

10

OBJECTIVES

After reading this chapter, you will be able to:

- 1 Identify the characteristics of property, plant, and equipment.
- 2 Record the acquisition of property, plant, and equipment.
- 3 Determine the cost of a nonmonetary asset acquired by the exchange of another nonmonetary asset.
- 4 Compute the cost of a self-constructed asset, including interest capitalization.
- 5 Record costs after acquisition.
- 6 Record the disposal of property, plant, and equipment.
- 7 Understand the disclosures of property, plant, and equipment.
- 8 Explain the accounting for oil and gas properties (Appendix).

Property, Plant, and Equipment: Acquisition and Disposal

To Capitalize or Not to Capitalize, That is the Question

The issue of capitalizing (recording as an asset) versus expensing expenditures for property, plant, and equipment has historically been controversial and one that can have dramatic consequences for the balance sheet, income statement, and statement of cash flows. It was precisely this issue that triggered one of the largest financial restatements in U.S. history by **WorldCom**. According to U.S. accounting standards, line costs, the various fees paid to telecommunications companies to use their communication networks, are considered expenses. By improperly capitalizing approximately \$3.8 billion in line costs, WorldCom was able to conceal large losses and falsely portray itself as a profitable business. In addition, the expenditures for line costs were treated as investing cash flows instead of operating cash flows, which resulted in WorldCom reporting higher net operating cash flows than if the costs were expensed. While the practices used by WorldCom were clear violations of GAAP, in many situations (e.g., oil and gas exploration) managers have choices and must use their judgment as to whether certain expenditures are capitalized or expensed.



Credit: Adam Rountree/Bloomberg News/Landov

What are the financial impacts of these choices? First, companies that choose to capitalize rather than expense costs will report higher asset and equity balances, which tend to make them appear more solvent (lower debt ratios). Second, capitalizing costs will raise current-year income by the amount capitalized; however, future income will be lowered by the amount of the depreciation expense. While the income effect on any single year depends on the actual size of the expenditures, the pattern of reported income will tend to be smoother for firms that capitalize costs because of the systematic allocation of costs through the recording of depreciation. When faced with the question of capitalizing or expensing certain costs, it is crucial to understand the financial statement impacts of your decision.

FOR FURTHER INVESTIGATION

For a discussion of capitalizing expenditures, consult the Business & Company Resource Center (BCRC):

- Accounting Practice On Trial with WorldCom: Should Cable Companies be Able to Capitalize Expenses? *Investment Dealers' Digest*, 0021-0080, Oct 13, 2003.

Property, plant, and equipment are very important components of a company's assets. They include assets that a company needs to conduct its business, such as land, office buildings, factories, machinery, equipment, warehouses, retail stores, and delivery vehicles. They usually are a major portion of a company's total assets. In this chapter we include a discussion of the costs of acquisition, costs subsequent to acquisition, and disposal of property, plant, and equipment. We include additional issues related to oil and gas properties in an Appendix at the end of this chapter.

CHARACTERISTICS OF PROPERTY, PLANT, AND EQUIPMENT

1 Identify the characteristics of property, plant, and equipment.

Property, plant, and equipment are the **tangible noncurrent assets that a company uses in the normal operations of its business**. Alternative terms are **plant assets, fixed assets, and operational assets**. To be included in this category, an asset must have three characteristics:

1. *The asset must be held for use and not for investment.* Only assets used in the normal course of business should be included. However, the asset does not have to be used continuously. Therefore, a company includes machinery it owns for standby purposes in case of breakdowns. However, it does not include idle land or buildings; these should be reported as investments. A particular type of asset may be classified as property, plant, and equipment by one company and as inventory by another. For example, trucks owned by a trucking company are included in its property, plant, and equipment. However, trucks owned by a dealer are categorized as inventory.
2. *The asset must have an expected life of more than one year.* The asset represents a bundle of future services that the company will receive over the life of the asset. To be included in property, plant, and equipment, the benefits must extend for more than one year or the normal operating cycle, whichever is longer. Therefore, a company distinguishes the asset from other assets, such as supplies, that it expects to consume within the current year. However, assets remain in the property, plant, and equipment category, even if the company intends to sell them in the next year.
3. *The asset must be tangible in nature.* There must be a physical substance that can be seen and touched. In contrast, intangible assets such as goodwill or patents do not have a physical substance. Unlike raw materials, generally property, plant, and equipment do not change their physical characteristics and are not added into the product. Wasting assets are natural resources, such as minerals, oil and gas, and timber, that are used up by extraction. A company usually includes them under the category of property, plant, and equipment, even though it may add them in a product. For example, an iron mine owned by a steel company produces iron ore, which changes its characteristics as it is used in the manufacture of steel.

A company initially records an asset included in its property, plant, and equipment category at its acquisition cost. The asset provides benefits to the company over a period of more than one year. Therefore, the matching principle requires that the company allocate the cost of the asset as an expense to each period in which it consumes the asset and receives benefits. We discuss this process of depreciation in the next chapter.

Evaluation of Use of Historical Cost

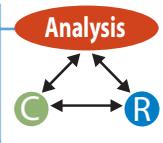
The use of acquisition (historical) cost as the basis for reporting property, plant, and equipment is consistent with the reporting of most other assets, liabilities, and stockholders' equity items. The advantages are that

1. the cost is equal to the fair value at the date of acquisition,
2. the cost is a *reliable* valuation, and
3. gains and losses from holding the asset are recognized only when realized through a sale transaction.

However, the use of historical cost for reporting property, plant, and equipment on a company's financial statements raises more issues than for other assets because the time since acquisition is usually greater. For example, many users question the continued use of historical cost for reporting an asset such as land. How *relevant* is the cost of land purchased in the past, perhaps as much as 50 years ago? Similar issues arise with depreciable assets such as office buildings. Although depreciation is a process of cost allocation rather than of valuation, the book value of the assets (cost less accumulated depreciation) may become less relevant as it becomes much less than the asset's current value. In addition, as we discuss in the next chapter, a company writes down property, plant, and equipment to its fair value when its value is impaired.

Another factor to be considered is the manner in which a company uses the asset. The process of allocating the historical cost may be more relevant if the company uses the asset in its productive operations, because there is an appropriate matching of the cost of the asset against the revenues it produces. Alternatively, the current value may be more relevant if the company intends to sell the asset, or the entire company is for sale.

Since generally accepted accounting principles require that a company report its property, plant, and equipment at historical cost, their current cost generally is not available to users of financial statements. However, companies are encouraged to provide supplementary disclosures of the current cost of their property, plant, and equipment.



ACQUISITION OF PROPERTY, PLANT, AND EQUIPMENT

The major types of assets that a company includes in the category of property, plant, and equipment are land, buildings, equipment, machinery, furniture and fixtures, leasehold improvements, and wasting assets. The acquisition of an item of property, plant, and equipment raises many issues. These include the determination of the cost of an asset acquired singly or by a lump-sum purchase, with deferred payments, through the issuance of securities, or by donation. Also, in more complex situations, assets may be acquired in exchange for other assets or by self-construction. We discuss each of these issues in the following sections.

- 2 Record the acquisition of property, plant, and equipment.

Determination of Cost

The cost of property, plant, and equipment is the cash outlay (not the "list" price) or its equivalent that is necessary to acquire the asset and put it in operating condition. In other words, **the acquisition costs that are necessary to obtain the benefits to be derived from the asset are capitalized** (recorded as an asset). These costs include the contract price, less discounts available, plus freight, assembly, installation, and testing costs. As for inventory, discounts *available* should be subtracted from the cost of the asset rather than recorded as discounts *taken*, because the benefits to be received from the asset are not increased by a discount not taken.

Example: Recording the Acquisition

Assume that the Devon Company purchases a machine with a contract price of \$100,000 on terms of 2/10, n/30. The company does not take the cash discount of \$2,000, and incurs transportation costs of \$2,500, as well as installation and testing costs of \$3,000. Sales tax is 7% of the invoice price, or \$7,000. During the installation of the machine, uninsured damages of \$500 are incurred and paid by the company. The company makes the following summary journal entry to record these costs:

Machine	(\$100,000 - \$2,000 + \$2,500 + \$3,000 + \$7,000)	110,500	
Repair Expense		500	
Discounts Lost		2,000	
Cash			113,000

The company does not include the \$500 of damages in the cost of the asset because it was not a “necessary” cost. We discuss the issues related to the cost of various types of property, plant, and equipment in the following sections. ♦

Land

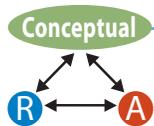
The recorded cost of land includes the:

- contract price
- costs of closing the transaction and obtaining title, including commissions, options, legal fees, title search, insurance, and past due taxes
- costs of surveys
- costs of preparing the land for its particular use, such as clearing, grading, and razing old buildings (net of any proceeds from salvage) when such improvements have an indefinite life

A company should record the costs of improvements with a limited economic life, such as landscaping, streets, sidewalks, and sewers, in a Land Improvements account and depreciate these costs over their economic lives. Alternatively, if the local government authority is responsible for the continued upkeep of the improvements, then effectively the improvements have an indefinite economic life to the company. In this case, the company should add the costs of the improvements to the cost of the land. Since land is considered *not* to have a limited economic life and its residual value is unlikely to be less than its acquisition cost, land generally is not depreciated.

Land purchased for future use or as an investment should not be considered part of property, plant, and equipment. Issues arise about accounting for interest and property taxes on such land. **FASB Statement No. 34** (discussed later in the chapter) requires that a company capitalize interest only when an asset is undergoing the activities needed to get it ready for its intended use. Therefore, if the company is involved in any planning activity, such as architectural design or the obtaining of permits, it capitalizes interest. The *Statement* does not address the issue of property taxes (or other costs such as insurance).

FASB Statement No. 67 applies to real estate held for sale or rental. It requires a company to capitalize the costs incurred for property taxes and insurance only during periods in which activities needed to get the property ready for its intended use are in progress. Costs incurred for these items after the property is substantially complete and ready for its intended use are expensed as incurred.¹ Thus the rules for interest, property taxes, and insurance are the same for real estate projects developed for sale or lease to others. However, the *Statement* does not apply to real estate developed by a company for use in its own operations. Therefore, the company could capitalize or expense the property taxes and insurance during the development period.



Arguments in favor of capitalizing property taxes are (1) the matching principle does not require expensing the costs since the asset is not being used in a revenue-producing activity, and (2) if the advance purchase of the land had been made at a lower price, capitalizing the costs would result in a cost nearer to that which the company would have paid later. Arguments in favor of expensing the property taxes are (1) property taxes are a maintenance cost that do not add value to the property, and (2) it is consistent with the conservatism convention. Once the land is used in the operating activities, both interest and property taxes must be expensed.

Buildings

The recorded cost of buildings includes:

- the contract price
- the costs of remodeling and reconditioning

1. “Accounting for Costs and Initial Rental Operations of Real Estate Projects,” *FASB Statement of Financial Accounting Standards No. 67* (Stamford, Conn.: FASB, 1982), par. 6.

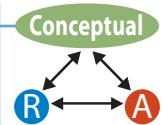
- the costs of excavation for the specific building
- architectural costs and the costs of building permits
- capitalized interest costs in the particular circumstances discussed later in the chapter
- unanticipated costs resulting from the condition of the land (such as blasting rock or channeling an underground stream)

A company should expense unanticipated costs, such as a strike or a fire, associated with the construction of the building. The different treatment is justified because the avoidable costs of the unanticipated events were not necessary to obtain the economic benefits of the building. The costs of property taxes and insurance during construction may be capitalized or expensed, as we discussed for land.

Leasehold Improvements

Improvements made by the lessee to leased property, unless specifically exempted in the lease agreement, revert to the lessor at the end of the lease. Therefore, **a lessee capitalizes the cost of a leasehold improvement**, such as the interior design of a retail store, **and amortizes the cost over its economic life or the life of the lease, whichever is shorter.**

The preceding discussion indicates the general rules to be followed but does not provide solutions for all possible situations. A company's decision to expense a cost immediately, to capitalize it as an asset, such as a building that will be depreciated, or to capitalize the cost as a nondepreciable asset, such as land, has an impact on both the company's income statement and balance sheet. **The general procedure is to determine whether incurring the cost will provide economic benefits for the company beyond the current period, and which asset is associated with the increase in benefits.** For example, when a company purchases land, the cost of demolishing an old building on the land is properly capitalized to the land because the benefits to be derived from the land are increased as a result of the old building no longer being there. Also, if the seller had demolished the old building, the selling price presumably would have been higher. When a company demolishes an old building on land already owned so that a new building can be erected, the cost is associated with the benefits previously realized from the old building. Therefore, the cost is included in the calculation of the gain or loss on disposal. The new building does not have greater benefits because the old building is obsolete. Similarly if a company purchases an old building with the expectation of incurring some costs of renovation, but the actual costs exceed the planned costs because of unforeseen difficulties, the added cost should not be capitalized. This is because it resulted from an error of judgment and did not increase the economic benefits of the building above those benefits originally expected. However, given the difficulties of accurate budgeting, the total costs often are capitalized whether or not those total costs exceed the budgeted amount.



Lump-Sum Purchase

A company may acquire several dissimilar assets for a single lump-sum purchase price. The purchase price is allocated to the individual assets purchased. This allocation is necessary because some of the assets may be depreciable and some not, and the depreciable assets may have different economic lives and be depreciated by different methods. **A company allocates the acquisition price in a lump-sum purchase based on the relative fair values of the individual assets.**

Example: Lump Sum Purchase

Suppose Sample Company pays \$120,000 for land and a building. If there is no evidence in the contract of separate prices agreed upon for the land and the building, the company allocates the \$120,000 between the two assets based on their relative fair values. The company can obtain evidence of such values from several sources, such as an appraisal or the assessed values for property taxes, if it considers those values to be reasonably

accurate indications of relative market values. Suppose that an appraisal of the land and building indicates values of \$50,000 and \$75,000, respectively. Sample Company computes the cost of each as follows:

	Appraisal Value	Relative Fair Value	×	Total Cost	=	Allocated Cost
Land	\$ 50,000	\$50,000/\$125,000	×	\$120,000	=	\$ 48,000
Building	75,000	\$75,000/\$125,000	×	\$120,000	=	72,000
Total	<u>\$125,000</u>					<u>\$120,000</u>

Sample Company records the land at a cost of \$48,000 and the building at a cost of \$72,000. If the cost of obtaining an appraisal is material, the company should add it to the purchase price so it is allocated to the respective assets. In some situations, it may be possible to determine only one of the market values. Then the remaining portion of the total cost is assigned to the other asset. ♦

Deferred Payments

When a company acquires property, plant, and equipment on a deferred payment basis, such as by issuing notes or bonds or assuming a mortgage, it records the asset at its fair value or the fair value of the liability on the date of the transaction, whichever is more reliable. If neither is determinable, the company records the asset at the present value of the deferred payments at the stated interest rate, unless the stated rate is materially different from the market rate, in which case it uses the market rate.²

Example: Deferred Payments

Suppose that Antush company purchases equipment by issuing a \$10,000 non-interest-bearing five-year note, when the market rate for obligations of this type is 12%. The note will be paid off at the rate of \$2,000 at the end of each year. Neither the fair value of the equipment nor the note is determinable directly. In this case the company values both the equipment and the note at the present value of the payments, which is \$7,210 (\$2,000 × 3.604776, the factor from Table 4 of the Time Value of Money Module for five years and a 12% rate). Antush Company records the acquisition of the equipment as follows:

Equipment	7,210	
Discount on Notes Payable	2,790	
Notes Payable		10,000

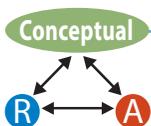
If the company purchased the equipment by issuing a \$7,500 5-year note with a stated interest rate of 12%, the present value of the note is \$7,500 (assuming that 12% is a fair rate). In this case, Antush Company would record the acquisition as follows:

Equipment	7,500	
Notes Payable		7,500

Property, plant, and equipment may be purchased by issuing bonds, as we discuss in Chapter 14. The same principles are followed, and the asset is recorded at the present value of the future payments. ♦

Issuance of Securities

When a company acquires assets by issuing securities such as common stock or preferred stock, the company must determine the fair value of the transaction. In many cases two measures of fair value are available: the fair value of the asset acquired and the fair value of the securities issued. The general rule is to record the exchange at the fair value of



2. "Interest on Receivables and Payables," APB Opinion No. 21 (New York: AICPA, 1971), par. 11.

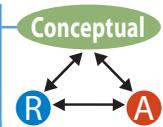
the asset acquired or of the stock issued, whichever is more *reliable*. Normally the two values would be very similar, but if they are materially different, it is necessary to select one. In some situations, one of the values may be considered more reliable because it is quoted in an active market. For example, if the security is actively traded on a stock exchange and the asset being acquired is very specialized, the security value would be the preferred choice. Alternatively, if the security is not actively traded but the asset is one that is commonly traded, the asset value would be the better choice. But what if neither of the two values can be readily determined?

For example, suppose that a company whose stock is not traded publicly issues stock to acquire a mining claim. Conceptually, the value of the asset is preferred to the value of the stock, because the value of the acquired asset is independent of the value of the stock. However, the value of the stock is *not* independent of the asset being acquired, because the more valuable the asset is, the more valuable is the stock. In the absence of any other valuation approach, the directors of the company assign a value on the transaction. State laws generally allow this procedure, provided the value is established in good faith.

Assets Acquired by Donation

When a company acquires property, plant, and equipment through donation (usually by a governmental unit or an individual), a strict interpretation of the cost concept would require that the asset be valued at zero. However, these transactions are defined by APB Opinion No. 29 as nonreciprocal transfers of nonmonetary assets. A **nonreciprocal transfer** is a transfer of assets or services in one direction. A company receiving an asset in such an exchange must record it at its fair value. The justification is that when an asset is donated, cost provides an inadequate method of accounting for the asset and for income measurement. Therefore, the cost principle is modified to produce more relevant asset and income values.

Generally accepted accounting principles require different treatment for recording an asset donated by a governmental unit and an asset donated by a nongovernmental unit (such as an individual stockholder). In both situations, the company records (debits) the asset at its fair value. In the case of a donation by a governmental unit, the credit is recorded in a donated capital account. The argument for this treatment is that the company should not increase earnings as a result of a donation by a governmental unit.



Example: Donation by Governmental Unit

Suppose the city of Julesberg (a governmental unit) donates land worth \$20,000 to the Klemme Company because the company relocates its production facilities to Julesberg. The Klemme Company records this event as follows:

Land	20,000	
Donated Capital		20,000

Donations of this type often are accompanied by conditions. For example, the Klemme Company might be required to employ 100 people for 10 years. The company reports the condition in the notes to the financial statements, if material, but does not record it as a liability. Klemme Company includes the Donated Capital account in the Stockholders' Equity section of its balance sheet. ♦

Example: Donation by Nongovernmental Agency

In the case of a donation by a nongovernmental unit, the company records a gain.³ The argument for this treatment is that receiving something of value from a nongovernmental unit (e.g., a stockholder) represents earnings to the company. For example, suppose



3. "Accounting for Contributions Received and Contributions Made," *FASB Statement of Financial Accounting Standards No. 116* (Norwalk, Conn.: FASB, 1993), par. 8.

the CEO of Hrouda Company donates a building worth \$50,000 to the company. The company records this event as follows:

Building	50,000	
Gain on Receipt of Donated Building		50,000

The company reports the gain in the other items section of its income statement. ♦

Start-up Costs

Many companies incur start-up costs as they expand their activities. For example, a retail company that opens a new store would incur start-up costs for hiring and training new employees and pre-opening advertising. Other examples are costs of opening new restaurants, new plants, new hotels, new casinos, and new golf courses.

AICPA Statement of Position No. 98-5 requires that a company expense the costs of start-up activities as incurred.⁴ The *SOP* defines start-up costs as those costs related to one-time activities for opening a new facility, introducing a new product or service, conducting business in a new territory, conducting business with a new class of customer, initiating a new process in an existing facility, or starting some new operation. Costs associated with organizing a new entity, often referred to as organization costs, (e.g., costs of preparing a charter, bylaws, minutes of organizational meetings, and original stock certifications) are also included as start-up costs. Start-up activities do *not* include activities that are related to routine, ongoing efforts to refine or otherwise improve the qualities of an existing product, service, process or facility.



LINK TO INTERNATIONAL DIFFERENCES

The primary difference between U.S. and international accounting standards is that international standards allow a company to write the value of its property, plant, and equipment assets up to fair value if fair value can be reliably measured. Any increase is credited to stockholders' equity as a revaluation surplus. Such write-ups create significant differences that reduce international comparability among companies. There are some other minor differences between U.S. and international accounting standards that are beyond the scope of the book.

NONMONETARY ASSET EXCHANGES

Accounting for assets acquired by the exchange of other assets (e.g., trade-in, swap) is covered by **APB Opinion No. 29** and **FASB Statement No. 153**.⁵ A **nonmonetary exchange** is a reciprocal transfer between a company and another entity, in which the company acquires nonmonetary assets or services by surrendering other nonmonetary assets or services. (A nonmonetary transaction may also include paying or incurring liabilities.) **The general principle is that the cost of a nonmonetary asset acquired in exchange for another nonmonetary asset is the fair value of the asset surrendered.** The company acquiring the asset recognizes a gain or loss on the exchange as the difference between the fair value of the asset surrendered and its book value. When a small

- 3** Determine the cost of a nonmonetary asset acquired by the exchange of another nonmonetary asset.

4. "Reporting on the Costs of Start-up Activities," *AICPA Statement of Position No 98-5* (New York: AICPA, 1998).
 5. "Accounting for Nonmonetary Transactions," *APB Opinion No. 29* (New York: AICPA, 1973), and "Exchanges of Nonmonetary Assets, an amendment of APB Opinion No. 29," *FASB Statement No. 153* (Norwalk, Conn.: FASB, 2004).

amount of cash is also given or received, the cost of the asset acquired and the gain or loss on the nonmonetary asset surrendered is determined by these equations:

$$\text{Cost of Asset Acquired} = \frac{\text{Fair Value of Asset Surrendered}}{\text{Asset Surrendered}} + \text{Cash Paid or} - \text{Cash Received}$$

and

$$\text{Gain (Loss)} = \frac{\text{Fair Value of Asset Surrendered}}{\text{Asset Surrendered}} - \text{Book Value of Asset Surrendered}$$

If the fair value of the asset received is more reliable than the fair value of the asset surrendered, it is used to measure the cost of the asset acquired. Of course, the recorded cost of the asset acquired cannot be greater than its fair value.

Example: Exchanges of Nonmonetary Assets

We show an exchange of nonmonetary assets between Arnold Company and Carbon Company, both with and without cash included in the exchange, in Example 10-1. Arnold Company exchanges a building for Carbon Company's equipment. Before studying the example, it is helpful to refer back to the equations for nonmonetary asset exchanges.

EXAMPLE 10-1 Exchange of Nonmonetary Assets				
(a) No Cash Included in Exchange				
	Arnold Company (Building)	Carbon Company (Equipment)		
Cost of asset surrendered	\$100,000	\$60,000		
Accumulated depreciation	54,000	32,000		
Fair value of asset surrendered	40,000	40,000		
	Arnold Company		Carbon Company	
Equipment	40,000		Building	40,000
Accumulated Depreciation	54,000		Accumulated Depreciation	32,000
Loss [\$40,000 – (\$100,000 – \$54,000)]	6,000		Equipment	60,000
Building	100,000		Gain [\$40,000 – (\$60,000 – \$32,000)]	12,000
(b) Cash Included in Exchange				
	Arnold Company (Building)	Carbon Company (Equipment)		
Cost of asset surrendered	\$100,000	\$60,000		
Accumulated depreciation	54,000	32,000		
Fair value of asset surrendered	40,000	35,000		
Cash received (paid)	5,000	(5,000)		
	Arnold Company		Carbon Company	
Equipment			Building	
(\$40,000 – \$5,000)	35,000		(\$35,000 + \$5,000)	40,000
Accumulated Depreciation	54,000		Accumulated Depreciation	32,000
Cash	5,000		Equipment	60,000
Loss [\$40,000 – (\$100,000 – \$54,000)]	6,000		Cash	5,000
Building	100,000		Gain [\$35,000 – (\$60,000 – \$32,000)]	7,000

In example (a), there is no cash exchanged. Each company gives up and receives an asset with a fair value of \$40,000, which is, therefore, the fair value of the transaction. Since Arnold Company gives up a building with a fair value of \$40,000 and a book value of \$46,000 (the cost of \$100,000 less the accumulated depreciation of \$54,000), it recognizes a loss of \$6,000 (\$40,000 – \$46,000). It also records the cost of the acquired equipment at the fair value of \$40,000. Carbon Company gives up equipment with a fair value of \$40,000 and a book value of \$28,000 (\$60,000 – \$32,000). Therefore, it recognizes a gain of \$12,000 (\$40,000 – \$28,000) and records the cost of the building acquired at the fair value of \$40,000.

In example (b), Arnold Company receives cash of \$5,000. Since Arnold Company gives up a building with a fair value of \$40,000 and a book value of \$46,000, it recognizes a loss of \$6,000. It records the acquired equipment at a cost of \$35,000 (the \$40,000 fair value of the building surrendered minus the \$5,000 cash received). Carbon Company gives up equipment with a fair value of \$35,000 and a book value of \$28,000. Therefore, it records a gain of \$7,000 and the acquired building at a cost of \$40,000 (the \$35,000 fair value of the equipment surrendered plus the \$5,000 cash paid). ♦

Exceptions to the General Rule to Use Fair Value for Nonmonetary Exchanges

FASB Statement No. 153 was issued to make U.S. GAAP more similar to international GAAP. Therefore, it made three exceptions to the general rule to use fair value that we discussed earlier. A company would record the nonmonetary exchange transaction at book value and would not recognize a gain or loss when:

1. Neither the fair value of the asset received or given up is reasonably determinable.
2. The transaction is an exchange of inventory to facilitate sales to a third party. For example, when a company exchanges its inventory with another company in order to sell the newly acquired inventory to a third company.
3. The transaction lacks “commercial substance.” A nonmonetary exchange does *not* have commercial substance if the company’s future cash flows are *not* expected to change significantly.

For example, assume that the Messenger Company owned a truck with a cost \$50,000 and accumulated depreciation of \$20,000. The company exchanged the truck for a used truck from Leninger Company and paid \$2,000. Since the trucks were so similar, the Messenger Company’s cash flows are not expected to change significantly as a result of this exchange. Messenger would record the truck it received at \$32,000, which is the book value of the truck it gave up of \$30,000 (\$50,000 – \$20,000) plus the \$2,000 cash it paid. Messenger would record the exchange as follows:

Truck	32,000	
Accumulated Depreciation	30,000	
Truck		50,000
Cash		2,000



SECURE YOUR KNOWLEDGE 10-1

- Property, plant, and equipment is reported in the financial statements at historical cost, and includes tangible assets with expected lives of greater than one year that a company uses in the normal course of business to generate revenue.
- The initial cost of the various types of property, plant, and equipment includes all the costs necessary to acquire the asset, bring it to its desired location, and get it ready for its intended use.

(continued)

- The initial valuation of property, plant, and equipment is often complicated by the manner in which the asset is acquired. In these situations, the acquisition cost is generally based on fair value, as noted below:
 - When more than one asset is acquired for a single lump-sum purchase price, the purchase price is allocated to the individual assets based on their relative fair values.
 - Assets acquired on a deferred payment basis (long-term credit contract) are recorded at the fair value of the asset or the fair value of the liability, whichever can be more clearly determined.
 - Assets acquired through the exchange of stock are recorded at the fair value of the asset or the fair value of the stock, whichever can be more clearly determined.
 - Donated assets are recorded at fair value with a corresponding increase in either an equity account (if the donation was made by a governmental entity) or a gain (if the donation was made by a nongovernmental entity).
 - In general, exchanges of nonmonetary assets should be recorded at fair value, with any gains or losses recognized in income.



LINK TO ETHICAL DILEMMA

As the accountant for Magna Corporation, you have been carefully analyzing a nonmonetary exchange of assets that occurred in the current fiscal year. Toward the end of the third quarter, Magna obtained 10 used Ford delivery trucks by exchanging 10 of its own General Motors delivery trucks. Because the fair value of Magna's trucks exceeded their book value, Magna was able to recognize a gain on the transaction. The Ford trucks obtained in the exchange had the same cargo capacity as the General Motors trucks and approximately the same amount of miles on the odometer. In fact, as far as you can tell, other than the manufacturer's names, the trucks were virtually identical! In discussions with management, you determine that, prior to the exchange, third-quarter earnings were slightly lower than analyst expectations, and the exchange appears to be prompted by a desire to record a gain that would increase earnings to meet the earnings forecast. As support for the decision to enter into the exchange, management offers a brief memo stating that the new trucks are expected to generate significantly more cash flow than the trucks given up. Therefore, the exchange has commercial substance and GAAP requires the exchange to be recorded at fair value. What is your response?

SELF-CONSTRUCTION

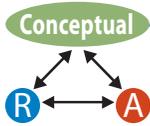
Sometimes a company constructs an item of property, plant, and equipment that it intends to use in its production process. The costs directly related to the construction are added to the cost of the asset, including materials, labor, engineering, and variable manufacturing overhead. Three other components of the asset cost need additional consideration: (1) interest costs, (2) fixed manufacturing overhead costs, and (3) profit on the construction. We discuss each of these in the following sections.

Interest During Construction

There has been a great deal of controversy as to whether a company should capitalize the interest on the funds borrowed to finance construction of an asset as part of the acquisition cost, or expense the interest. Also, if the company uses internally generated funds to finance the acquisition, should it add imputed interest to the cost of the asset? Regulating authorities for public utilities usually allow a company to

4 Compute the cost of a self-constructed asset, including interest capitalization.

include both actual and imputed interest in the cost of the asset because the impact of the interest on the utility rates is deferred until the new plant is in operation. Therefore, the company assigns the cost of the plant (through depreciation expense) to the periods of use and to the customers who use the product. **FASB Statement No. 34** requires the capitalization of interest in certain instances as we discuss later in this section.⁶



Conceptual Alternatives

The *Statement* discussed three alternatives that the FASB considered to account for interest during construction.

- (a) ***No interest is capitalized during construction.*** Under this alternative a company would treat interest as a cost of borrowing funds, and would record the interest as an expense during the period incurred. This approach would be consistent with all other interest costs, such as interest on cash borrowed to purchase inventory, or to purchase property, plant, and equipment. The principal argument in favor of this alternative is that interest is the price paid for borrowing funds for a period of time, and the benefit received is the availability of the funds. Therefore, the matching principle requires that the cost be expensed against the company's revenues in the period in which the funds are made available. Another argument is that expensing interest as incurred results in income amounts that are more similar to cash flows.
- (b) ***Capitalize an amount of interest for all funds used for construction.*** Under this alternative a company would assign an interest cost to all funds used in construction, whether borrowed or not. Therefore, the company would have to impute and capitalize an interest cost for the equity funds (common stock) used in construction in addition to the cost of borrowed funds. While it often is argued that this alternative provides the fairest economic cost of the asset, two major problems have prevented its adoption. First, there might be disagreement about the rate to be used for the imputed cost of the equity funds, and this amount would lack *reliability*. Second, since the computed interest cost of the equity funds would be debited to the asset, it would be necessary to record a credit. The credit could be to a revenue account, but that would violate the revenue recognition principle, since revenue should not be recognized as a result of acquiring assets. Another alternative would be to credit stockholders' equity directly, but there has been no contribution of capital by the owners, and the net worth of the company has not increased.
- (c) ***Capitalize the interest on funds borrowed for the construction.*** Under this alternative a company would treat the cost of borrowed funds as part of the cost of acquiring an asset and therefore as equivalent to the other costs of construction, such as materials and labor. The advantages are (1) the cost of the borrowed funds is necessary to obtain the benefits from the asset, and (2) since the asset is not yet generating revenue, the matching principle requires that the cost of interest (and depreciation) not be expensed during construction. The disadvantage is that the cost of the asset will differ depending on the type of financing (debt or equity) used for construction. There are two ways of interpreting this third alternative. The cost to be capitalized could be either the cost of funds *specifically* borrowed to finance the project or the *average* cost of all borrowed funds. Elements of both approaches are required by *FASB Statement No. 34*.

6. "Capitalization of Interest Cost," *FASB Statement of Financial Accounting Standards No. 34* (Stamford, Conn.: FASB, 1979).

GAAP for Interest Capitalization

FASB *Statement No. 34* requires a company to complete three steps for its interest capitalization:

- Determine whether an asset qualifies for interest capitalization
- Calculate the amount of interest to capitalize
- Identify the period over which to capitalize interest

We discuss each step in the following sections.

Assets Qualifying for Interest Capitalization A company is required to capitalize interest on assets that are either constructed for its own use or constructed as discrete projects for sale or lease to others (for example, long-term construction projects such as ships or real estate developments, as we discuss in Chapter 18). Interest *cannot* be capitalized for the following types of assets:

1. Inventories that are routinely manufactured. Inventories are not qualifying assets because, in the view of the FASB, “the informational benefit does not justify the cost”⁷ of capitalization.
2. Assets that are in use or ready for their intended use.
3. Assets that are not being used in the earning activities of the company and are not undergoing the activities necessary to get them ready for use.

Amount of Interest to Be Capitalized The amount of interest capitalized for a qualifying asset is based on the actual amounts borrowed and the cost of those borrowings. The amount is “intended to be that portion of the interest cost incurred during the asset’s acquisition periods that theoretically could have been avoided.”⁸ A company determines the amount of interest to capitalize by applying an interest rate to the average cumulative invested costs (expenditures) for the qualifying asset during the capitalization period.

If a company incurs a specific borrowing for a qualifying asset, it applies the interest rate on that borrowing to the expenditures for the asset. If the expenditures on the asset exceed the cost of the specific borrowing or if no specific borrowing is made, the company applies the weighted average interest rate on all other borrowings. Because no imputed interest is allowed to be capitalized, the total amount of interest cost that a company capitalizes each period may not exceed the interest cost incurred during the period.

The expenditures to which a company applies this rate are the cumulative capitalized expenditures (which include any capitalized interest on the qualifying asset from previous periods). The company may assume for simplicity that the expenditures are incurred evenly throughout the period. Therefore, the average cumulative capitalized expenditures for a period are computed as follows: $[(\text{beginning cumulative costs} + \text{ending cumulative costs}) \div 2]$. If a company does not incur expenditures evenly throughout the period, a weighted average calculation would be used. If the company receives any progress payments from the eventual purchaser of the asset, it deducts these amounts from its expenditures, so that it capitalizes interest on its net expenditures.

Period of Interest Capitalization The capitalization period begins when (a) expenditures for the asset have been made, (b) activities that are necessary to get the asset ready for its intended use are in progress, and (c) interest cost is being incurred. Interest capitalization continues as long as the three conditions are present. *Activities* include all the steps necessary to prepare the asset for its intended use. For example, they include administrative and technical activities during the preconstruction stage and activities undertaken to overcome technical difficulties after construction has begun, such as labor disputes or litigation. If a company suspends



7. *Ibid.*, par. 10.

8. *Ibid.*, par. 12.

substantially *all* the activities related to the construction of the asset, however, it suspends interest capitalization until the activities are resumed.

The capitalization period ends when the asset is (a) substantially complete and (b) ready for its intended use. If the asset is completed in parts and each part can be used independently, interest capitalization stops for each part when that part meets the two criteria. In this case the interest capitalized is based on the average cost for that part. If the asset must be completed in its entirety before any part of the asset may be used, however, interest capitalization continues until the entire asset meets the two criteria.

Example : Interest Capitalization

To illustrate these provisions of *FASB Statement No. 34*, consider the Cia Company, which started a building project on January 1, 2007 and completed it on December 31, 2008. Example 10-2 shows the relevant facts.

The company incurred the costs (expenditures) evenly during each year. It computes the average cumulative capitalized costs in the project to date for each year using the equations discussed earlier as we show in Example 10-2.

EXAMPLE 10-2 Capitalization of Interest Costs

Capitalization period: January 1, 2007 through December 31, 2008

Annual expenditures on the project (excluding capitalized interest):

2007 \$1 million

2008 \$2.9 million

Amounts borrowed and outstanding:

\$1.5 million at 10% borrowed specifically for the project

\$4 million at 12%

\$6 million at 13%

Average cumulative costs: 2007, \$500,000 $[(\$0 + \$1,000,000) \div 2]$

Capitalized interest, 2007 = Average cumulative cost \times Interest rate

$$= \$500,000 \times 10\%$$

$$= \underline{\underline{\$50,000}}$$

Average cumulative costs: 2008, \$2,500,000 $[(\$1,000,000 + \$50,000^a) + (\$1,050,000 + \$2,900,000)] \div 2$

Capitalized interest, 2008 = Average cumulative cost \times Interest rate

$$= (\$1,500,000^b \times 10\%) + (\$1,000,000^c \times 12.6\%^d)$$

$$= \$150,000 + \$126,000$$

$$= \underline{\underline{\$276,000}}$$

^a\$50,000 capitalized interest for 2007

^b\$1.5 million specific borrowing

^c\$2,500,000 average cumulative cost for 2008 – \$1,500,000 specific borrowing

^dWeighted average interest rate $= (12\% \times \frac{\$4,000,000}{\$10,000,000}) + (13\% \times \frac{\$6,000,000}{\$10,000,000})$

$$= 4.8\% + 7.8\%$$

$$= 12.6\%$$

Since the company borrowed \$1.5 million specifically for the project, it uses the 10% interest rate on this borrowing for each of the two years on the first \$1.5 million of costs. It computes interest each year on costs greater than \$1.5 million based on the weighted average of its remaining borrowings. It calculates the amount of interest to be capitalized in each of the two years as we show in Example 10-2.

Cia Company calculates the \$50,000 interest capitalized in 2007 by multiplying the \$500,000 average cumulative cost by the 10% interest rate on the specific borrowing for the project. The interest capitalized in 2008 requires two calculations, because the \$2,500,000 average cumulative cost exceeds the \$1,500,000 specifically borrowed for the project. First, the company calculates the \$150,000 ($\$1,500,000 \times 10\%$) annual interest on the specific borrowing. Next, it multiplies the \$1,000,000 excess of average cost over specific borrowing ($\$2,500,000 - \$1,500,000$) by the 12.6% weighted average interest rate to determine the \$126,000 additional interest to be capitalized. Thus it capitalizes a total of \$276,000 ($\$150,000 + \$126,000$) interest in 2008.

As we mentioned earlier, the total amount of interest that is capitalized each period may not exceed the interest cost incurred during the period. Each year the company incurs interest costs of \$1.41 million [$(\$1.5 \text{ million} \times 10\%) + (\$4 \text{ million} \times 12\%) + (\$6 \text{ million} \times 13\%)$]. This amount is clearly more than the capitalized interest in either year. If it were less, however, it would be the maximum amount that the company could capitalize in any given year. Assuming Cia Company has recorded interest expense for the \$1.41 million interest cost each year, it would record the capitalized interest at the end of 2007 and 2008, respectively, as follows:

End of 2007

Building	50,000	
Interest Expense		50,000

End of 2008

Building	276,000	
Interest Expense		276,000

Note that these journal entries *reduce* the net interest expense for each year and *increase* the cost of the building because of the capitalized interest. The company reports the remaining net interest expense amounts of \$1,360,000 ($\$1,410,000 - \$50,000$) and \$1,134,000 ($\$1,410,000 - \$276,000$), respectively, on its 2007 and 2008 income statements. Therefore, its pretax income is increased by \$50,000 in 2007 and \$276,000 in 2008. In addition, the company discloses the capitalized interest amounts of \$50,000 and \$276,000 in the notes to its financial statements. (Note that it also discloses the total interest paid each year, as we discuss in Chapter 22.)

The company reports a cost of \$1,050,000 (\$1 million construction cost + \$50,000 interest cost) for the construction-in-process on its December 31, 2007 balance sheet, and a cost of \$4,226,000 (\$3.9 million total construction costs + \$326,000 total interest cost) for the building on its December 31, 2008 balance sheet. The total interest capitalized over the two years is \$326,000 ($\$50,000 + \$276,000$). Therefore, the cost of the asset is increased by this amount. This will reduce the gross profit on the sale if the asset is sold when completed, or increase the depreciation expense each year if the asset is held by the company. ♦

In some cases, a company may borrow a larger amount than it requires for its immediate construction needs. A question arises as to whether the company should offset the interest revenue earned by investing the excess funds against the interest cost to determine the amount of interest to be capitalized. Since *FASB Statement No. 34* states that the amount of interest to be capitalized is the portion of the interest that theoretically could have been avoided, the interest revenue should *not* be offset against the interest cost. The decision of a company to borrow greater amounts than needed and to invest the excess does not affect the avoidable interest and therefore does not affect the amount of interest to be capitalized.⁹ Therefore, the interest earned is recognized and reported as interest revenue in the normal way.



9. "Offsetting Interest Cost to Be Capitalized with Interest Income," *FASB Technical Bulletin No. 81-5* (Stamford, Conn.: FASB, 1981).



LINK TO INTERNATIONAL DIFFERENCES

International accounting standards for the capitalization of interest may be different from U.S. standards. International standards state that the “benchmark” method is to expense all interest costs. However, the capitalization of interest during the acquisition, construction, or production of a qualifying asset is an allowable alternative. This allowed alternative approach is similar to the capitalization rules under U.S. GAAP. So the flexibility allowed under international standards may create a lack of comparability with companies following U.S. standards. (There are also some differences in the two sets of capitalization rules that are beyond the scope of this book.)

Fixed Overhead Costs

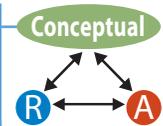
There are three alternatives for a company to include fixed overhead costs in the cost of a self-constructed asset. They are (1) to allocate a portion of the total fixed overhead, (2) to include only the incremental fixed overhead, and (3) not to include any fixed overhead in the cost of the asset. Each alternative should be considered for two production situations. First, the company may be operating at full capacity, so that the construction activity reduces normal production activity. Second, the company may be operating at below-normal capacity, so that the construction activity does not affect normal production activity.

1. **Allocate a portion of total fixed overhead to the self-constructed asset.** Under this alternative, the company allocates the fixed overhead to the construction in the same manner as to units of inventory produced. This is a “full costing” concept, because the total overhead costs of the period are allocated to the production of inventory and the construction of the asset. Arguments in favor of this alternative are (1) the construction should be accounted for in the same way as regular products, even though this means that the regular products will be allocated less of the overhead, and (2) the cost of the constructed asset will tend to approximate more closely the cost of an equivalent purchased asset, since the seller normally would include fixed overhead in its selling price. The first argument is especially relevant if the company is operating at full capacity prior to the construction, so that the construction causes less regular production to take place. Then the lower total overhead allocated to production coupled with lower productive output results in more consistent unit costs. When the company is operating at below-normal capacity prior to construction, allocation of some fixed overhead to self-constructed assets reduces the costs allocated to regular production and therefore increases the income reported for these products when they are sold. Thus there is a transfer of overhead costs from regular production to the self-constructed asset.
2. **Include only incremental fixed overhead in the cost of the self-constructed asset.** Under this alternative, the company includes only the fixed overhead that increases as a result of the construction (but no allocated overhead) in the cost of the self-constructed asset. Arguments in favor of this alternative are (1) the cost of an asset is the additional cost incurred to produce it, (2) the normal operations should not receive different treatment by reducing the cost of the regular product and increasing income because of the construction, (3) the overhead would be incurred whether or not the construction takes place, and (4) the decision to construct the asset should be based on the total incremental cost and not include allocated fixed overhead. This method is particularly appropriate when the company has excess capacity available so that regular production and income are not affected by the construction. If this method is used in a full-capacity situation, the unit cost of the regular production is increased because the same total fixed overhead is allocated to the reduced production.

3. **Include no fixed overhead in the cost of the self-constructed asset.** The primary argument in favor of this alternative is that the company's fixed overhead does not change as a result of the construction. Therefore, if the company included some overhead, this would result in less overhead being expensed in the current period (or included in the cost of inventory) and an increase in income. Of course, this alternative is reasonable only if the fixed overhead does not increase as a result of the construction.

In summary,

- the allocation of fixed overhead to a self-constructed asset is most appropriate when the company is operating at full capacity,
- the inclusion of only incremental fixed overhead is most appropriate in excess-capacity situations, and
- no allocation is appropriate if the overhead does not change.



Otherwise, the self-construction activity affects income, an effect that many people consider undesirable. Income should be a measure of the success of selling goods and services, and it should not depend on the amount of construction undertaken.

However, the first alternative of allocating a portion of the total fixed overhead to the self-constructed asset is supported for both situations by the Cost Accounting Standards Board as follows:

Tangible capital assets constructed for a contractor's own use must be capitalized at amounts that include general and administrative [costs] when such [costs] are identifiable with the constructed asset and are material in amount. When the constructed assets are identical with or similar to the contractor's regular product, such assets must be capitalized at amounts that include a full share of indirect costs.¹⁰

This method is the most commonly used and tends to produce an asset cost that is closer to the cost of a purchased asset, because an independent contractor would include an allowance to cover its overhead and income. However, it also tends to result in increased income during construction.

Income on Self-Construction

If a company constructs an asset for less than it would cost to purchase, should it recognize income for the difference between the two costs? An argument can be made in favor of recognizing income, since it would tend to produce an asset cost similar to the purchase price of the asset. However, generally accepted accounting principles do not allow recognition of income in this case. To do so would violate the revenue recognition principle that requires a company to recognize income through asset use and disposal and not through acquisition. In addition, accounting is based on actions taken, not on what might have been. The company will realize the saving from self-construction with reduced depreciation charges in the future. However, the conservatism convention requires that, if the construction cost materially exceeds the fair value of the asset, the company must write down the capitalized construction costs of the asset to fair value and recognize a loss.

Development Stage Companies

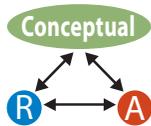
Development stage companies devote substantially all their efforts to establishing a new business, and their planned principal operations have not yet started or no significant revenue has been generated. Some people argue that a new company should capitalize the costs of interest, taxes, and general overhead during its development stage—that is, before it makes

10. "Capitalization of Tangible Assets," *CASB Standard 404* (Washington, D.C.: CASB, 1973).

significant sales. They argue that the costs incurred in the development stage will benefit future periods. Therefore, the company should not report losses before it makes sales. In **FASB Statement No. 7** this argument was rejected. Instead normal capitalization criteria are applied to development stage companies. Therefore, a company expenses such costs as interest (except for the provisions of *FASB Statement No. 34*), taxes, and general overhead in the period incurred. *FASB Statement No. 7* does impose some special disclosure requirements on development stage companies, but these are beyond the scope of this book.

COSTS AFTER ACQUISITION

5 Record costs after acquisition.



A company incurs costs over the life of its property, plant, and equipment for purposes ranging from routine repairs to major overhauls and improvements. The related accounting decision is whether these costs should be added (capitalized) to an asset account (a **capital expenditure**) or expensed (an **operating** or **revenue expenditure**). A cost that increases the future economic benefits of the asset above those that originally were expected is a **capital expenditure**. The future economic benefits can be increased by (1) extending the life of the asset, (2) improving productivity, (3) producing the same product at lower cost, or (4) increasing the quality of the product. A cost that does not increase the economic benefits but is incurred to maintain the existing benefits is an **operating expenditure**.

We discuss additions, improvements and replacements, rearrangement and moving, and repairs and maintenance in the following sections.

Additions

The cost of an **addition** represents a new asset and therefore is capitalized. Adding a new wing to a building and installing a pollution-control device are examples of additions. When the addition involves removing an old asset, an issue arises as to how to account for the cost of the removal. For example, when a company adds a new wing to a building, it frequently makes alterations to the old building. If these alterations increase the economic benefits originally anticipated for the old building, then the cost of alteration is capitalized. If the alterations do not increase the original benefits of the old building, then the cost is expensed. In addition, the cost of any part of the asset that is demolished (for example, a connecting wall) should be removed from the accounts as the disposal of an asset, although this is rarely done because of immateriality or the difficulty of measurement.

Improvements and Replacements

Improvements (sometimes called **betterments**) and **replacements** (sometimes called **renewals**) involve the substitution of new parts for old ones, and increase the economic benefits to be obtained from the asset. An improvement is the substitution of a better asset for the one currently used, such as the installation of a solar heating system in a building. A replacement is the substitution of an equivalent asset, such as a new engine in a truck. The related costs of improvements and replacements are capitalized. There are three alternative ways for a company to account for such capitalized expenditures, and the choice depends on the particular circumstances.

1. Example: Substitution Method

When the book value of the old asset is known, it is removed from the accounts and the new asset recorded. For example, suppose that Pippa Company decides to replace its oil furnace with a gas furnace. The oil furnace is carried on the books at a cost of \$50,000 with accumulated depreciation of \$30,000. The scrap value of the old furnace is \$5,000, and the new furnace costs \$70,000. Pippa Company records this transaction as follows:

Furnace	70,000	
Accumulated Depreciation: Furnace	30,000	
Loss on Disposal of Furnace (\$20,000 – \$5,000)	15,000	
Furnace		50,000
Cash (\$70,000 – \$5,000)		65,000 ♦

Although this is the ideal method, it often is not practical because the company does not know the book value of the asset being replaced. For example, when the company replaces the engine on a truck, it may not know the book value of the engine. In these situations, it should use one of the following two alternative methods.

2. Example: Reduce Accumulated Depreciation

The costs of improvements and replacements are often debited to Accumulated Depreciation because some of the service potential that previously was written off has been restored. Therefore, it is appropriate to use this method for replacements when the service life of the asset has been extended. For example, suppose that Ellen Company incurs a capital expenditure of \$60,000 to replace a roof on its factory. Ellen Company had not planned to replace the roof, but it has extended the life of the factory. Ellen Company records the cost as follows:

Accumulated Depreciation	60,000	
Cash		60,000 ♦

3. Example: Increase the Asset Account

The costs of improvements and replacements may be capitalized directly to the asset account because an addition to the service potential of the asset has been made. This method is particularly appropriate for improvements when the benefits are increased above those originally expected. For example, Matt Company records a capital expenditure of \$80,000 to enlarge a factory that increases its usefulness as follows:

Factory	80,000	
Cash		80,000 ♦

Note that examples 2 and 3 have exactly the same effect on the book value of the asset, although the gross amounts in the two accounts would be different. In both cases, a new depreciation rate would be computed, as we discuss in the next chapter.

Rearrangement and Moving

The costs of rearranging the facilities within a building or moving them to a new location are capitalized and expensed over the period expected to benefit. (This period is shorter than the economic life of the assets being moved if the company expects that it will move the assets again before the end of their service lives.) However, many companies expense such costs immediately, which is an acceptable procedure if the difference is immaterial.

Repairs and Maintenance

When a company incurs routine repair and maintenance costs to maintain an asset in its operating condition, it expenses the costs in the period incurred. However, the classification of an expenditure as a repair may depend on how the company accounts for its assets. For example, if the company includes landscaping costs in a Land Improvements

account, it would account for the replacement of some trees as repairs and maintenance. If the company included the landscaping costs in a separate account, then it would most likely account for the replacement of these trees as an improvement or replacement.

Since a company may incur repair and maintenance costs unevenly during the year (e.g., it may schedule repairs for slack production periods), its interim financial statements (such as quarterly reports) will include different amounts of repair costs that, in turn, may give a misleading picture of the company's income. The amount of repair costs that a company records as an expense in each interim period may be averaged by using an allowance account.

Example: Repairs and Maintenance

Suppose Sanner Company anticipates spending \$60,000 on repair and maintenance during the year, but \$45,000 will be spent in the third quarter, with the remainder spread equally over the remaining three quarters. Sanner Company records these events as follows:

First Quarter

Repair Expense (\$60,000 ÷ 4)	15,000	
Allowance for Repairs		10,000
Cash, Accounts Payable, Inventory, etc.		5,000

Second Quarter

Repair Expense	15,000	
Allowance for Repairs		10,000
Cash, Accounts Payable, Inventory, etc.		5,000

Third Quarter

Repair Expense	15,000	
Allowance for Repairs		30,000
Cash, Accounts Payable, Inventory, etc.		45,000

Fourth Quarter

Repair Expense	15,000	
Allowance for Repairs		10,000
Cash, Accounts Payable, Inventory, etc.		5,000

The repair expense for each quarter is \$15,000 (one-fourth of the annual cost of \$60,000), and Allowance for Repairs has a zero balance at the end of the year. This procedure is acceptable for *interim* reporting because it allows a company to record equal expenses in each interim period. Sanner Company reports the balance in Allowance for Repairs as an addition to or offset from its property, plant, and equipment and not as a liability because nothing is owed. However, a balance in Allowance for Repairs is not carried over from one *annual* fiscal period to another, because such smoothing of income is not allowed under generally accepted accounting principles. If a balance does remain in the Allowance for Repairs account at the end of the year, it is closed to the Repair Expense account. ♦



DISPOSAL OF PROPERTY, PLANT, AND EQUIPMENT

A company may dispose of property, plant, and equipment by sale, involuntary conversion, abandonment, or exchange (which we discussed earlier in the chapter). Ideally, the depreciation, which is accumulated up to the time of disposal, will have reduced the book value down to the disposal value. Usually, however, this does not occur, and the company must recognize a gain or a loss on the disposal. The gain or loss may be considered a correction of the income that has been recorded in the years the asset has been owned, since it is an indication that the depreciation was not correct. However, GAAP requires that a company record a gain or loss on disposal in the period of the disposal. The company usually includes the gain or loss in ordinary income, but it could also be reported as an

6 Record the disposal of property, plant, and equipment.



extraordinary item or a disposal of a component of a business if it meets the appropriate criteria established in **FASB Statement No. 144**, as we discussed in Chapter 4.

To account for the disposal of property, plant, and equipment, the company first records the depreciation up to the date of the disposal (as we discuss in the next chapter). It then removes the cost of the asset and the related amount of accumulated depreciation from the respective accounts.

Example: Disposal of Machine

Assume that Bean Company has a machine that originally cost \$10,000, has accumulated depreciation of \$8,000 at the beginning of the current year, and is being depreciated at \$1,000 per year. If the company sells the machine for \$600 on December 30, it must first bring the depreciation up to date as follows:

Depreciation Expense	1,000	
Accumulated Depreciation		1,000

Once the book value is up to date, the company compares it to the proceeds to determine the gain or loss. Comparing the \$1,000 [$\$10,000 - (\$8,000 + \$1,000)$] book value of the asset on December 30 to the \$600 proceeds yields a loss of \$400, which Bean Company records as follows:

Cash	600	
Accumulated Depreciation	9,000	
Loss on Disposal	400	
Machine		10,000

An involuntary disposal, such as condemnation of land by a governmental unit, is accounted for in the same way.¹¹ An abandonment is handled in a similar way, except that there is no receipt of cash, so the loss is equal to the remaining book value. ♦

Asset Retirement Obligations

The acquisition of some assets automatically creates a legal obligation related to the retirement of the asset. For example, companies owning power plants, mines, and industrial manufacturing sites frequently are legally required to incur significant costs related to their closure. **FASB Statement No. 143** requires a company to record a legal liability for the obligation at its fair value when the obligation is incurred, which is usually when the asset is acquired. The most common method of measuring the fair value is likely to be the present value of the future cash flows that will be paid by the company. When the company acquires the asset (and records the liability) the present value is less than the future cash flows, and therefore, it must increase the liability over time. So the company recognizes interest expense (called accretion expense) each year it uses the asset. It calculates the expense by multiplying the book value of the liability by the discount rate it used to compute the original present value. On the date the company retires the asset and pays the retirement costs, it debits the obligation and credits cash. The company recognizes any difference between the estimated retirement costs (i.e., the liability) and the actual costs as a gain or loss.

When the company records (credits) the initial liability, it also records (debits) the same amount as an increase in the carrying value of the related asset. The company expenses (depreciates) this cost in the usual way by means of a systematic and rational allocation method over its useful life.¹²

11. "Accounting for Involuntary Conversions of Nonmonetary Assets to Monetary Assets," *FASB Interpretation No. 30* (Stamford, Conn.: FASB, 1979), requires that a gain or loss be recognized when a nonmonetary asset is involuntarily converted to monetary assets even though a company reinvests or is obligated to reinvest the monetary assets in replacement nonmonetary assets.

12. "Accounting for Asset Retirement Obligations," *FASB Statement of Financial Accounting Standards No. 143* (Norwalk, Conn.: FASB, 2001), par. 3, 11, and 14.



SECURE YOUR KNOWLEDGE 10-2

- The initial cost of self-constructed assets includes direct material, direct labor, and a portion of the company's overhead costs.
 - If the asset qualifies for interest capitalization, avoidable interest (computed by applying an appropriate interest rate to the average cumulative cost) is capitalized as long as it does not exceed the actual interest cost incurred during the period.
 - Management may choose to allocate a portion of fixed overhead, include incremental fixed overhead, or exclude fixed overhead from the cost of a self-constructed asset.
 - Income recognition is not allowed if a company constructs an asset for less than it would have cost to purchase it.
- Expenditures that increase the future economic benefits of an asset (e.g., extend the useful life of the asset, improve productivity, decrease operating costs, or increase the quality of the product) are capital expenditures and are added to the cost of the asset.
- Expenditures that simply maintain the existing level of benefits are operating (or revenue) expenditures and are expensed in the current period.
- When a company disposes of property, plant, and equipment by sale, involuntary conversion, or abandonment, any resulting gain or loss is included in current period income.
- An asset retirement obligation (any liability related to the retirement or disposition of property, plant, and equipment) is required to be capitalized at fair value on the date the obligation is incurred. After acquisition, a company increases the liability over time by recognizing interest expense (accretion expense), and depreciates the asset using a systematic and rational method.



DISCLOSURE OF PROPERTY, PLANT, AND EQUIPMENT

APB Opinion No. 12 requires a company to disclose the balances of its major classes of depreciable assets by nature or function.¹³ We show an example of each of these methods in Real Report 10-1. **Johnson & Johnson** discloses by the nature of the assets, such as land, buildings, and machinery. **Norfolk Southern** discloses by function, such as road and equipment.

7 Understand the disclosures of property, plant, and equipment.

Real Report 10-1 Disclosures of Depreciable Assets

JOHNSON & JOHNSON AND SUBSIDIARIES

Notes to Consolidated Financial Statements (in part)

1. Summary of Accounting Principles (in part):

Property, Plant, and Equipment and Depreciation

Property, plant, and equipment are stated at cost. The Company utilizes the straight-line method of depreciation over the estimated useful lives of the assets:

Building and building equipment	20–40 years
Land and leasehold improvements	10–20 years
Machinery and equipment	2–13 years

3 Property, Plant and Equipment

At the end of 2004 and 2003, property, plant and equipment at cost and accumulated depreciation were:

<i>(Dollars in Millions)</i>	2004	2003
Land and land improvements	\$ 515	\$ 491
Buildings and building equipment	5,907	5,242
Machinery and equipment	10,455	9,638
Construction in progress	1,787	1,681
	<u>18,664</u>	<u>17,052</u>
Less accumulated depreciation	8,228	7,206
	<u>\$ 10,436</u>	<u>\$ 9,846</u>

The Company capitalizes interest expense as part of the cost of construction of facilities and equipment. Interest expense capitalized in 2004, 2003 and 2002 was \$136 million, \$108 million and \$98 million, respectively.

Upon retirement or other disposal of fixed assets, the cost and related amount of accumulated depreciation or amortization are eliminated from the asset and accumulated depreciation accounts, respectively. The difference, if any, between the net asset value and the proceeds is adjusted to earnings.

NORFOLK SOUTHERN CORPORATION AND SUBSIDIARIES

Notes to Consolidated Financial Statements (in part)

1. Summary of Significant Accounting Policies (in part):

Properties: "Properties" are stated principally at cost and are depreciated using group depreciation. Rail is depreciated primarily on the basis of use measured by gross ton

Continued



13. "Omnibus Opinion—1967," APB Opinion No. 12 (New York: AICPA, 1967), par. 5.

miles. Other properties are depreciated generally using the straight-line method over the lesser of estimated service or lease lives. NS capitalizes interest on major capital projects during the period of their construction. Expenditures, including those on leased assets, that extend an asset's useful life or increase its utility, are capitalized. Maintenance expense is recognized when repairs are performed. When properties other than land and non-rail assets are sold or retired in the ordinary course of business, the cost of the assets, net of sale proceeds or salvage, is charged to accumulated depreciation, and no gain or loss is recognized through income. Gains and losses on disposal of land and non-rail assets are included in "Other income-net."

NS reviews the carrying amount of properties whenever events or changes in circumstances indicate that such carrying amount may not be recoverable based on future undiscounted cash flows. Assets that are deemed impaired as a result of such review are recorded at the lower of carrying amount or fair value.

6. Properties

(\$ in millions)	December 31,		Depreciation Rate for 2004
	2004	2003	
Railway property:			
Road	\$19,530	\$11,243	3.0%
Equipment	6,661	5,779	4.2%
Other property	574	569	2.9%
	<u>26,765</u>	<u>17,591</u>	
Less: Accumulated depreciation	<u>6,239</u>	<u>5,812</u>	
Net properties	<u>\$20,526</u>	<u>\$11,779</u>	

Railway property includes \$618 million at Dec. 31, 2004 and \$477 million at Dec. 31, 2003, of assets recorded pursuant to capital leases. Other property includes the costs of obtaining rights to natural resources of \$341 million at Dec. 31, 2004 and 2003.

Total interest cost incurred on debt in 2004, 2003 and 2002 was \$499 million, \$509 million and \$529 million respectively, of which \$10 million, \$12 million and \$11 million was capitalized.

Questions:

1. If Johnson & Johnson had not capitalized interest in 2004, how would its financial statements be different?
2. What are the effects on the financial statements of the method used by Norfolk Southern for the sale of its properties? Is it different from the method used by Johnson & Johnson?
3. Why does Norfolk Southern account for the sale of land differently than the sale of other properties?

1 3

LINK TO RATIO ANALYSIS

The analysis of property, plant, and equipment is often concerned with a company's ability to use its investment in assets to generate income. An examination of a company's return on assets, a profitability ratio, provides an indication of how efficiently a company uses its economic resources. Consider the following information from **Microsoft's** 2004 annual report:

(in millions)	
Net Sales	\$36,835
Net Income	5,355
Total Assets, beginning of year	81,732
Total Assets, end of year	92,389

Microsoft's return on assets¹⁴ is shown in the following equation:

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Average Total Assets}} = \frac{\$5,355}{\left(\frac{\$81,732 + \$92,389}{2}\right)} = 6.1\%$$

A company's return on assets is driven by two factors: how effective a company is at controlling its costs and expenses in relation to sales (profit margin) and how well a company manages its assets to generate sales (asset turnover). Additional insights into Microsoft's profitability can be obtained by separating its return on assets into these two ratios as shown in the following equation:

$$\begin{aligned} \text{Return on Assets} &= \text{Profit Margin} \times \text{Asset Turnover} = \frac{\text{Net Income}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Average Total Assets}} \\ &= \frac{\$5,355}{\$36,835} \times \left(\frac{\$36,835}{\left(\frac{\$81,732 + \$92,389}{2}\right)}\right) = 14.5\% \times 42.3\% = 6.1\% \end{aligned}$$

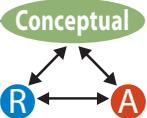
Based on this equation, Microsoft's profit margin indicates that every dollar of sales generated approximately \$0.145 of income and that Microsoft was able to generate \$0.423 of sales per dollar invested in assets.

APPENDIX: OIL AND GAS PROPERTIES

A company faces special issues when accounting for oil and gas properties that are included in its property, plant, and equipment. Two alternative methods of accounting for the cost of oil and gas properties are widely used. The principal difference between the two methods concerns the cost of dry wells—those that do not result in the production of oil or gas. Under the **successful-efforts** method, those costs are expensed; under the **full-cost** method, they are capitalized as part of the cost of oil and gas reserves, and then amortized.

Proponents of the *successful-efforts method* argue that a direct relationship between costs incurred and specific reserves discovered is required before costs are recorded as assets. Costs of acquisition and development activities that are known not to have resulted in the discovery of reserves are expensed. In contrast, the *full-cost method* regards the costs of unsuccessful

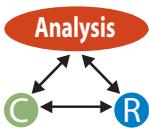
8 Explain the accounting for oil and gas properties.



14. Return on assets is often computed by adding interest expense (net of tax) back to net income because interest is a financial cost to pay creditors, not a cost of generating sales. However, because Microsoft has such a small percentage of long-term debt, we ignore interest cost for this calculation.

acquisition and exploration activities as necessary for the discovery of reserves. Thus, all costs incurred in oil and gas drilling are regarded as integral to the development of whatever reserves ultimately result from the efforts as a whole, and are thus associated with the company's reserves. Establishing a direct cause-and-effect relationship between drilling costs incurred and specific reserves discovered is not relevant to full costing.

The basic difference between the two methods focuses on the nature of an asset. If the asset is viewed as an individual well, it is appropriate for a company to expense the costs incurred if no oil or gas is found, because no future cash flows will result. Alternatively, if the asset is viewed as the oil or gas that lies underground, it is appropriate for a company to capitalize the costs of drilling even if no oil or gas is found from a particular well, because the activity was necessary in searching for oil or gas. It is the oil or gas that is discovered that will contribute to the future cash flows rather than the costs incurred to drill any particular well. A company that uses the full-cost method is required (by the SEC, as discussed later) to use a country as a cost center. Thus if costs are incurred in a new country and no oil or gas results, the costs are expensed.



Because both methods are widely used, difficulties are created for users of financial statements when making comparisons between companies that are each using different methods. Large oil and gas companies generally use the successful-efforts method, whereas small independent producers prefer the full-cost method because it enables them to defer more costs, thereby reducing current expenses and increasing current income.

In 1977 **FASB Statement No. 19** was issued, which required the use of the successful-efforts method. The FASB cited two primary reasons to justify the adoption of the successful-efforts method. First, an asset is an economic resource that is expected to provide future benefits, so costs that are known not to have resulted in identifiable future benefits should be expensed. Second, financial statements should reflect risk and unsuccessful results. The successful-efforts method highlights the cost of failures and the risks involved in the search for oil and gas reserves. In a politically motivated decision, the SEC decided not to support the FASB's position. Many of the owners and managers of oil and gas companies that were using full-cost accounting objected to its elimination and lobbied Congress. They argued that the use of successful efforts would cause reported income and assets to be lower, and would impair the ability of their companies to raise capital and search for oil and gas. This argument is inconsistent with efficient markets research, which indicates that users of financial statements would not be "fooled" by the different reporting of the same underlying economic facts. However, Congress accepted the argument and directed that the SEC must accept the use of the full-cost method in reports filed with it, thereby allowing both methods to continue to be used. Consequently, the FASB suspended *FASB Statement No. 19*.

It can be argued that neither method satisfies the needs of users of financial statements because they do not reflect the economic substance of oil and gas exploration. That is, neither one includes the current values of a company's oil and gas reserves in its financial statements. Thus, the SEC established a completely new method of accounting called Reserve Recognition Accounting (RRA). RRA allowed a company to report the current values of reserves on its balance sheet and changes in the values of those reserves to be included on its income statement. Effective in 1979, companies were required to present a supplementary income statement, based on RRA, while continuing to use successful-efforts or full-cost accounting. Later, the SEC rescinded the requirement to use RRA, and therefore oil companies now use either the full-cost or the successful-efforts method. Once a company has selected one of the two alternative methods, it must follow specific SEC accounting rules.¹⁵ If the successful-efforts method is chosen, the SEC requires that the rules of *FASB Statement No. 19* must be followed. In addition, *FASB Statement No. 69* requires that oil companies disclose the physical and dollar amounts of reserves at year-end and changes in these amounts. Since these accounting problems relate to a specific industry, we do not discuss them further.

15. "Codification of Financial Reporting Policies," *SEC Accounting Rules* (Chicago: Commerce Clearing House, 2005), sec. 406.

SUMMARY

At the beginning of the chapter, we identified several objectives you would accomplish after reading the chapter. The objectives are listed below, each followed by a brief summary of the key points in the chapter discussion.

1. **Identify the characteristics of property, plant, and equipment.** Property, plant, and equipment is the title used to classify tangible noncurrent assets a company uses in the normal operations of its business. The asset must be held for use and not for investment, must have an expected life of more than one year, and must be tangible in nature.
2. **Record the acquisition of property, plant, and equipment.** Property, plant, and equipment is recorded at the total cost necessary to acquire the asset and put it in operating condition; that is, the costs that are necessary to obtain the benefits to be derived from the asset.
3. **Determine the cost of a nonmonetary asset acquired by the exchange of another nonmonetary asset.** The cost of the nonmonetary asset acquired is the fair value of the nonmonetary asset surrendered plus any cash paid or minus any cash received.
4. **Compute the cost of a self-constructed asset, including interest capitalization.** When a company constructs an item of property, plant, and equipment, the costs included in the asset cost are materials, labor, engineering, variable manufacturing overhead, interest, and perhaps allocated fixed manufacturing overhead. A company is required to capitalize interest on assets that are either constructed for its own use or constructed as discrete projects for sale or lease to others. The company determines the amount of interest to capitalize by applying an interest rate to the average cumulative invested costs for the qualifying asset during the capitalization period.
5. **Record costs after acquisition.** A subsequent cost that increases the future economic benefits of the asset above those that originally were expected is a capital expenditure. A subsequent cost that does not increase the economic benefits but is incurred to maintain existing benefits is an operating expenditure and is expensed.
6. **Record the disposal of property, plant, and equipment.** A company may dispose of property, plant, and equipment by sale, involuntary conversion, or abandonment. The company records depreciation up to the date of the sale and records a gain or loss for the difference between the book value of the asset and the proceeds received.
7. **Understand the disclosures of property, plant, and equipment.** A company is required to disclose the balances of its major classes of depreciable assets by nature or function.
8. **Explain the accounting for oil and gas properties (Appendix).** A company may account for oil and gas properties using either the full cost method, in which the cost of dry holes is capitalized, or the successful efforts method, in which the cost of dry holes is expensed.

ANSWERS TO REAL REPORT QUESTIONS

Real Report 10-1 Answers

1. The capitalization of interest in 2004 by Johnson & Johnson resulted in a \$136 million decrease in interest expense reported on the income statement, and a \$136 million increase in income, assets (property, plant, and equipment), and stockholders' equity.
2. Norfolk Southern uses the group depreciation method for "properties" (group depreciation is discussed in Chapter 11). Under this method, the sale of properties other than land and non-rail assets is recorded by a debit to cash for any sale proceeds and a credit to the asset account. Any gain or loss on the sale (the difference between the cost of the asset and the sale proceeds) is recorded as an adjustment to accumulated depreciation. For land and non-rail assets, Norfolk Southern includes any gain or loss in income. Johnson & Johnson records retirements or disposals in a manner consistent with the latter method.
3. Norfolk Southern uses group depreciation for its railway property because the assets are homogeneous (similar) and this method simplifies the company's record-keeping. However, the unique nature of land necessitates a different accounting method relative to the similar, relatively lower cost railway properties.

QUESTIONS

- Q10-1** What characteristics are necessary for a company to include an asset in the category of property, plant, and equipment?
- Q10-2** What is the general criterion a company uses to decide whether to include an expenditure in the cost of property, plant, and equipment rather than expensing it?
- Q10-3** How does a company categorize land held for investment on its balance sheet?
- Q10-4** What is the book value of an asset?
- Q10-5** What is the relationship between the book value and the market value of an asset during the life of the asset?
- Q10-6** When a company purchases several assets for a single lump sum, what principle does it use for cost apportionment? Why is it necessary to apportion the cost?
- Q10-7** How does a company determine the acquisition cost of an asset when it acquires the asset in exchange for securities?
- Q10-8** At what amount does a company record the cost of a nonmonetary asset acquired in exchange for another nonmonetary asset?
- Q10-9** How much does a company recognize as a gain or loss when it exchanges nonmonetary assets?
- Q10-10** Under what conditions does a company capitalize the interest incurred during self-construction of an asset? Contrast your answer with accounting for interest on a note payable that is not associated with the construction of an asset.
- Q10-11** Explain how a company determines the amount of interest to capitalize when it constructs an asset.
- Q10-12** A company borrows some money which it uses to acquire a parcel of land for a real estate development project. Before construction begins, a period of time passes while the company obtains the necessary planning permission. May the company capitalize interest during this period? If so, should it capitalize the interest to the land or the building account?
- Q10-13** What are the three common alternative treatments of overhead costs during self-construction of an asset? What are the arguments in favor of each?
- Q10-14** May a company recognize profit during self-construction of an asset under generally accepted accounting principles? May it recognize a loss?
- Q10-15** What is the distinction between a capital and an operating expenditure? Give two examples of each.
- Q10-16** Distinguish between additions and improvements/replacements. How should a company account for each?
- Q10-17** Distinguish between ordinary repairs and maintenance, and extraordinary repairs. How should a company account for each?
- Q10-18** What are leasehold improvements? How should a company account for them?
- Q10-19** Under what conditions would you expect to see Allowance for Repairs in a company's balance sheet?
- Q10-20** How does a company account for the disposal of an asset? How does it report gains and losses on its financial statements?
- Q10-21 (Appendix)** Distinguish between successful efforts and full cost accounting for oil and gas properties.

MULTIPLE CHOICE (AICPA Adapted)

Select the best answer for each of the following.

M10-1 The Hickory Company made a lump-sum purchase of three pieces of machinery for \$115,000 from an unaffiliated company. At the time of acquisition Hickory paid \$5,000 to determine the appraised value of the machinery. The appraisal disclosed the following values:

Machine A \$70,000 Machine B \$42,000
Machine C \$28,000

What cost should be assigned to machines A, B, and C, respectively?

	A	B	C
a.	\$40,000	\$40,000	\$40,000
b.	\$57,500	\$34,500	\$23,000
c.	\$60,000	\$36,000	\$24,000
d.	\$70,000	\$42,000	\$28,000

M10-2 A donated plant asset for which the fair value has been determined, and for which incidental costs were incurred in acceptance of the asset, should be recorded at an amount equal to its

- Incidental costs incurred
- Fair value and incidental costs incurred
- Book value on books of donor and incidental costs incurred
- Book value on books of donor

M10-3 The following expenditures were among those incurred by Jensen Corporation during the year ended December 31, 2007:

Replacement of tiles on portion of roof that had been leaking	\$4,000
Overhaul of machinery that is expected to extend its useful life for another two years	6,000

How much should be charged to repairs and maintenance in 2007?

- a. \$0
b. \$4,000
- c. \$6,000
d. \$10,000

M10-4 The sale of a depreciable asset resulting in a loss indicates that the proceeds from the sale were

- a. Less than current market value
b. Greater than cost
c. Greater than book value
d. Less than book value

M10-5 Electro Corporation bought a new machine and agreed to pay for it in equal annual installments of \$5,000 at the end of each of the next five years. Assume a prevailing interest rate of 15%. The present value of an ordinary annuity of \$1 at 15% for five periods is 3.35. The future amount of an ordinary annuity of \$1 at 15% for five periods is 6.74. The present value of \$1 at 15% for five periods is 0.5. How much should Electro record as the cost of the machine?

- a. \$12,500
b. \$16,750
- c. \$25,000
d. \$33,700

M10-6 When a company purchases land with a building on it and immediately tears down the building so that the land can be used for the construction of a plant, the costs incurred to tear down the building should be

- a. Expensed as incurred
b. Added to the cost of the plant
c. Added to the cost of the land
d. Amortized over the estimated time period between the tearing down of the building and the completion of the plant

M10-7 When a company replaces an old asphalt roof on its plant with a new fiberglass insulated roof, which of the following types of expenditure occurs?

- a. Ordinary repair and maintenance
b. Addition
- c. Rearrangement
d. Betterment

M10-8 On January 2, 2007 Yuki Yogurt Company decided to replace its obsolete refrigeration system with a more efficient one. The old system had a book value of \$9,000 and a fair value of \$1,000. Yuki's new refrigeration system has a fair value of \$190,000, for which Yuki paid \$189,000 after permitting the contractor to keep the old refrigeration equipment. How much should Yuki capitalize as the cost of the new refrigeration system?

- a. \$189,000
b. \$190,000
- c. \$197,000
d. \$198,000

M10-9 During 2007, Belardo Corporation constructed and manufactured certain assets, and incurred the following interest costs in connection with those activities:

	Interest Costs Incurred
Warehouse constructed for Belardo's own use	\$20,000
Special-order machine for sale to unrelated customer, produced according to customer's specifications	9,000
Inventories routinely manufactured, produced on a repetitive basis	7,000

All of these assets required an extended period of time for completion. Assuming that the effect of interest capitalization is material, what is the total amount of interest costs to be capitalized?

- a. \$0
b. \$20,000
- c. \$29,000
d. \$36,000

M10-10 Lyle, Inc., purchased certain plant assets under a deferred payment contract on December 31, 2007. The agreement was to pay \$20,000 at the time of purchase and \$20,000 at the end of each of the next five years. The plant assets should be valued at

- a. The present value of a \$20,000 ordinary annuity for five years
b. \$120,000
c. \$120,000 less imputed interest
d. \$120,000 plus imputed interest

EXERCISES

E10-1 Determination of Cost Which of the following 22 items does a company include in the cost of property, plant, and equipment?

- Contract price
- List price
- Freight costs

4. Discounts taken
5. Discounts not taken
6. Installation costs
7. Testing costs
8. Cost of overhaul before initial use
9. Costs of grading land prior to construction
10. Tax assessment for street improvements
11. Delinquent property taxes on acquired property
12. Cost of tearing down an old building (already owned) in preparation for new construction
13. Cost of insurance during construction
14. Excess of costs over revenues during the development stage of the company
15. Interest costs during construction
16. Landscaping costs
17. Severance pay for employees dismissed because of the acquisition of a new machine
18. Cost of tearing down a building on newly acquired land
19. Replacement of an electric motor in a machine
20. Expansion of the heating/cooling system to accommodate an expansion of a building and certain expected future needs
21. Service contract for two years on the acquired asset
22. Cost of training new employees

E10-2 Inclusion in Property, Plant, and Equipment Which of the following does a company include in property, plant, and equipment on the balance sheet?

1. Idle equipment awaiting sale
2. Land held for future use as a plant site
3. Land held for investment
4. Deposits on machinery not yet received
5. Progress payments on building being constructed by a contractor
6. Fully depreciated assets still being used
7. Leasehold improvements
8. Assets leased to others

E10-3 Acquisition Costs The Voiture Company manufactures compact, energy efficient cars. On April 1, it purchased a machine for its assembly line at a contract price of \$200,000 with terms of 2/10, n/30. The company paid the contract price on April 8 and also incurred installation and transportation costs of \$5,000, sales tax of \$10,000, and testing costs of \$2,000. During testing the machine was accidentally damaged, so the company had to pay \$1,000 to repair it.

Required

Prepare the journal entry to record the acquisition of the machine.

E10-4 Determination of Acquisition Cost In January 2007 Cordova Company entered into a contract to acquire a new machine for its factory. The machine, which has a cash price of \$215,000, was paid for as follows:

Down payment	\$ 55,000
Note payable in four equal annual payments starting in January 2008	120,000
600 shares of Cordova preferred stock with a mutually agreed value of \$100 per share (par value \$100)	60,000
Fair rate of interest on the non-interest-bearing note	10%

Required

1. Prepare the journal entry to record the acquisition of the machine.
2. How would your answer change, if at all, if the \$215,000 cash price were not available?

E10-5 AICPA Adapted Determination of Acquisition Cost On August 1, 2007 Darmow Corporation purchased a new machine on a deferred payment basis. It made a down payment of \$1,000 and will make four monthly installments of \$2,500 each beginning on September 1, 2007. The cash equivalent price of the machine was \$9,500. Darmow incurred and paid installation cost amounting to \$300.

Required

Prepare the journal entry to record the acquisition of the machine.

E10-6 AICPA Adapted Acquisition of Land and Building On February 1, 2007 Edwards Corporation purchased a parcel of land as a factory site for \$50,000. It demolished an old building on the property, and began construction on a new building that was completed on October 2, 2007. Costs incurred during this period are:

Demolition of old building	\$ 4,000
Architect's fees	20,000
Legal fees for title investigation and purchase contract	2,000
Construction costs	500,000

The company sold salvaged materials resulting from the demolition for \$3,000.

Required 

At what amount should Edwards record the cost of the land and the new building, respectively?

E10-7 Lump-Sum Purchase The Garrett Corporation paid \$200,000 to acquire land, buildings, and equipment. At the time of acquisition, the company paid \$20,000 for an appraisal, which revealed the following values: land, \$100,000; buildings, \$125,000; and equipment, \$25,000.

Required 

What cost does the company assign to the land, buildings, and equipment, respectively?

E10-8 Exchange of Assets Two independent companies, Denver and Bristol, each own a warehouse, and they agree to an exchange in which no cash changes hands. The following information for the two warehouses is available:

	Denver	Bristol
Cost	\$90,000	\$45,000
Accumulated depreciation	55,000	25,000
Fair value	30,000	30,000

Required

Prepare journal entries for the Denver Company and the Bristol Company to record the exchange.

E10-9 Exchange of Assets Use the same information as in E10-8, except that the warehouse owned by Denver Company has a fair value of \$28,000, and therefore Denver agrees to pay Bristol \$2,000 to complete the exchange.

Required

Prepare journal entries for the Denver Company and the Bristol Company to record the exchange.

E10-10 Exchange of Assets Use the same information as in E10-8, except that the warehouse owned by Denver Company has a fair value of \$33,000, and therefore the Bristol Company agrees to pay the Denver Company \$3,000 to complete the exchange.

Required

Prepare journal entries for the Denver Company and the Bristol Company to record the exchange.

E10-11 Exchange of Assets The Goodman Company acquired a truck from the Harmes Company in exchange for a machine. The machine cost \$30,000, has a book value of \$6,000, and has a market value of \$9,000. The truck has a cost of \$12,000 and a book value of \$8,000 on Harmes' books.

Required

Prepare journal entries for the Goodman Company and the Harmes Company to record the exchange.

E10-12 Exchange of Assets Use the same information as in E10-11, except that the machine has a market value of \$8,500, and therefore the Goodman Company agrees to pay \$500 to complete the exchange.

Required

Prepare journal entries for the Goodman Company and the Harmes Company to record the exchange.

E10-13 AICPA Adapted Exchange of Assets Minor Baseball Company had a player contract with Doe that was recorded in its accounting records at \$145,000. Better Baseball Company had a player contract with Smith that was recorded in its accounting records at \$140,000. Minor traded Doe to Better for Smith by exchanging each player's contract. The fair value of each contract was \$150,000.

Required

What amounts should each company show in its accounting records for the exchange of player contracts?

E10-14 Self-Construction The Harshman Company constructed a building for its own use. The company incurred costs of \$20,000 for materials and supplies, \$48,000 for direct labor, and \$4,000 for a supervisor's overtime that was caused by the construction. The company uses a factory overhead rate of 50% of direct labor cost. Before construction, the company had received a bid of \$100,000 from an outside contractor.

Required

1. At what value should the company capitalize the building? Justify your answer.
2. Would your answer change if the bid from the outside contractor had been \$80,000? \$60,000?

E10-15 Asset Acquired by Donation The city of Littleton donated a building and land to the Hetting Co. without charge. The agreement provided that the company employ 350 people for 10 years. The land was appraised at \$65,000 and the building at \$44,000.

Required

1. Prepare the journal entry to record the acquisition of the land and building.
2. How should the 10-year agreement be reported in the financial statements?
3. If the title were not to pass until after 10 years, would your answer change?

E10-16 Interest During Construction The Snowbird Company is constructing a building that qualifies for interest capitalization. It is built between January 1 and December 31, 2007. Expenditures, which occur evenly throughout the year, totaled \$800,000. The company borrowed \$500,000 at 12% to help finance the project. In addition, the Snowbird Company had outstanding borrowings of \$2 million at 8%.

Required

1. Compute the amount of interest capitalized on the building.
2. What effect does the interest capitalization have on the company's financial statements after it completes the building?

E10-17 Calculating Capitalized Interest The Kit Company borrows \$5 million at 12% on January 1, 2007 specifically for the purpose of financing a construction project. The company invests the total amount at 11% until it makes payments for the construction project. During the first year of construction, the company incurs construction costs of \$4 million evenly over the year.

Required

Compute the amount of interest that the company would capitalize and the amount of interest revenue it would recognize.

E10-18 Capital and Operating Expenditures Which of the following 10 items does a company record as a capital expenditure and which as an operating expenditure?

- | | |
|--------------------------------------------------------------------|-------------------------------------------------------------|
| 1. Cost of installing machinery | 6. Property taxes on land and buildings |
| 2. Cost of moving machinery | 7. Property taxes on land and buildings held for investment |
| 3. Repairs as a result of an accident | 8. Cost of rearranging offices |
| 4. Cost of major overhaul | 9. Cost of repainting offices |
| 5. Installation of safety device as a result of an OSHA inspection | 10. Ordinary repairs |

E10-19 Oil and Gas Accounting (Appendix) The Lawrence Company spends \$4 million in 2007 drilling oil wells. Sixty percent of the drilling is successful and results in commercial quantities of oil being found.

Required

1. How much drilling expense does the company recognize under
 - a. The successful-efforts method?
 - b. The full-cost method?
2. At what value does the company report the asset, Oil and Gas Properties, in its balance sheet under
 - a. The successful-efforts method?
 - b. The full-cost method?

PROBLEMS

P10-1 Acquisition Costs The Mawn Company bought land and built a warehouse during 2007. It debited the following related costs to an account titled Land and Buildings:

Land purchase	\$22,000
Demolition of old building	3,000

Legal fees for land acquisition	1,500
Interest on loan for construction (based on average costs incurred)	2,900
Building construction	53,000
Assessment by city for sewer connection	1,200
Landscaping	3,500
Equipment purchased for excavation	18,800
Fixed overhead charged to building	15,000
Insurance on building during construction	1,000
Profit on construction	12,000
Compensation for injury to construction worker	3,000
Modifications to building ordered by building inspectors	7,500
Property taxes on land paid in 2007	2,500

The following credits were made to the account:

Salvage from demolished old building	\$ 700
Sale of excavation equipment	14,000

In addition, you discover that compensation for the worker's injury was necessary because it was not covered by the particular insurance policy purchased by the company. Accident insurance that would have covered the injury would have cost an additional \$350. The modifications ordered by the building inspectors resulted from poor planning by the company.

Required

Prepare adjusting entries on December 31, 2007 to properly reclassify the preceding items.

P10-2 *Costs Subsequent to Acquisition* As the first auditor of the Newberg Company you discover that the following entries have been made in the property, plant, and equipment account:

Property, Plant, and Equipment			
2006		2006	
Plant purchased	60,000	Depreciation	6,310
Legal fees	700		
Insurance	2,400		
2007		2007	
Repairs	2,000	Depreciation	6,879
Addition to building	10,000		
2008		2008	
Repairs	3,000	Machine sold	500
Insurance	2,800	Depreciation	7,421
Machine purchased	7,000		

You discover the following additional information:

1. The purchase of the plant included a building and machinery. When the plant was purchased, an appraisal showed that the building was valued at \$39,000 and the machinery at \$26,000.
2. Depreciation has been recorded each year at 10% of the balance in the account. The 10% was chosen because the property is being depreciated over 10 years for tax purposes. Subsequent investigation indicates that the expected lives at the time of acquisition were: building, 20 years; machinery, 8 years.
3. Each insurance payment was made on January 1 and was for a two-year policy.
4. The machine that was sold in 2008 had an original cost of \$800.
5. All purchases and sales of property, plant, and equipment items occurred at the beginning of the year indicated.

Required

Prepare adjusting entries at December 31, 2008 to correct the books assuming they have not been closed for the year.

P10-3 *Classification of Costs Associated with Assets* The following account balances were included in the balance sheet of the Bromley Company on December 31, 2006:

Land	\$100,000
Land improvements	20,000
Buildings	300,000
Machinery and equipment	500,000

During 2007 the following transactions occurred:

1. Land was acquired for \$70,000 for a future building site. Commissions of \$4,000 were paid to a real estate agent.
2. A factory and land were acquired from the Kent Development Company by issuing 20,000 shares of \$3 par common stock. At that time the stock was selling for \$10 per share on the New York Stock Exchange. The independently appraised values of the land and the factory were \$60,000 and \$180,000, respectively.
3. Machinery and equipment was acquired at a cost of \$120,000. In addition, sales tax, freight costs, and installation costs were \$7,000, \$10,000, and \$16,000, respectively. During installation, the machinery was damaged and \$2,000 was spent in repairs.
4. A new parking lot was installed at a cost of \$30,000.
5. A machine that had cost \$20,000 on January 1, 2003 and had a book value on December 31, 2007 of \$4,000 was sold on that date for \$6,000.
6. Half the land purchased in item 1 was prepared as a building site. Costs of \$26,000 were incurred to clear the land, and the timber recovered was sold for \$3,000. A new building was built for \$60,000 plus architect's fees and imputed interest on equity funds used during construction of \$18,000 and \$15,000, respectively. No debt is outstanding.
7. Costs of \$20,000 were incurred to improve some leased office space. The lease will terminate in 2009 and is not expected to be renewed.
8. A group of new machines was purchased under a royalty agreement that provides for payment of annual royalties based on units produced. The invoice price of the machines was \$30,000, freight costs were \$2,000, and royalty payments for 2007 were \$12,000.

Required

Prepare journal entries to record all the preceding events. Unless otherwise indicated, assume the company makes all payments in cash.

P10-4 CMA Adapted Self-Construction The Olson Machine Company manufactures small and large milling machines. Selling prices of these machines range from \$35,000 to \$200,000. During the five-month period from August 1, 2007 through December 31, 2007, the company manufactured a milling machine for its own use. This machine was built as part of the regular production activities. The project required a large amount of time from planning and supervisory personnel, as well as that of some of the company's officers, because it was a more sophisticated type of machine than the regular production models.

Throughout the five-month period, the company charged all costs directly associated with the construction of the machine to a special account entitled "Asset Construction Account." An analysis of the charges to this account as of December 31, 2007 follows:

ASSET CONSTRUCTION ACCOUNT	
Item Description	Cost
<i>Raw Materials</i>	
Iron castings:	
Main housing, 3 sections	\$37,480
Movable heads, 2 heads @ \$3,900	7,800
Machine bed	4,760
Table, 2 sections @ \$5,500	<u>11,000</u>
	\$ 61,040
Other raw materials:	
Electrical components and wiring	\$28,000
Worm screws and housing	8,600
Cutter housings	2,700
Conveyor system	8,400
Other parts	<u>2,500</u>
	50,200
<i>Direct Labor Costs</i>	
Layout 90 hr. @ \$5.00	\$ 450
Electricians 380 hr. @ 9.00	3,420
Machining 1,100 hr. @ 8.00	8,800
Heat treatment 100 hr. @ 7.50	750
Assembly 450 hr. @ 7.00	3,150
Testing 180 hr. @ 8.00	<u>1,440</u>
	18,010
<i>Other Direct Charges</i>	
Repairs and maintenance during testing period	\$ 1,340
Interest expense from 8/1/07 to 12/31/07 on funds borrowed for construction purposes	4,260
Additional labor to assist during machine testing period, 180 hr. @ \$5.00	<u>900</u>
	6,500
Balance, December 31, 2007	<u>\$135,750</u>

The company allocates factory overhead to normal production as a percent of direct labor dollars as follows:

Departments	Factory Overhead Rates (applied as a percent of direct labor dollars)		Total
	Variable	Fixed	
Layout and electricians	50%	20%	70%
Machining,* heat treatment, and assembly	50%	50%	100%

*All testing is conducted by employees in the machining department.

The company uses a flat rate of 40% of direct labor dollars to allocate general and administrative overhead.

During the machine testing period, a cutter head malfunctioned and did extensive damage to the machine table and one cutter housing. This damage was not anticipated and was the result of an error in the assembly operation. Although no additional raw materials were needed to make the machine operational after the accident, the following labor for rework was required:

	Direct Labor Hours
Electric	80
Machining	200
Assembly	100
Testing (conducted by machining department)	20

The company has included all these labor charges in the Asset Construction account. In addition, it included in the account the repairs and maintenance charges of \$1,340 that it incurred as a result of the malfunction.

Required

1. Compute, in accordance with generally accepted accounting principles, the amount that Olson Machine Company should capitalize for the milling machine as of December 31, 2007 when it declares the machine operational.
2. Identify the costs you included in Requirement 1 for which there are acceptable alternative procedures. Describe the alternative procedure(s) in each case.

P10-5 Acquisition Cost The following transactions of the Weber Company occurred during 2007:

1. The company acquired a tract of land in exchange for 1,000 shares of \$10 par value common stock. The stock was traded on the New York Stock Exchange at \$24 on the date of exchange. The land had a book value on the selling company's records of \$5,000, and it was believed to be worth "anything up to \$30,000."
2. An engine on a truck was replaced. The truck originally cost \$10,000 three years ago and was being depreciated at \$2,000 per year. The engine cost \$1,000 to replace.
3. The company acquired a tract of land that was believed to have mineral deposits by issuing 500 shares of preferred stock of \$50 par value. The preferred stock was rarely traded. The last transaction was two months earlier, when 50 shares were sold at \$75 per share. The owner of the land was willing to accept cash of \$55,000, and an appraisal had shown a value of \$60,000.
4. The company purchased a machine with a list price of \$8,500 by issuing a two-year \$10,000 non-interest-bearing note when the market rate of interest was 10%.

Required

Prepare journal entries to record the preceding events.

P10-6 AICPA Adapted Comprehensive At December 31, 2006 certain accounts included in the property, plant, and equipment section of the Townsend Company's balance sheet had the following balances:

Land	\$100,000	Leasehold improvements	\$500,000
Buildings	800,000	Machinery and equipment	700,000

During 2007, the following transactions occurred:

1. Land site number 621 was acquired for \$1,000,000. Additionally, to acquire the land Townsend paid a \$60,000 commission to a real estate agent. Costs of \$15,000 were incurred to clear the land. During the course of clearing the land, timber and gravel were recovered and sold for \$5,000.
2. A second tract of land (site number 622) with a building was acquired for \$300,000. The closing statement indicated that the land value was \$200,000 and the building value was \$100,000. Shortly after acquisition, the building was demolished at a cost of \$30,000. A new building was constructed for \$150,000 plus the following costs:

Excavation fees	\$11,000
Architectural design fees	8,000
Building permit fee	1,000

The building was completed and occupied on September 29, 2007.

3. A third tract of land (site number 623) was acquired for \$600,000 and was put on the market for resale.

4. Extensive work was done to a building occupied by Townsend under a lease agreement that expires on December 31, 2016. The total cost of the work was \$125,000, which consisted of the following:

Painting of ceilings	\$ 10,000 (estimated useful life is one year)
Electrical work	35,000 (estimated useful life is ten years)
Construction of extension to current working area	<u>80,000 (estimated useful life is thirty years)</u>
	<u>\$125,000</u>

The lessor paid one-half of the costs incurred in connection with the extension to the current working area.

5. During December 2007 costs of \$65,000 were incurred to improve leased office space. The related lease will terminate on December 31, 2009, and is not expected to be renewed.
6. A group of new machines was purchased under a royalty agreement which provides for payment of royalties based on units of production for the machines. The invoice price of the machines was \$75,000, freight costs were \$2,000, unloading charges were \$1,500, and royalty payments for 2007 were \$13,000.

Required

- Prepare a detailed analysis of the changes in each of the following balance sheet accounts for 2007:

Land	Leasehold improvements
Buildings	Machinery and equipment

 Disregard the related accumulated depreciation accounts.
- List the items in the fact situation which were not used to determine the answer to Requirement 1, and indicate where, or if, these items should be included in Townsend's financial statements.

P10-7 Assets Acquired by Exchange The Bremer Company made the following exchanges of assets during 2007:

- Acquired a more advanced machine worth \$10,000 by paying \$2,000 cash and giving a machine that had originally cost \$40,000 and has a book value of \$12,000.
- Acquired a building worth \$55,000 by paying \$5,000 cash and giving a piece of land that had originally cost \$35,000.
- Acquired a more advanced machine worth \$20,000 by paying \$5,000 cash and giving a machine that had originally cost \$13,000 and has a book value of \$11,000.
- Acquired a car by giving a truck that had originally cost \$20,000, has a book value of \$15,000, and has a "blue book" value of \$16,800. In addition the company received \$1,000 cash.

Required

Prepare the journal entry of the Bremer Company for each exchange.

P10-8 Assets Acquired by Exchange The Bussell Company exchanged the following assets during 2007:

- Acquired a newer machine by paying \$4,000 cash and giving a machine that originally cost \$40,000, has a book value of \$25,000, and is worth \$30,000.
- Same facts as in item 1, except that the asset being surrendered has a book value of \$33,000.
- Acquired a newer machine by giving a machine that originally cost \$45,000, has a book value of \$20,000, and is worth \$32,000. In addition \$5,000 cash was received.
- Same facts as in item 3, except that the asset being surrendered has a book value of \$36,000.
- Acquired a newer machine worth \$90,000 by giving up a machine of equal value. The machine surrendered had originally cost \$150,000 and has a book value of \$80,000.
- Same facts as in item 5, except that the asset being surrendered has a book value of \$94,000.
- Acquired a building in exchange for land that had originally cost \$130,000 and is now worth \$200,000.
- Same facts as in item 7, except that \$30,000 was paid.
- Same facts as in item 7, except that \$20,000 was received.

Required

Prepare the journal entry to record each acquisition of the Bussell Company.

P10-9 Interest During Construction The Alta Company is constructing a production complex which qualifies for interest capitalization. The following information is available:

Capitalization period: January 1, 2007 to June 30, 2009

Expenditures on project (incurred evenly during each period and excluding capitalized interest from previous years):

2007	\$2,000,000
2008	\$3,760,000
2009	\$4,324,000

Amounts borrowed and outstanding:

- \$3 million borrowed at 12%, specifically for the project
- \$6 million borrowed on July 1, 2003, at 14%
- \$14 million borrowed on January 1, 1999, at 8%

Required

1. Compute the amount of interest costs capitalized each year.
2. If it is assumed that the production complex has an estimated life of 20 years and a residual value of zero, compute the straight-line depreciation in 2010.
3. Explain the effects of the interest capitalization on the financial statements for all three years. Ignore income taxes.

P10-10 Comprehensive The Foothills Power Company begins a two-year construction project on a power plant on January 1, 2007. The following information is available:

1. The company borrows \$10 million on January 1, 2007 at 12%, specifically for use on the project.
2. The company's other borrowings are:
 - \$20 million at 10%
 - \$60 million at 8%
3. The expenditures for the project, incurred evenly each year (excluding capitalized interest from previous years), are as follows:
 - \$6,000,000 in 2007
 - \$11,460,000 in 2008
 - \$1,800,000 in 2009
4. The project is completed on March 31, 2009. It took longer than originally planned because the company suspended construction for the last three months of 2007 because of a concern about the salability of the electricity produced by the plant.
5. Because of reduced demand for electricity, the plant does not begin operations until October 1, 2009.
6. The company invests at 11% the unused amounts of the \$10 million borrowed in item 1.
7. Assume all transactions are in cash unless otherwise indicated.

Required

1. Prepare all the necessary journal entries for each of the three years. Record all construction costs in a Construction in Progress inventory account.
2. How would your answer to Requirement 1 change if the three-month suspension in the construction activity was due to an environmental dispute with the federal government?

P10-11 Events Subsequent to Acquisition The following selected events occurred during 2007:

- Jan. 10 A motor breaks on a machine and is replaced for \$800. This replacement was expected when the machine was purchased.
- Jan. 24 A machine that was purchased for \$10,000 and has a book value of \$1,000 is sold for \$600.
- Feb. 3 A fully depreciated building that originally cost \$25,000 is demolished so that a new building may be constructed. The demolition cost \$2,200 and resulted in \$700 of salvageable materials.
- Feb. 14 A machine breaks down unexpectedly and requires repairs of \$700.
- Mar. 10 An accident damages some equipment. Repairs cost \$2,000.
- Mar. 19 A motor breaks on a machine and is replaced for \$900. The new motor is of an improved design that increases the capacity of the machine.
- Mar. 27 Office layout is rearranged at a cost of \$700. At the same time, the walls are repainted for \$500.

Required

Prepare journal entries for the preceding transactions.

P10-12 AICPA Adapted Comprehensive You are engaged in the examination of financial statements of the Dewoskin Company and are auditing the Machinery and Equipment account and the related depreciation accounts for the year ended December 31, 2007. Your permanent file contains the following schedules:

	Balance 12/31/05	2006 Retirements	2006 Addition	Balance 12/31/06
<i>Machinery and Equipment</i>				
1996	\$ 8,000	\$2,100	—	\$ 5,900
1997	400	—	—	400
1998	—	—	—	—
1999	—	—	—	—
2000	3,900	—	—	3,900
2001	—	—	—	—
2002	5,300	—	—	5,300
2003	—	—	—	—
2004	4,200	—	—	4,200
2005	—	—	—	—
2006	—	—	\$5,700	5,700
	<u>\$21,800</u>	<u>\$2,100</u>	<u>\$5,700</u>	<u>\$25,400</u>

	Balance 12/31/05	2006 Retirements	2006 Addition	Balance 12/31/06
<i>Accumulated Depreciation</i>				
1996	\$ 7,840	\$2,100	\$ 160	\$ 5,900
1997	340	—	40	380
1998	—	—	—	—
1999	—	—	—	—
2000	2,145	—	390	2,535
2001	—	—	—	—
2002	1,855	—	530	2,385
2003	—	—	—	—
2004	630	—	420	1,050
2005	—	—	—	—
2006	—	—	285	285
	<u>\$12,810</u>	<u>\$2,100</u>	<u>\$1,825</u>	<u>\$12,535</u>

Here is a transcript of the Machinery and Equipment account for 2007:

2007	Machinery and Equipment	Ref.	Debit	Credit
Jan. 1	Balance forward		\$25,400	
Mar. 1	Burnham grinder	VR	1,200	
May 1	Air compressor	VR	4,500	
June 1	Power lawnmower	VR	600	
June 1	Lift-truck battery	VR	320	
Aug. 1	Rockwood saw	CR		\$ 150
Nov. 1	Electric spot welder	VR	4,500	
Nov. 1	Baking oven	VR	2,800	
Dec. 1	Baking oven	VR	236	
			<u>\$39,556</u>	<u>150</u>
Dec. 31	Balance			<u>\$39,406</u>
			<u>\$39,556</u>	<u>\$39,556</u>

Your examination reveals the following eight items:

1. The company uses a 10-year life for all machinery and equipment for depreciation purposes. Depreciation is computed by the straight-line method. Six months' depreciation is recorded in the year of acquisition or retirement. For 2007 the company recorded depreciation of \$2,800 on machinery and equipment.

- The Burnham grinder was purchased for cash from a firm in financial distress. The chief engineer and a used machinery dealer agreed that the machine, which was practically new, was worth \$2,100 in the open market.
- For production reasons, the new air compressor was installed in a small building that was erected in 2007 to house the machine. The building will also be used for general storage. The cost of the building, which has a 25-year life, was \$2,000 and is included in the \$4,500 voucher for the air compressor.
- The power lawnmower was delivered to the home of the company president for personal use.
- On June 1, the battery in a battery-powered lift truck was accidentally damaged beyond repair. The damaged battery was included at a price of \$600 in the \$4,200 cost of the lift truck purchased on July 1, 2004. The company decided to rent a replacement battery instead of buying a new battery. The \$320 expenditure is the annual rental for the battery paid in advance, net of a \$40 allowance for the scrap value of the damaged battery that was returned to the battery company.
- The Rockwood saw sold on August 1 had been purchased on August 1, 1994, for \$1,500. The saw was in use until it was sold.
- On September 1, the company determined that a production casting machine was no longer needed and advertised it for sale for \$1,800 after having determined from a used machinery dealer that this was its market value. The casting machine had been purchased for \$5,000 on September 1, 2002.
- On November 1 a baking oven was purchased for \$10,000. A \$2,800 down payment was made, and the balance will be paid in monthly installments over a three-year period. The December 1 payment includes interest charges of \$36. Legal title to the oven will not pass to the company until the payments are completed.

Required

- Prepare the auditor's adjusting journal entries required on December 31, 2007, for machinery and equipment and the related depreciation.
- Prepare schedules for detailing the effect of additions and retirements on the assets and related accumulated depreciation balances.

P10-13 AICPA Adapted *Adjusting Entries* In your examination of the financial statements of Ericson Corporation at December 31, 2007 you observe the contents of certain accounts and other pertinent information as follows:

Date	Explanation	Building Post REF	Debit	Credit	Balance
12/31/06	Balance	X	\$100,000	—	\$100,000
7/1/07	New boiler	CD	16,480	\$1,480	115,000
9/1/08	Insurance recovery	CR	—	2,000	113,000

Date	Explanation	Accumulated Depreciation—Building LF	Debit	Credit	Balance
12/31/06	Balance: 15 years @ 4% of \$100,000 (no salvage value)	X		\$60,000	\$60,000
12/31/07	Annual depreciation	GJ		4,440	64,440

You learn that on June 15 the company's old high-pressure boiler exploded and was partially damaged. Damage to the building was insignificant, but the boiler was replaced by a more efficient oil-burning boiler. The company received \$2,000 as an insurance adjustment under terms of its policy for damage to the boiler. The disbursement voucher charged to the Building account on July 1, 2007 is reproduced here:

To: Leetsdale Heating Company

Fair value—new oil-burning boiler (including fuel oil tank and 1,000 gallons fuel oil)	\$16,000
Sales tax—3% of \$16,000	480
Total	\$16,480
Less: Allowance (fair value) for old coal-burning boiler in building—to be removed at the expense of the Leetsdale Heating Company	1,480
Total price	<u>\$15,000</u>

In vouching the expenditure, you determine that the terms included a 2% cash discount that was properly computed and taken. Neither the sales tax nor the trade-in allowance on the old boiler is subject to discount. Your audit discloses that a voucher for \$1,000 was paid to Monaco Company on July 3, 2007 and charged to the Repair Expense account. The voucher is adequately supported and is marked "installation costs for new oil-burning boiler."

The company's fuel oil supplier advises that fuel oil had a market price of 80 cents per gallon on July 1 and 85 cents per gallon on December 31. The fuel oil inventory at December 31 was 100 gallons.

A review of subsidiary property records discloses that the replaced coal-burning boiler was installed when the building was constructed and was recorded at a cost of \$10,000. According to its manufacturers, the new boiler should be serviceable for the estimated useful life of the building.

In computing depreciation for retirements, Ericson Corporation consistently treats a fraction of a month as a full month.

Required

Prepare the adjusting journal entries that you would suggest for entry on the books of the Ericson Corporation. The books have not been closed. Support your entries with computations in good form. Assume that the building has no salvage value.

P10-14 Oil and Gas Accounting Methods (Appendix) The Iwata Oil Company incurred costs of \$6 million during 2007 drilling for oil. Half the costs resulted in oil being found and half resulted in dry wells. The company expects the oil wells to produce 10% of their capacity each year from 2008 to 2017.

Required

1. What amounts appear in the financial statements for 2008 under
 - a. The successful-efforts method?
 - b. The full-cost method?
2. Why do small oil companies generally prefer the full-cost method?

CASES

COMMUNICATION

C10-1 Acquisition and Retirement

AICPA Adapted Among the principal topics related to the accounting for property, plant, and equipment of a company are acquisition and retirement.

Required

1. Explain the expenditures that a company capitalizes when it acquires equipment for cash.
2. Assume that a company cannot determine the market value of equipment acquired by reference to a similar purchase for cash. Explain how the company determines the capitalizable cost of equipment purchased by exchanging it for each of the following three items:
 - a. Bonds having an established market price.
 - b. Common stock not having an established market price.
 - c. Similar equipment having a determinable market value.
3. Explain the factors that a company uses to determine whether it capitalizes expenditures relating to property, plant, and equipment already in use.
4. Explain how a company accounts for the gain or loss on the sale of property, plant, and equipment for cash.

C10-2 Capitalization Issues

AICPA Adapted George Company purchased land for use as its corporate headquarters. A small factory that was on the land when it was purchased was torn down before construction of the office building began. Furthermore, a substantial amount of rock blasting and removal had to be done to the site before construction of the building foundation began. Because the office building was set back on the land, far from the public road, George Company had the contractor construct a paved road that led from the public road to the parking lot of the office building.

Three years after it occupied the office building, George Company added four stories to the office building. The four stories had an estimated useful life of five years more than the remaining estimated useful life of the original office building.

Ten years later George Company sold the land and building at an amount more than their book value and had a new

office building constructed in another state for use as its new corporate headquarters.

Required

1. Which of the preceding expenditures does the company capitalize? How does it depreciate or amortize each? Explain the rationale for your answers.
2. How does a company account for the sale of the land and building? Include in your answer how to determine the book value at the date of sale. Explain the rationale for your answer.

C10-3 Cost Issues

AICPA Adapted Deskin Company purchased a new machine to be used in its operations. The new machine was delivered by the supplier, installed by Deskin, and placed into operation. It was purchased under a long-term payment plan for which the interest charges approximated the prevailing market rates. The estimated useful life of the new machine is 10 years, and its estimated residual (salvage) value is significant. Normal maintenance was performed to keep the new machine in usable condition.

Deskin also added a wing to the manufacturing building that it owns. The addition is an integral part of the building. Furthermore, Deskin made significant leasehold improvements to office space used as corporate headquarters.

Required

1. What costs should Deskin capitalize for the new machine?
2. Explain how Deskin should account for the normal maintenance performed on the new machine.
3. Explain how Deskin should account for the wing added to the manufacturing building. Where should the added wing be reported on Deskin's financial statements?
4. Explain how Deskin should account for the leasehold improvements made to its office space. Where should the leasehold improvements be reported on Deskin's financial statements?

C10-4 Acquisition Costs

AICPA Adapted A company may acquire plant assets (among other ways) for cash, on a deferred-payment plan, by exchanging other assets, or by a combination of these ways.

Required

1. Identify six costs that a company should capitalize as the cost of land. For your answer, assume that a company acquires land with an existing building for cash and that it removes the existing building immediately in order that it can construct a new building on that site.
2. At what amount should a company record a plant asset acquired on a deferred-payment plan?
3. In general, at what amount should a company record plant assets received in exchange for other nonmonetary assets? Specifically, at what amount should a company record a new machine acquired by exchanging an older, similar machine and paying cash? What amount should it recognize as a gain or loss?

C10-5 Capital and Revenue Expenditures

AICPA Adapted Bristol Company purchased land as a site for construction of a factory. Outside contractors were engaged to:

1. Construct the factory
2. Grade and pave a parking lot adjacent to the factory for the exclusive use of the factory workers.

Operations at the new location began during the year and normal factory maintenance costs were incurred after production began.

Required

1. Distinguish between capital and revenue (operating) expenditures.
2. Indicate how the company should account for and report expenditures for each of the following at the time incurred and in subsequent accounting periods.
 - a. Purchase of land
 - b. Construction of factory
 - c. Grading and paving parking lot
 - d. Payment of normal factory maintenance costs

Do not discuss capitalization of interest during construction in your response.

CREATIVE AND CRITICAL THINKING

C10-6 Lump-Sum Acquisition

In 1975 a trial was held to settle a tax dispute between the owners of the **Atlanta Falcons**, a National Football League franchise, and the Internal Revenue Service. In 1966, the owners had paid \$8.5 million to purchase the franchise. They considered \$50,000 to be the cost of the franchise (which is not depreciable for income tax reporting), \$727,000 was deferred interest, and the remaining \$7.7 million was claimed to be the cost of the players' contracts and options. The dispute centered on several variables:

1. How much of the purchase price was assignable to television rights?
2. Is the value assignable to television rights depreciable? If so, what is the expected life?
3. How much of the purchase price was assignable to player contracts and options?
4. Over what life should the value assigned to the players be depreciated?
5. What is the value of the franchise?

Required

1. As an independent accountant, explain the approach you would take and the information you would need to provide advice to the court for the resolution of the points in dispute.
2. Do these valuation issues also create ethical issues?

C10-7 Interest Capitalization

The Gold Creek Company has borrowed large amounts of money to purchase 5,000 acres of land, which it will develop as a new ski area over the next 10 years. Development is currently

under way on the first 2,000 acres, with trails being cut and ski lifts being built. When the company completes this initial development after four years, it will develop the remaining acreage at the rate of approximately 500 acres per year. The company also used some of the money it borrowed to purchase adjacent land, which it will use to expand the ski area if it is successful.

Since this is the first year of the company's existence, it has not developed a policy about interest capitalization. Specifically, it is uncertain about whether it is entitled to capitalize interest on the amounts borrowed to acquire the first 2,000 acres, the total 5,000 acres, the 5,000 acres plus the adjacent land, or the land and the development.

Required

1. Explain the interest capitalization that is appropriate under these circumstances.
2. How might the decision be influenced if the company were interested in earnings management?

C10-8 Purchase Options

The Morgan Company was planning to expand its production facilities. Therefore it acquired one-year options to purchase two alternative sites. Each option cost \$5,000 and could not be applied against the contract. One of the sites was bought for \$100,000. The company was unsure whether to capitalize the land at \$100,000, \$105,000, or \$110,000.

Required

Write a short report that presents arguments in favor of each alternative.

C10-9 Donated Asset and Its Modification

The Birkby Company acquires a building as a donation from the City of Avalon. The controller argues that since there was no payment by the company, it is not necessary to record the asset and therefore no depreciation should be recorded.

The company has to spend \$15,000 altering the building to suit its unique needs. The controller argues that the \$15,000 should be expensed because if the building is sold or returned to the city, it cannot recover the \$15,000. In addition, expensing the \$15,000 results in a closer approximation of the apparent market value of the asset and reduces income taxes immediately.

Required

Write a short memo to the controller that evaluates each of the arguments made by the controller.

C10-10 Natural Resource Assets

AICPA Adapted You have been engaged to examine the financial statements of Brahe Corporation for the year ending December 31, 2007. Brahe Corporation was organized in January 2007 by Messrs. Moses and Price, original owners of options to acquire oil leases on 5,000 acres of land for \$350,000. They expected that first the oil leases would be acquired by the corporation and subsequently 180,000 shares of the corporation's common stock would be sold to the public at \$6 per share. In February 2007 they exchanged their options, \$150,000 cash, and \$50,000 of other assets for 75,000 shares of common stock of the corporation. The corporation's board of directors appraised the leases at \$600,000, basing its appraisal on the price of other acreage recently leased in the same area. The options were therefore recorded at \$250,000 (\$600,000 – \$350,000 option price).

The options were exercised by the corporation in March 2007 prior to the sale of common stock to the public in April 2007. Leases on approximately 500 acres of land were abandoned as worthless during the year.

Required

1. Explain why the valuation of assets acquired by a corporation in exchange for its own common stock is sometimes difficult.
2. a. Explain the reasoning Brahe Corporation might use to support valuing the leases at \$600,000, the amount of the appraisal by the board of directors.
b. Assuming the board's appraisal was sincere, what steps might Brahe Corporation have taken to strengthen its position to use the \$600,000 value and to provide additional information if questions were raised about possible overvaluation of the leases?
3. Discuss the propriety of charging one-tenth of the recorded value of the leases against income at December 31, 2007 because leases on 500 acres of land were abandoned during the year.



C10-11 Ethics and Construction Costs

You are the accountant for a division of a company that is constructing a building for its own use. It is January 2008, and you are working on closing the books for 2007. The CEO of the division stops by your office and says, "I have some questions about our building. Although we started construction at the beginning of June this year, we started planning it at the beginning of the previous year. I believe that we can capitalize interest since then. Check to see if we did capitalize some in 2006. If not, we can take it out of this year's expense and get a double dose. Also, I want you to add lots of overhead to the cost of the building so we can increase our profit for this year. For example, you spent quite a bit of time on the project. So perhaps we could add 1/12 of your salary to the cost of the building. You get the idea?" When the CEO leaves, you check the files and find a letter to an architect dated January 2, 2006. There are numerous subsequent letters to and from the architect.

Required

From financial reporting and ethical perspectives, how would you reply to the CEO?

RESEARCH SIMULATIONS

R10-1 Researching GAAP

Situation

The Tenth National Bank had taken possession of a shopping mall in foreclosure of a mortgage. When the mall was inspected prior to being sold by the bank to a real estate company, it was discovered that it had extensive asbestos problems. An estimate indicated that it would cost \$1 million to remove the asbestos. The bank has also purchased an office building for its headquarters. The building was inspected before the purchase and a similar asbestos problem was

discovered. An estimate indicated that it would cost \$2 million to remove the asbestos, and the bank completed the purchase. The bank's president has asked you how to account for these transactions.

Directions

1. Research the related generally accepted accounting principles and prepare a short memo to the president that answers her question. Cite your references and applicable paragraph numbers.
2. Does this situation create ethical issues?

R10-2 Researching GAAP

Situation

The Perry Park Company (a privately-held company) was searching for a way to expand its operating capacity even though it was short of cash. The president of the company was playing golf and mentioned his concern to his playing partner, who owned some land and a building, and was interested in disposing of them. After some negotiation, the two agreed to swap the land and building for shares in the company. The president of the company has asked you

how to account for this transaction, including whether the transaction qualifies as an exception to the general rule to use fair value and the value to place on the transaction and its components.

Directions

1. Research the related generally accepted accounting principles and prepare a short memo to the president. Cite your references and applicable paragraph numbers.
2. Does this situation create ethical issues?