30 years for ground property and equipment once the asset is placed in service. Amortization of property under capital leases is on a straight-line basis over the lease term and is included in depreciation expense.

From this note, we learn that Southwest Airlines uses the straight-line method to depreciate its planes over periods of 20 to 25 years.

REVISING PERIODIC DEPRECIATION

LEARNING OBJECTIVE 4

Describe the procedure for revising periodic depreciation.

Management should periodically review annual depreciation expense. If wear and tear or obsolescence indicates that annual depreciation is either inadequate or excessive, the company should change the depreciation expense amount.

When a change in an estimate is required, the company makes the change in **current and future years but not to prior periods**. Thus, when making the change, the company (1) does not correct previously recorded depreciation expense, but (2) revises depreciation expense for current and future years. The rationale for this treatment is that continual restatement of prior periods would adversely affect users' confidence in financial statements.

To determine the new annual depreciation expense, the company first computes the asset's depreciable cost at the time of the revision. It then allocates the revised depreciable cost to the remaining useful life.

Helpful Hint

Use a step-by-step approach: (1) determine new depreciable cost; (2) divide by remaining useful life.

To illustrate, assume that Bill's Pizzas decides at the end of 2017 (prior to the year-end adjusting entries) to extend the estimated useful life of the truck one year (a total life of six years) and increase its salvage value to \$2,200. The company has used the straight-line method to depreciate the asset to date. Depreciation per year was \$2,400 $((\$13,000 - \$1,000) \div 5)$. Accumulated depreciation after three years (2014–2016) is \$7,200 $(\$2,400 \times 3)$, and book value is \$5,800 $(\$13,000 - \$7,200)$. The new annual depreciation is \$1,200, computed on December 31, 2017, as follows.

Illustration 9-15: Revised depreciation computation

Book value, 1/1/17	\$5,800
Less: New salvage value	<u>2,200</u>

3 years (2017–2019)

Revised annual depreciation (\$3,600 ÷ 3)	\$1,200
--	----------------

Bill's Pizzas does not make a special entry for the change in estimate. On December 31, 2017, during the preparation of adjusting entries, it records depreciation expense of \$1,200.

Companies must disclose in the financial statements significant changes in estimates. Although a company may have a legitimate reason for changing an estimated life, financial statement users should be aware that some companies might change an estimate simply to achieve financial statement goals. For example, extending an asset's estimated life reduces depreciation expense and increases current period income.

In a recent year, **AirTran Airways** (now owned by **Southwest Airlines**) increased the estimated useful lives of some of its planes from 25 to 30 years and increased the estimated lives of related aircraft parts from 5 years to 30 years. It disclosed that the change in estimate decreased its net loss for the year by approximately \$0.6 million, or about \$0.01 per share. Whether these changes were appropriate depends on how reasonable it is to assume that planes will continue to be used for a long time. Our Feature Story suggests that although in the past many planes lasted a long time, it is also clear that because of high fuel costs, airlines are now scrapping many of their old, inefficient planes.

***Do it!:* REVISED DEPRECIATION**

Chambers Corporation purchased a piece of equipment for \$36,000. It estimated a 6-year life and \$6,000 salvage value. Thus, straight-line depreciation was \$5,000 per year $((\$36,000 - \$6,000) \div 6)$. At the end of year three (before the depreciation adjustment), it estimated the new total life to be 10 years and the new salvage value to be \$2,000. Compute the revised depreciation.

Action Plan

- Calculate remaining depreciable cost.
- Divide remaining depreciable cost by new remaining life.

Solution

$$\text{Original depreciation expense} = (\$36,000 - \$6,000 \div 6) = \$5,000$$

Accumulated depreciation after 2 years = $2 \times \$5,000 = \$10,000$

$$\text{Book value} = \$36,000 - \$10,000 = \$26,000$$

Book value after 2 years of depreciation	\$26,000
Less: New salvage value	<u>2,000</u>
Depreciable cost	\$24,000

Revised annual depreciation ($\$24,000 \div 8$) \$ 3,000

Related exercise material: [BE9-5](#),  [9-3](#), and [E9-6](#).



EXPENDITURES DURING USEFUL LIFE

During the useful life of a plant asset, a company may incur costs for ordinary repairs, additions, and improvements. **Ordinary repairs** are expenditures to maintain the operating efficiency and expected productive life of the unit. They usually are fairly small amounts that occur frequently throughout the service life. Examples are motor tune-ups and oil changes, the painting of buildings, and the replacing of worn-out gears on factory machinery. Ordinary repairs are debited to Maintenance and Repairs Expense as incurred.

In contrast, **additions and improvements** are costs incurred to **increase** the operating efficiency, productive capacity, or expected useful life of the plant asset. These expenditures are usually material in amount and occur infrequently during the period of ownership. Expenditures for additions and improvements increase the company's investment in productive facilities and are generally debited to the plant asset affected. Thus, they are **capital expenditures**. The accounting for capital expenditures varies depending on the nature of the expenditure.

Northwest Airlines at one time spent \$120 million to spruce up 40 jets. The improvements were designed to extend the lives of the planes, meet stricter government noise limits, and save money. The capital expenditure was expected to extend the life of the jets by 10 to 15 years and save about \$560 million compared to the cost of buying new planes. The jets were, on average, 24 years old.

ANATOMY OF A FRAUD

Bernie Ebbers was the founder and CEO of the phone company **WorldCom**. The company engaged in a series of increasingly large, debt-financed acquisitions of other companies. These acquisitions made the company grow quickly, which made the stock price increase dramatically. However, because the acquired companies all had different accounting systems, WorldCom's financial records were a mess. When WorldCom's performance started to flatten out, Bernie coerced WorldCom's accountants to engage in a number of fraudulent activities to make net income look better than it really was and thus prop up the stock price. One of these frauds involved treating \$7 billion of line costs as capital expenditures. The line costs, which were rental fees paid to other phone companies to use their phone lines, had always been properly expensed in previous years. Capitalization delayed expense recognition to future periods and thus boosted current-period profits.

Total take: \$7 billion

THE MISSING CONTROLS

Documentation procedures. The company's accounting system was a disorganized collection of non-integrated systems, which resulted from a series of corporate acquisitions. Top management took advantage of this disorganization to conceal its fraudulent activities.

IMPAIRMENTS

As noted earlier, the book value of plant assets is rarely the same as the fair value. In instances where the value of a plant asset declines substantially, its fair value might fall materially below book value. This may happen because a machine has become obsolete, or the market for the product made by the machine has dried up or has become very competitive. A **permanent decline** in the fair value of an asset is referred to as an **impairment**. So as not to overstate the asset on the books, the company writes the asset down to its new fair value during the year in which the decline in value occurs. Recently, **Disney** recorded a \$200 million write-down on its action movie *John Carter*. Disney spent more than \$300 million producing the film.

In the past, some companies **improperly** delayed recording losses on impairments until a year when it was “convenient” to do so—when the impact on the company’s reported results was minimized. For example, in a year when a company has record profits, it can afford to write down some of its bad assets without hurting its reported results too much. As discussed in [Chapter 4](#), the practice of timing the recognition of gains and losses to achieve certain income results is known as **earnings management**. Earnings management reduces earnings quality. To minimize earnings management, accounting standards now require immediate loss recognition on impaired assets.

Write-downs can create problems for users of financial statements. Critics of write-downs note that after a company writes down assets, its depreciation expense will be lower in all subsequent periods. Some companies improperly inflate asset write-downs in bad years, when they are going to report poor results anyway. (This practice is referred to as “taking a big bath.”) Then in subsequent years, when the company recovers, its results will look even better because of lower depreciation expense.

PLANT ASSET DISPOSALS

LEARNING OBJECTIVE 5

Explain how to account for the disposal of plant assets.

Companies dispose of plant assets that are no longer useful to them. [Illustration 9-16](#) shows the three ways in which companies make plant asset disposals.

Illustration 9-16: Methods of plant asset disposal



Whatever the disposal method, the company must determine the book value of the plant asset at the time of disposal in order to determine the gain or loss. Recall that the book value is the difference between the cost of the plant asset and the accumulated depreciation to date. If the disposal occurs at any time prior to the end of the year, the company must record depreciation for the fraction of the year to the date of disposal. The company then eliminates the book value by reducing (debiting) Accumulated Depreciation for the total depreciation associated with that asset to the date of disposal and reducing (crediting) the asset account for the cost of the asset.

In a disposal by sale, the company compares the book value of the asset with the proceeds received from the sale. If the proceeds from the sale **exceed** the book value of the plant asset, a **gain on disposal** occurs. If the proceeds from the sale **are less than** the book value of the plant asset sold, a **loss on disposal** occurs.

Only by coincidence will the book value and the fair value of the asset be the same at the time the asset is sold. Gains and losses on sales of plant assets are therefore quite common. As an example, **Delta Air Lines** reported a \$94 million gain on the sale of five **Boeing** B-727-200 aircraft and five **Lockheed** L-1011-1 aircraft.

GAIN ON SALE.

To illustrate a gain on sale of plant assets, assume that on July 1, 2014, Wright Company sells office furniture for \$16,000 cash. The office furniture originally cost \$60,000 and as of January 1, 2014, had accumulated depreciation of \$41,000. Depreciation for the first six months of 2014 is \$8,000. Wright records depreciation expense and updates accumulated depreciation to July 1 as follows.

A	=	L	+	SE
+16,000				
+49,000				
−60,000				
				+5,000 Rev
Cash Flows				
+16,000				



July 1	Depreciation Expense	8,000
	Accumulated Depreciation—Equipment	8,000

(To record depreciation expense for the first 6 months of 2014)

After the accumulated depreciation balance is updated, the company computes the gain or loss as the difference between the proceeds from sale and the book value at the date of disposal. Wright Company has a gain on disposal of \$5,000, as computed in [Illustration 9-17](#).

Illustration 9-17: Computation of gain on disposal

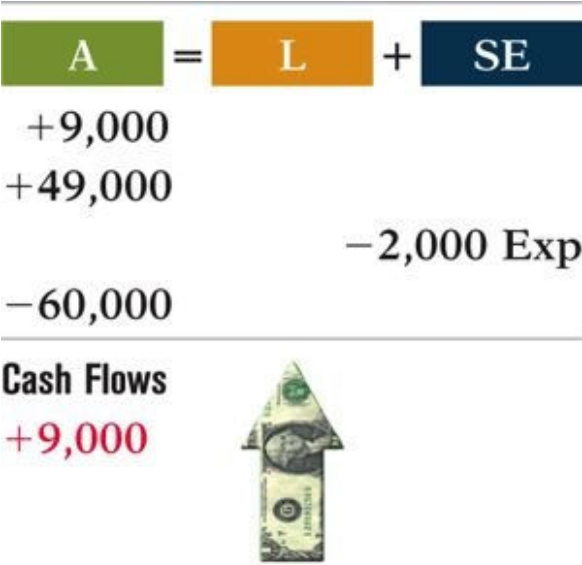
Cost of office furniture	\$60,000
--------------------------	----------

Book value at date of disposal	11,000
--------------------------------	--------

Proceeds from sale	<u>16,000</u>
--------------------	---------------

Gain on disposal of plant asset	\$ 5,000
--	-----------------

Wright records the sale and the gain on sale of the plant asset as follows.



July 1	Cash	16,000
	Accumulated Depreciation—Equipment	49,000
	Equipment	60,000
	Gain on Disposal of Plant Assets	5,000
	(To record sale of office furniture at a gain)	

Companies report a gain on disposal of plant assets in the “Other revenues and gains” section of the income statement. Recently, the shares of **Sears Holdings Corporation** rose 19% when the company announced its intention to sell 1,200 stores to raise cash.

LOSS ON SALE.

Assume that instead of selling the office furniture for \$16,000, Wright sells it for \$9,000. In this case, Wright experiences a loss of \$2,000, as computed in [Illustration 9-18](#).

Illustration 9-18: Computation of loss on disposal
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Cost of office furniture	\$60,000
Less: Accumulated depreciation	<u>49,000</u>
Book value at date of disposal	11,000
Proceeds from sale	<u>9,000</u>
Loss on disposal of plant asset	\$ 2,000

Wright records the sale and the loss on sale of the plant asset as follows.

A	=	L	+	SE
				–8,000 Exp
–8,000				
Cash Flows				
no effect				

July 1	Cash	9,000
	Accumulated Depreciation—Equipment	49,000
	Loss on Disposal of Plant Assets	2,000
	Equipment	60,000
(To record sale of office furniture at a loss)		

Companies report a loss on disposal of the plant asset in the “Other expenses and losses” section of the income statement.

Retirement of Plant Assets

Companies simply retire, rather than sell, some assets at the end of their useful life. For example, some productive assets used in manufacturing may have very specific uses, and they consequently have no ready market when the company no longer needs them. In such a case, the asset is simply retired.

Companies record retirement of an asset as a special case of a disposal where no cash is received. They decrease (debit) Accumulated Depreciation for the full amount of depreciation taken over the life of the asset and decrease (credit) the asset account for the original cost of the asset. The loss (a gain is not possible on a retirement) is equal to the asset's book value on the date of retirement.¹

Do it!: PLANT ASSET DISPOSALS

Overland Trucking has an old truck that cost \$30,000 and has accumulated depreciation of \$16,000. Assume two different situations:

- 1. The company sells the old truck for \$17,000 cash.
- 2. The truck is worthless, so the company simply retires it.

What entry should Overland use to record each scenario?

Action Plan

- Compare the asset's book value and its fair value to determine whether a gain or loss has occurred.
- Make sure that both the Equipment account and Accumulated Depreciation-Equipment are reduced upon disposal.

Solution

- 1. Sale of truck for cash:

Cash	17,000
Accumulated Depreciation—Equipment	16,000
Equipment	30,000
Gain on Disposal of Plant Assets	3,000
[$\$17,000 - (\$30,000 - \$16,000)$]	

(To record sale of truck at a gain)

- 2. Retirement of truck:

Accumulated Depreciation—Equipment	16,000
Loss on Disposal of Plant Assets	14,000
Equipment	30,000

(To record retirement of truck at a loss)

Related exercise material: [BE9-7](#), [BE9-8](#),  [9-4](#), [E9-7](#), and [E9-8](#).



Analyzing Plant Assets

LEARNING OBJECTIVE 6

Describe methods for evaluating the use of plant assets.

The presentation of financial statement information about plant assets enables decision makers to analyze the company's use of its plant assets. We will use two measures to analyze plant assets: return on assets and asset turnover. We also show how profit margin relates to both.

RETURN ON ASSETS

An overall measure of profitability is the [return on assets](#). This ratio is computed by dividing net income by average assets. (Average assets are commonly calculated by adding the beginning and ending values of assets and dividing by 2.) Return on assets indicates the amount of net income generated by each dollar of assets. Thus, the higher the return on assets, the more profitable the company.

Information is provided below related to [JetBlue Airways](#).

JetBlue (in millions)

Net income, 2011 \$ 86

Total assets, 12/31/11 7,071

Total assets, 12/31/10 6,593

Net sales, 2011 4,504

[Illustration 9-19](#) presents the 2011 and 2010 return on assets of JetBlue Airways, Southwest Airlines, and industry averages.

Illustration 9-19: Return on assets for JetBlue and Southwest

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

JetBlue Airways

Southwest Airlines

Industry Average

(\$ in millions)

2011	2010	2011	2011
$\frac{\$86}{(\$7,071 + \$6,593) / 2} = 1.3\%$	1.5%	1.1%	4.0%

JetBlue’s return on assets was better than that of Southwest’s but significantly lower than the airline industry. The airline industry has experienced financial difficulties in recent years as it attempted to cover high labor, fuel, and security costs while offering fares low enough to attract customers. Such difficulties are reflected in the low industry average for return on assets and the very low values for JetBlue and Southwest. Recently, Southwest announced that it would not add additional planes beyond the 700 it already had until it met its investment-return targets. Instead, the company is adding seats to existing planes and replacing some smaller planes with larger ones.



Accounting Across the Organization: Marketing ROI as Profit

Indicator

Marketing executives use the basic finance concept underlying return on assets to determine “marketing return on investment (ROI).” They calculate *marketing ROI* as the profit generated by a marketing initiative divided by the investment in that initiative.



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It can be tricky to determine what to include in the “investment” amount and how to attribute profit to a particular marketing initiative. However, many firms feel that measuring marketing ROI is worth the effort because it allows managers to evaluate the relative effectiveness of various programs. In addition, it helps quantify the benefits that marketing provides to the organization. In periods of tight budgets, the marketing ROI number can provide particularly valuable evidence to help a marketing manager avoid budget cuts.

Source: James O. Mitchel, “Marketing ROI,” *LIMRA’s MarketFacts Quarterly* (Summer 2004), p. 15.



How does measuring marketing ROI support the overall efforts of the organization? (See [page 499](#).)



DECISION TOOLKIT

DECISION CHECKPOINTS	INFO NEEDED FOR DECISION	TOOL TO USE FOR DECISION	HOW TO EVALUATE RESULTS
Is the company using its assets effectively?	Net income and average assets	$\text{Return on assets} = \frac{\text{Net income}}{\text{Average total assets}}$	Higher value suggests favorable efficiency (use of assets).

ASSET TURNOVER

[Asset turnover](#) indicates how efficiently a company uses its assets to generate sales—that is, how many dollars of sales a company generates for each dollar invested in assets. It is calculated by dividing net sales by average total assets. When we compare two companies in the same industry, the one with the higher asset turnover is operating more efficiently. It is generating more sales per dollar invested in assets. [Illustration 9-20](#) presents the asset turnovers for JetBlue Airways and Southwest Airlines.

Illustration 9-20: Asset turnovers for JetBlue and Southwest

$$\text{Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

$$\text{JetBlue Airways Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

(\$ in millions)

2011	2010	2011	2011
$\frac{\$4,504}{(\$7,071 + \$6,593) / 2} = 0.66 \text{ times}$	0.58 times	0.93 times	0.80 times

These asset turnover values tell us that for each dollar of assets, JetBlue generates sales of \$0.66 and Southwest \$0.93. Southwest is more successful in generating sales per dollar invested in assets. The average asset turnover for the airline industry is 0.80 times. In recent years, airlines have reduced both the number of planes used and routes flown to try to pack more customers on a plane. This would increase the asset turnover.

Asset turnovers vary considerably across industries. During a recent year, the average asset turnover for electric utility companies was 0.34. The grocery industry had an average asset turnover of 2.89. Asset turnover values, therefore, are only comparable within—not between—industries.

PROFIT MARGIN REVISITED

In [Chapter 5](#), you learned about **profit margin**. That ratio is calculated by dividing net income by net sales. It tells how effective a company is in turning its sales into income—that is, how much income each dollar of sales provides. [Illustration 9-21](#) shows that return on assets can be computed as the product of profit margin and asset turnover.

Illustration 9-21: Composition of return on assets

$$\text{Profit Margin} \times \text{Asset Turnover} = \text{Return on Assets}$$

$$\frac{\text{Net Income}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Average Total Assets}} = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

This relationship has very important strategic implications for management. From [Illustration 9-21](#), we can see that if a company wants to increase its return on assets, it can do so in two ways: (1) by increasing the margin it generates from each dollar of goods that it sells (the profit margin), or (2) by increasing the volume of goods that it sells (the asset turnover). For example, most grocery stores have very low profit margins, often in the range of 1 or 2 cents for every dollar of goods sold. Grocery stores, therefore, focus on asset turnover: They rely on high turnover to increase their return on assets. Alternatively, a store selling luxury goods, such as expensive jewelry, doesn't generally have a high turnover. Consequently, a seller of luxury goods focuses on having a high profit margin. Recently, Apple decided to offer a less expensive version of its popular iPod. This new product would provide a lower margin, but higher volume, than Apple's more expensive version.

Let's evaluate the return on assets of JetBlue Airways for 2011 by evaluating its components—profit margin and asset turnover. See [Illustration 9-22](#).

Illustration 9-22: Components of rate of return for JetBlue and Southwest

$$\text{Profit Margin} \times \text{Asset Turnover} = \text{Return on Assets}$$

JetBlue Airways 1.9% × 0.66 = 1.3%

Southwest Airlines 1.2% × 0.93 = 1.1%

JetBlue’s return on asset of 1.3% versus Southwest’s 1.1% means that JetBlue generates 1.3 cents per each dollar invested in assets, while Southwest generates 1.1 cents. [Illustration 9-22](#) reveals that although these two airlines have similar return on asset values, they achieve this return in a slightly different fashion. First, JetBlue’s profit margin of 1.9% versus Southwest’s of 1.2% means that for every dollar of sales, JetBlue generates approximately 1.9 cents of net income, while Southwest generates approximately 1.2 cents. Second, JetBlue’s asset turnover of 0.66 means that it generates 66 cents of sales per each dollar invested in assets, while Southwest generates 93 cents. Therefore, in 2011, Southwest was more effective at generating sales from its assets, while JetBlue was better at deriving profit from those sales.



DECISION TOOLKIT

DECISION CHECKPOINTS	INFO NEEDED FOR DECISION	TOOL TO USE FOR DECISION	HOW TO EVALUATE RESULTS
----------------------	--------------------------	--------------------------	-------------------------

How effective is the company at generating sales from its assets?

Net sales and average total assets

$$\text{Asset turnover} = \frac{\text{Net sales}}{\text{Average total assets}}$$

Indicates the sales dollars generated per dollar of assets. A high value suggests the company is effective in using its resources to generate sales.



People, Planet, and Profit Insight: Sustainability Report

Please

Sustainability reports identify how the company is meeting its corporate social responsibilities. Many companies, both large and small, are now issuing these reports. For example, companies such as **Disney**, **Best Buy**, **Microsoft**, **Ford**, and **ConocoPhillips** issue these reports. Presented below is an adapted section of **BHP Billiton**'s (a global mining, oil, and gas company) sustainability report on its environmental policies. These policies are to (1) take action to address the challenges of climate change, (2) set and achieve targets that reduce pollution, and (3) enhance biodiversity by assessing and considering ecological values and land-use aspects. Here is how BHP Billiton measures the success or failure of some of these policies:



Environment	Result	Trend	Commentary	Target Date
Aggregate Group target of 6% reduction in greenhouse gas emissions per unit of production	On track	Improvement	Our greenhouse gas emissions intensity index has reduced 7% on our FY2006 baseline year	30 June 2012
Aggregate Group target of 13% reduction in carbon-based energy use per unit of production	On track	Improvement	Our energy intensity index has reduced 6% on our FY2006 baseline year	30 June 2012
Aggregate Group target of a 10% improvement in the ratio of water recycled/reused to high-quality water consumed	On track	Deterioration	Our water use index has improved 7% on our FY2007 baseline year	30 June 2012

In addition to the environment, BHP Billiton has sections in its sustainability report which discuss people, safety, health, and community.

Source: BHP Billiton, 2010 Sustainability Report.



Why do you believe companies issue sustainability reports? (See [page 500](#).)

Intangible Assets

LEARNING OBJECTIVE 7

Identify the basic issues related to reporting intangible assets.

Intangible assets are rights, privileges, and competitive advantages that result from ownership of long-lived assets that do not possess physical substance. Many companies' most valuable assets are intangible. Some widely known intangibles are **Microsoft's** patents, **McDonalds's** franchises, the trade name iPod, and **Nike's** trademark "swoosh."

Analysts estimated that in the early 1980s, the fair value of intangible assets to total assets was close to 40%. By 2000, the percentage was over 80%—quite a difference. What has happened is that research and development (e.g., hi-tech and bio-tech) has grown substantially. At the same time, many companies (e.g., Nike and Microsoft) have developed brand power which enables them to maintain their market position.

As you will learn in this section, financial statements do report numerous intangibles. Yet, many other financially significant intangibles are not reported. To give an example, according to its financial statements in a recent year, **Google** had total stockholders' equity of \$22.7 billion. But its market value—the total market price of all its shares on that same date—was roughly \$178.5 billion. Thus, its actual market value was about \$155.8 billion greater than the amount reported for stockholders' equity on the balance sheet. It is not uncommon for a company's reported book value to differ from its market value because balance sheets are reported at historical cost. But such an extreme difference seriously diminishes the usefulness of the balance sheet to decision-makers. In the case of Google, the

Intangibles may be evidenced by contracts, licenses, and other documents. Intangibles may arise from the following sources:

- 1. Government grants, such as patents, copyrights, licenses, trademarks, and trade names.
- 2. Acquisition of another business in which the purchase price includes a payment for goodwill.
- 3. Private monopolistic arrangements arising from contractual agreements, such as franchises and leases.

ACCOUNTING FOR INTANGIBLE ASSETS

Companies record intangible assets at cost. Intangibles are categorized as having either a limited life or an indefinite life. If an intangible has a **limited life**, the company allocates its cost over the asset's useful life using a process similar to depreciation. The process of allocating to expense the cost of intangibles is referred to as **amortization**. The cost of intangible assets with **indefinite lives should not be amortized**.

To record amortization of an intangible asset, a company increases (debits) Amortization Expense, and decreases (credits) the specific intangible asset. (Unlike depreciation, no contra account, such as Accumulated Amortization, is usually used.)

Intangible assets are typically amortized on a straight-line basis. For example, the legal life of a patent is 20 years. Companies **amortize the cost of a patent over its 20-year life or its useful life, whichever is shorter**. To illustrate the computation of patent amortization, assume that National Labs purchases a patent at a cost of \$60,000 on June 30. If National estimates the useful life of the patent to be eight years, the annual amortization expense is \$7,500 (\$60,000

÷ 8) per year. National records \$3,750 ($7,500 \times \frac{6}{12}$) of amortization for the six-month period ended December 31 as follows.

A	=	L	+	SE
				–3,750 Exp
–3,750				

Cash Flows

no effect

Dec. 31	Amortization Expense	3,750
	Patent	3,750

(To record patent amortization)

When a company has significant intangibles, analysts should evaluate the reasonableness of the useful life estimates that the company discloses in the notes to its financial statements. In determining useful life, the company should consider obsolescence, inadequacy, and other factors. These may cause a patent or other intangible to become economically ineffective before the end of its legal life.

For example, suppose **Intel** obtained a patent on a new computer chip it had developed. The legal life of the patent is 20 years. From experience, however, we know that the useful life of a computer chip patent is rarely more than five

years. Because new superior chips are developed so rapidly, existing chips become obsolete. Consequently, we would question the amortization expense of Intel if it amortized its patent on a computer chip for a life significantly longer than a five-year period. Amortizing an intangible over a period that is too long will understate amortization expense, overstate Intel's net income, and overstate its assets.



DECISION TOOLKIT

DECISION CHECKPOINTS	INFO NEEDED FOR DECISION	TOOL TO USE FOR DECISION	HOW TO EVALUATE RESULTS
Is the company's amortization of intangibles reasonable?	Estimated useful life of intangibles from notes to financial statements of this company and its competitors	If the company's estimated useful life significantly exceeds that of competitors or does not seem reasonable in light of the circumstances, the reason for the difference should be investigated.	Too high an estimated useful life will result in understating amortization expense and overstating net income.

TYPES OF INTANGIBLE ASSETS

Patents

A [patent](#) is an exclusive right issued by the U.S. Patent Office that enables the recipient to manufacture, sell, or otherwise control an invention for a period of 20 years from the date of the grant. **The initial cost of a patent is the cash or cash equivalent price paid to acquire the patent.**

The saying "A patent is only as good as the money you're prepared to spend defending it" is very true. Most patents are subject to some type of litigation by competitors. A well-known example is the patent infringement suit brought by [Amazon.com](#) against [Barnes&Noble.com](#) regarding its online shopping software. If the owner incurs legal costs in

Research and Development Costs

Research and development costs are expenditures that may lead to patents, copyrights, new processes, and new products. Many companies spend considerable sums of money on research and development (R&D) in an ongoing effort to develop new products or processes. For example, in a recent year **IBM** spent over \$5.1 billion on research and development. There are uncertainties in identifying the extent and timing of the future benefits of these expenditures. As a result, companies usually record research and development costs **as an expense when incurred**, whether the R&D is successful or not.

Helpful Hint

Research and development costs are not intangible costs, but because these expenditures may lead to patents and copyrights, we discuss them in this section.

To illustrate, assume that Laser Scanner Company spent \$3 million on research and development that resulted in two highly successful patents. It spent \$20,000 on legal fees for the patents. It can include the legal fees in the cost of the patents but cannot include the R&D costs in the cost of the patents. Instead, Laser Scanner records the R&D costs as an expense when incurred.

Many disagree with this accounting approach. They argue that to expense these costs leads to understated assets and net income. Others argue that capitalizing these costs would lead to highly speculative assets on the balance sheet. Who is right is difficult to determine.

International Note

IFRS allows capitalization of some development costs. This may contribute to differences in R&D expenditures across nations.

Copyrights

The federal government grants copyrights, which give the owner the exclusive right to reproduce and sell an artistic or published work. Copyrights last for the life of the creator plus 70 years. The cost of the copyright consists of the **cost of acquiring and defending it**. The cost may be only the small fee paid to the U.S. Copyright Office, or it may amount to a great deal more if a copyright is acquired from another party. The useful life of a copyright generally is significantly shorter than its legal life.

Trademarks and Trade Names

A trademark or trade name is a word, phrase, jingle, or symbol that distinguishes or identifies a particular enterprise or product. Trade names like Wheaties, Monopoly, Sunkist, Kleenex, Coca-Cola, Big Mac, and Jeep create immediate product identification and generally enhance the sale of the product. The creator or original user may obtain the exclusive legal right to the trademark or trade name by registering it with the U.S. Patent Office. Such registration provides 20 years' protection and may be renewed indefinitely as long as the trademark or trade name is in use.

If a company purchases the trademark or trade name, the cost is the purchase price. If the company develops the trademark or trade name itself, the cost includes attorney's fees, registration fees, design costs, successful legal defense costs, and other expenditures directly related to securing it. Because trademarks and trade names have indefinite lives, they are not amortized.

Franchises: jromero0950@email.phoenix.edu. Printing is for personal, private use only. No part of this book may be reproduced or transmitted without publisher's prior permission. Violators will be prosecuted.

When you purchase a RAV4 from a **Toyota** dealer, fill up your tank at the corner **Shell** station, eat lunch at **Subway**, or make reservations at a **Marriott** hotel, you are dealing with franchises. A **franchise** is a contractual arrangement under which the franchisor grants the franchisee the right to sell certain products, to perform specific services, or to use certain trademarks or trade names, usually within a designated geographic area.

Another type of franchise is a license. Licenses granted by a governmental body permit a business to use public property in performing its services. Examples are the use of city streets for a bus line or taxi service; the use of public land for telephone, electric, and cable television lines; and the use of airwaves for radio or TV broadcasting. In a recent license agreement, **Fox**, **CBS**, and **NBC** agreed to pay \$27.9 billion for the right to broadcast **NFL** football games over an eight-year period.

Franchises and licenses may be granted for a definite period of time, or the time period may be indefinite or perpetual. **When a company can identify costs with the acquisition of the franchise or license, it should recognize an intangible asset.** Companies record as **operating expenses** annual payments made under a franchise agreement in the period in which they are incurred. In the case of a limited life, a company amortizes the cost of a franchise (or license) as operating expense over the useful life. If the life is indefinite or perpetual, the cost is not amortized.

Goodwill

Usually, the largest intangible asset that appears on a company's balance sheet is goodwill. **Goodwill** represents the value of all favorable attributes that relate to a company that are not attributable to any other specific asset. These include exceptional management, desirable location, good customer relations, skilled employees, high-quality products, fair pricing policies, and harmonious relations with labor unions. Goodwill is unique because unlike other assets such as investments, plant assets, and even other intangibles, which can be sold **individually** in the marketplace, goodwill can be identified only with the business **as a whole**.

If goodwill can be identified only with the business as a whole, how can it be determined? Certainly, many business enterprises have many of the factors cited above (exceptional management, desirable location, and so on). However, to determine the amount of goodwill in these situations would be difficult and very subjective. In other words, to recognize goodwill without an exchange transaction that puts a value on the goodwill would lead to subjective valuations that do not contribute to the reliability of financial statements. **Therefore, companies record goodwill only when there is an exchange transaction that involves the purchase of an entire business. When an entire business is purchased, goodwill is the excess of cost over the fair value of the net assets (assets less liabilities) acquired.**

In recording the purchase of a business, a company debits the identifiable acquired assets and credits liabilities at their fair values, credits cash for the purchase price, and records the difference as the cost of goodwill. Goodwill is not amortized because it is considered to have an indefinite life. However, it must be written down if a company determines the value of goodwill has been permanently impaired.



International Insight: Should Companies Write Up Goodwill?

Softbank Corp. was Japan's biggest Internet company. At one time, it boosted the profit margin of its mobile-phone unit from 3.2% to 11.2% through what appeared to some as accounting tricks. What did it do? It wrote down the value of its mobile-phone-unit assets by half. This would normally result in a huge loss. But rather than take a loss, the company wrote up goodwill by the same amount. How did this move increase earnings? The assets were being depreciated over 10 years, but the company amortizes goodwill over 20 years. (Amortization of goodwill was allowed under the accounting standards it followed at that time.) While the new treatment did not break any rules, the



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Source: Andrew Morse and Yukari Iwatani Kane, “Softbank’s Accounting Shift Raises Eyebrows,” *Wall Street Journal* (August 28, 2007), p. C1.



Do you think that this treatment would be allowed under U.S. GAAP? (See [page 500](#).)

***Do it!:* CLASSIFICATION CONCEPTS**

Match the statement with the term most directly associated with it.

- Copyright Intangible assets Research and development costs Amortization Franchise

- 3. _____ An exclusive right granted by the federal government to reproduce and sell an artistic or published work.
- 4. _____ A right to sell certain products or services or to use certain trademarks or trade names within a designated geographic area.
- 5. _____ Costs incurred by a company that often lead to patents or new products. These costs must be expensed as incurred.

Action Plan

- Know that the accounting for intangibles often depends on whether the item has a finite or indefinite life.
- Recognize the many similarities and differences between the accounting for plant assets and intangible assets.

Solution

- 1. Amortization
- 2. Intangible assets
- 3. Copyright
- 4. Franchise
- 5. Research and development costs

Related exercise material: [BE9-10](#), **Do it!** [9-5](#), [B9-13](#), [E9-14](#), and [E9-15](#).



Financial Statement Presentation of Long-Lived Assets

LEARNING OBJECTIVE 8

Indicate how long-lived assets are reported in the financial statements.

Usually, companies show plant assets in the financial statements under "Property, plant, and equipment," and they show intangibles separately under "Intangible assets." [Illustration 9-23](#) shows a typical balance sheet presentation of long-lived assets, adapted from a recent [The Coca-Cola Company](#) balance sheet.

Illustration 9-23: Presentation of property, plant, and equipment and intangible assets



THE COCA-COLA COMPANY

Balance Sheet (partial)

(in millions)

Property, plant, and equipment

Land	\$ 699
------	--------

Buildings and improvements	3,816
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Machinery and equipment	10,355
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Containers and other	<u>1,597</u>
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	16,467
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Less: Accumulated depreciation	<u>6,906</u>
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	9,561
--	-------

Intangible assets

Trademarks with indefinite lives	6,183
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Goodwill	4,224
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Other intangible assets	<u>2,421</u>
-------------------------	--------------

	\$12,828
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