CHAPTER OBJECTIVES

After careful study of 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.
SYNOPSIS

Characteristics of Property, Plant, and Equipment

1. Assets categorized by a company as property, plant, and equipment must (a) be held for use in the business and not for investment, (b) have an expected life of more than one year, and (c) be tangible in nature. Sometimes these assets are referred to as plant assets, fixed assets, or operational assets.

2. A company initially records assets included in the property, plant, and equipment category at their acquisition cost (historical cost). The company then allocates the cost of the assets, other than land, as an expense to the periods in which it consumes the assets and receives the benefits in order to comply with the matching principle. This process is called depreciation. The major types of assets that a company classifies as property, plant, and equipment are land, buildings, equipment, machinery, furniture and fixtures, leasehold improvements, and natural resources (also called wasting assets).

Acquisition of Property, Plant, and Equipment

3. The cost of a company’s property, plant, and equipment is the cash outlay or its equivalent that is necessary to acquire the asset and put it in operating condition. This cost includes the contract price (less any available discounts), freight, assembly, installation, and testing costs. A company capitalizes the costs incurred to obtain the benefits of the asset when it records them as an asset.

4. The recorded value of land includes (a) the contract price, (b) the costs of closing the transaction and obtaining title (such as commissions, options, legal fees, title search, insurance, and past due taxes), (c) the costs of surveys, and (d) the costs of preparing the land for its particular use (such as the cost of removing an old building) if such improvements have an indefinite life. The costs of land improvements that have a limited life (such as sidewalks) are separately capitalized and depreciated if the company is responsible for maintaining them. If the local government has the responsibility for maintaining such improvements, then the company adds the costs to the cost of the land. Because land has an unlimited economic life and its residual value is unlikely to be less than its acquisition cost, a company generally does not depreciate it.

5. Land acquired for future use or as an investment should not be classified as property, plant, and equipment. A company may capitalize interest related to the purchase of such land only if the land is undergoing activities to ready it for future use. Property taxes and insurance on land that is not being developed for sale or lease to others, however, may be capitalized or expensed regardless of whether the land is acquired for future use or as an investment. Once the land is used in operations, both interest and property taxes must be expensed.

6. The recorded cost of buildings includes (a) the contract price, (b) the costs of remodeling and reconditioning, (c) the costs of excavation for the specific building, (d) architectural costs and the costs of building permits, (e) certain capitalized interest costs, and (f) unanticipated costs resulting from the condition of the land. A company should expense unanticipated construction costs (such as a strike or fire). The cost to raze an old building that is already owned is an element of the gain or loss on retirement of the old building and is not capitalized. A company may expense or capitalize any costs of property taxes and insurance during construction.

7. Improvements made by a lessee to leased property normally revert to the lessor at the end of the lease. In this case, the lessee capitalizes the costs of leasehold improvements and amortizes them over their economic life or the life of the lease, whichever is shorter.
8. When a company acquires several dissimilar assets categorized as property, plant, and equipment for a lump-sum purchase price, it allocates the price paid to the individual assets purchased. The allocation basis is the relative fair values of the individual assets and the company records as acquisition cost the allocated value.

9. When a company acquires property, plant, and equipment on a deferred payment basis (e.g., issuance of bonds or notes or assumption of a mortgage), it records the asset at its fair value or the fair value of the liability on the transaction date, whichever is more reliable. If neither is determinable, the asset is recorded at the present value of the deferred payments using the stated rate. If the stated rate is materially different from the market rate, the market rate is used.

10. A company may also acquire assets categorized as property, plant, and equipment by issuing securities such as common stock. In this case, the recorded cost is either the fair value of the assets obtained, or the fair value of the securities issued, whichever is more reliable.

11. When a company acquires an asset through a nonreciprocal transfer (donation), it records the asset at its fair value rather than its cost, which would be zero. In this case, cost provides an inadequate method of accounting for the asset and for subsequent relevant income measurement. A donation by a governmental unit is credited to a donated capital account; a donation by a nongovernmental unit is credited as a gain and reported in the other items section of the income statement.

12. Under AICPA Statement of Position No. 98-5, a company is required to expense the costs of start-up activities as incurred. A company may incur one-time start-up costs associated with opening a new facility, introducing a new product or service, conducting business in a new territory, conducting business with a new class of customers, initiating a new process in an existing facility, or beginning a new operation. Organization costs are considered start-up costs.

13. In contrast to U.S. standards, international accounting standards allow a company to write up the value of its property, plant, and equipment to fair value if the fair value is reliably measured. The increase is credited to stockholders' equity as a "revaluation" surplus.

Nonmonetary Asset Exchanges

14. Under APB Opinion No. 29, a nonmonetary exchange is a transfer between a company and another entity that results in the acquisition of nonmonetary assets or services or the satisfaction of liabilities by surrendering other nonmonetary assets or services or incurring other obligations. Nonmonetary exchanges may be accompanied by the payment and/or receipt of small amounts of cash. 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. A gain or loss is recognized on the exchange as the difference between the fair value of the asset surrendered and its book value.

15. ASB Statement No. 153 made significant changes so the treatment of nonmonetary asset exchanges to make U.S. GAAP more similar to international GAAP. In doing so it made three exceptions to the general rule to use fair value as the cost of the asset acquired:
   a) Neither the fair value of the asset received or given up is unable to be reasonably determined.
   b) The transaction is an exchange of inventory to facilitate sales to a third party.
   c) The transaction lacks "commercial substance." A nonmonetary exchange lacks commercial substance if a company’s future cash flows are not expected to change significantly.
Self-Construction

16. FASB Statement No. 34 specifies the treatment of interest incurred during the self-construction of assets. If a company constructs an asset for either its own use or as a discrete project for sale or lease to others, interest must be capitalized.

17. A company must not capitalize interest on (a) routinely manufactured inventories, (b) assets in use or ready for use, or (c) assets not used in the earnings activities of the company.

18. A company determines the amount of interest to be capitalized for a qualifying asset by multiplying either the interest rate incurred on the specific borrowing or a weighted average interest rate on all other borrowings multiplied by the average cumulative expenditures for the qualifying asset during the capitalization period. The total interest cost capitalized each period may not exceed the interest cost incurred during the period.

19. 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. The capitalization period ends when the asset is (a) substantially complete and (b) ready for its intended use.

20. The cost of self-constructed assets (items of property, plant, and equipment constructed by a company for use in its own production process) should include all direct costs of materials, labor, engineering, and variable manufacturing overhead. The cost of the self-constructed asset should also include: (a) interest costs incurred during the period of self-construction on the average cumulative invested costs during the period; (b) fixed manufacturing overhead costs: either an allocated portion of total fixed overhead, particularly appropriate when the company is operating at full capacity; the incremental fixed overhead actually incurred, particularly appropriate when the company is operating with excess capacity; or no amount of fixed overhead, if the overhead does not change; and (c) recognition of a loss and a write-down of the asset to the fair value if construction cost materially exceeds the fair value of the asset. However, if the asset is constructed at a cost below the asset's normal purchase price, the company should not recognize any profit.

Costs after Acquisition

21. A cost that increases the future economic benefits of the asset above those originally expected is a capital expenditure and should be capitalized (and then depreciated as time passes) to an asset account. A cost that is incurred to maintain existing benefits and does not increase the economic benefits is an operating expenditure and should be expensed in the period incurred.

22. Additions to already existing assets (e.g., a new wing to a building) represent new assets and are capitalized. Improvements (or betterments) and replacements (or renewals) involve the substitution of new or better assets for old ones. Because the economic benefits to be derived from the asset are increased, a company should capitalize the costs by one of the following methods depending on the circumstances: (a) The Substitution Method (when the book value of the old asset is known): the book value of the old asset is removed from the accounts and the new asset is recorded; (b) Reduce Accumulated Depreciation (when the service life of the asset has been extended): the specific Accumulated Depreciation account is debited with the costs of improvements or replacements on the grounds that service potential that has been written off has been restored; or (c) Increase the Asset Account (when benefits are increased above those originally expected): the specific asset account is debited directly with the new costs on the grounds that an addition has been made to the service potential of the asset.

23. The costs of rearranging or relocating are capitalized and expensed over the periods expected to benefit, or expensed immediately if the difference is immaterial.
24. A company expenses, in the period incurred, routine repair and maintenance costs that are incurred to maintain the operating condition of an asset. However, in order to prevent distortion of interim financial statements, a company may estimate annual repair and maintenance expense and then record an equal amount as an expense each quarter. The company records the difference between the actual expense and the prorated portion in an Allowance for Repairs account (an addition to or offset from property, plant, and equipment) that would have a zero balance at the end of the year.

**Disposal of Property, Plant, and Equipment**

25. A company may dispose of property, plant, and equipment by sale, involuntary conversion, abandonment, or exchange. When recording the disposal, depreciation expense up to the date of the disposal must be recorded first. Then the asset account is credited and the accumulated depreciation account is debited to remove these accounts from the records. Any gain or loss on the disposal is recognized and is usually included as an element of ordinary income in the income statement, but it could be an extraordinary item or disposal of a component of a business if it meets the requirements discussed in Chapter 5.

26. A company may acquire an asset (e.g., power plant, mine) that creates an obligation related to the retirement of the asset because of the significant costs related to closure. GAAP requires a company to record a liability for the obligation at its fair value when the obligation is incurred, usually when the asset is acquired. This fair value is usually measured using the present value of the future cash flows. The discount rate that a company uses is its credit-adjusted, risk-free rate. The company records (credits) the fair value of the liability at acquisition and increases (debits) the asset. Then the company increases the liability (and recognizes interest, or accretion, expense) each year it uses the asset. Upon retirement, the company eliminates the estimated liability when it pays the actual retirement costs, and records a gain/loss if necessary.

**Disclosure of Property, Plant and Equipment**

27. APB Opinion No. 12 requires a company to disclose the balances of its major classes of depreciable assets by nature or by function.

**SELF-EVALUATION EXERCISES**

**True-False Questions**

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

1. A company records an expense, called depreciation, the cost of all assets classified as property, plant, and equipment in the period in which the asset is either acquired or the benefits received. **Answer: False**

   A company will allocate the cost of an asset to each period in which it consumes the asset and receives benefits. The correct answer is false because it implies that there is an option to expense an asset in the period in which it is acquired. Further, the cost of land is not allocated to depreciation expense.
2. Conceptually, in determining the costs of an asset that are to be capitalized, cash discounts available rather than cash discounts taken should be deducted from the asset's contract price. **Answer: True**

3. When purchasing land, a company immediately expenses rather than capitalizes the closing costs and costs of obtaining title because they do not extend the useful life of the asset. **Answer: False**

4. A company may capitalize interest related to the purchase of land held as an investment if the land is being readied for some future use. **Answer: True**

5. A company should capitalize unanticipated costs of constructing a building, such as labor strikes or storm damage, as part of the total cost of the building. **Answer: False**

6. A company had to pay to have an old building razed on land that it purchased to build a new factory. The cost of the razing should be capitalized in the cost of the new building. **Answer: False**

7. Improvements with a 10-year life made to a building leased under a 5-year nonrenewable lease are capitalized and amortized over 10 years by the lessee. **Answer: False**

8. If a company acquires two assets in a lump-sum purchase, it should capitalize each asset at its fair value. **Answer: False**
9. An asset acquired by a deferred payment plan may be recorded at the present value of the deferred payments, which is determined by discounting the payments at an appropriate rate of interest. **Answer: True**

If a company acquires an asset through a deferred payment plan then the asset is usually recorded at the asset's fair value or the fair value of the liability on the date of the transaction, whichever is more reliable. If the value of neither is determinable, then the present value of the deferred payments is used.

10. When a company receives a building donated by a governmental unit, the asset is debited at its fair value and the credit is recorded as a gain to recognize the increased earnings to the company. **Answer: False**

Any asset acquired through a donation will be debited at the fair value of the asset; however, the credit will vary depending on who donated the asset. If the asset is donated by a nongovernmental unit the company would record a gain. If the asset is donated by a governmental unit the credit would be to a donated capital account (stockholders' equity account), not a gain; therefore the answer to this question is false.

11. If an exchange of nonmonetary assets lacks commercial substance, a company must recognize a loss in full on the exchange but gains only to the extent that cash is involved. **Answer: False**

If a transaction lacks commercial substance, a company would not recognize any gain or loss on the exchange. An exchange lacks commercial substance if the company's future cash flows are not expected to significantly change.

12. If a company is operating at full capacity, it is logical to allocate a portion of total fixed overhead to self-constructed assets produced during the period. **Answer: True**

If a company is operating at full capacity then the self-constructed assets are using a portion of the fixed overhead costs that could be used elsewhere; therefore, it is appropriate that these costs be allocated to the cost of the self-constructed asset.

13. A company must capitalize one-time start-up costs associated with beginning a new operation. **Answer: False**

Under AICPA Statement of Position No. 98-5, a company is required to expense, not capitalize, the costs of start-up activities as incurred.

14. Once a company purchases an asset and capitalizes its original costs, all subsequent expenditures that are related to the asset are expensed. **Answer: False**

A cost that increases the future economic benefits of the asset above those that originally were expected should be capitalized. Future economic benefits can be increased by extending the life of the asset, improving the productivity, lowering costs of producing products, or increasing the quality of a product.
15. Under generally accepted accounting principles, the degree of materiality determines if relocation costs are capitalized or expensed immediately.

**Answer: True**

If the relocation costs are material, then a company would capitalize the costs and expense them over the period expected to benefit. If the expenses are not material than it doesn’t matter how a company accounts for them and they may be expensed immediately.

16. The rationale for debiting the cost of improvements to a specific asset’s Accumulated Depreciation account is that improvements to the asset restore the asset’s service potential.

**Answer: True**

Conceptually, an improvement has restored some of the asset’s previously written-off service potential; therefore, it makes sense to reduce the amount of accumulated depreciation by the amount of economic benefit that was restored.

**Multiple Choice Questions**

Select the one best answer for each of the following questions.

1. Davpas Company acquired an asset by issuing 100 shares of its $100 par value preferred stock to the seller. The company last sold shares of its preferred stock two years ago at a price of $130 a share. While no current market value for the asset obtained is readily available, an independent appraisal placed its value at $12,000. Davpas should record this asset at:

   - (a) $12,000.
   - (b) $10,000.
   - (c) $13,000.
   - (d) a zero book value until such time as transaction-based market value is available.

**Answer: (a) $12,000.**

An asset should be recorded at the most readily apparent fair value of either the asset or what was exchanged for the asset. In this case, the asset's fair value is more readily apparent based on an independent appraisal.

Choice (b) is incorrect because this is the par value of the stock that was exchanged. In many instances, the par value, despite the word "value" in its name, has absolutely nothing to do with fair value. Choice (c) is incorrect because the fair value of the preferred stock that was given is more than two years old and the age of this value makes the amount questionable. Choice (d) is incorrect because the asset must be recorded at a value. If there is no clearly discernable value then the Board of Directors must assign an appropriate value.
2. Panda Company exchanged a machine with a fair value of $1,000 for a similar machine with a fair value of $1,200. Panda Company also paid $200 cash as part of the exchange. The machine was purchased three years ago for $3,600 and $2,300 has been depreciated. In recording this transaction, Panda should recognize:
(a) a gain of $200.
(b) a loss of $100.
(c) a loss of $300.
(d) neither a gain nor a loss.

Answer: (d) neither a gain nor a loss.

Because Panda's exchange was for a similar asset, their cash flows should not be expected to change significantly because of the exchange. Because the cash flows will not significantly change, the exchange lacks commercial substance and Panda would not recognize either a gain or loss on the exchange. Panda would record the exchange as follows:

<table>
<thead>
<tr>
<th>Asset (new)</th>
<th>1,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accumulated Depreciation (old)</td>
<td>2,300</td>
</tr>
<tr>
<td>Machine (old)</td>
<td>3,600</td>
</tr>
<tr>
<td>Cash</td>
<td>200</td>
</tr>
</tbody>
</table>

Choice (a) is incorrect because of the lack of commercial substance. While Panda did receive an asset worth $1,200 in exchange for an asset worth $1,000, they also paid $200 in cash. Choice (b) is incorrect. I'm not sure how to revise...The new machine will be recorded at $1,500, which is the book value of the machine that it gave up of $1,300 ($3,600 − $2,300) plus the $200 cash it paid. Choice (c) is incorrect because the $300 difference between the book value and the worth of the old machine is not considered when the exchange lacks commercial substance.

3. Land donated to the Canyon Corporation by Comal County should be recorded in Blarney's accounting records at:
(a) Comal County's book value.
(b) historical cost.
(c) fair value on the date of the donation.
(d) its tax assessment value, which is 80% of fair value.

Answer: (c) fair value on the date of the donation.

Donated assets, whether from governmental or nongovernmental entities, should be recorded on the books of the recipient at the asset's fair value on the date of the donation. Choice (a) is incorrect because Comal County's book value is irrelevant to the Canyon Corporation. Choice (b) is incorrect because Canyon Corporation has no historical cost. Choice (d) is incorrect because the tax assessment value does not represent fair value because it is only 80% of the fair value.
4. During 2011, Reamer Inc. built a new building to house its corporate offices. The contract cost of the building was $350,000, which included excavation costs of $37,000 and architectural costs of $42,000. The demolition costs to raze an old building on the site were $47,000. During the construction phase, the company also incurred $12,000 of unanticipated labor costs due to an electrical workers’ strike. The capitalized cost of the building will be recorded at:

(a) $350,000.
(b) $397,000.
(c) $362,000.
(d) $409,000.
(e) $313,000.

Answer: (a) $350,000.

The capitalized cost of the building should include the construction costs, the excavation costs, and the architectural costs. The total of $350,000 is the capitalized cost of the building.

Choice (b) is incorrect because it includes the cost of demolition of an existing building on the site. The demolition costs should be accorded to the cost of the land, not the building, because it is a cost of preparing the land for its intended use.

Choice (c) is incorrect because it includes the $12,000 unanticipated labor costs due to an electrical workers’ strike. These types of costs should be expensed in the period incurred not capitalized. Choice (d) is incorrect because it includes both the demolition and labor strike costs. Choice (e) is incorrect because it removes the $37,000 of excavation costs. Excavation costs for the building are a cost of the building, not the land.

5. The Repco Company incurred costs of $3 million during the year drilling oil wells. Thirty percent of the drilling resulted in oil being found. The rest of the drilling was unsuccessful. If Repco uses the full-cost method of accounting, the Oil and Gas Properties will be valued on the end of the year balance sheet at:

(a) $3,000,000.
(b) $2,100,000.
(c) $900,000.
(d) $1,500,000.

Answer: (a) $3,000,000.

In the full-cost method of accounting for oil and gas, all drilling costs (successful and unsuccessful) are capitalized; therefore, the full $3,000,000 will be recorded as the value on the balance sheet.

Choice (b) is incorrect because full costing capitalizes all costs whether successful or not. The $2,100,000 represents the 70% of the wells that were not successful. Choice (c) is incorrect. The $900,000 represents the cost of the successful oil wells. If Repco used the successful-efforts method, this is the amount that would be recorded as the oil and gas well properties. Choice (d) is incorrect because it does not represent the total costs incurred in drilling both the successful and unsuccessful wells.

6. In constructing a warehouse for its own use, Rightway Company incurred material costs of $25,000, direct labor costs of $60,000, and interest on funds borrowed for construction of $7,200. Rightway's fixed overhead rate is 40% of direct labor. Rightway was operating at full capacity during the construction. An outside contractor had bid $120,000 to build the warehouse. The capitalized cost of the warehouse should be:

(a) $120,000.
(b) $109,000.
(c) $116,200.
(d) $92,200.

Answer: (c) $116,200.

The capitalized cost of the warehouse should include the material costs ($25,000), the direct labor costs ($60,000), the interest on construction loans ($7,200), and the fixed overhead rate (40% of $60,000 = $24,000), for a total cost of $116,200.

Choice (a) is incorrect because the bid of the outside contractor does not represent the costs that Rightway incurred in building the warehouse. Choice (b) is incorrect because it does not include the $7,200 of interest costs on the construction loans that should be included. Choice (d) is incorrect because it does not include the $24,000 of fixed overhead that should be appropriately charged to the warehouse.
7. On June 30, Hilltop, Inc. purchased new equipment by making a down payment of $12,000 and issuing a $25,000 five-year note with a stated (and fair) part of this statement is hidden, it’s here but I can’t fix it to make it show all the time: interest rate of 12%. The acquisition would be recorded by a debit to Equipment for
(a) $25,000.
(b) $37,000.
(c) $51,338.
(d) $39,338.

**Answer: (b) $37,000.**

The debit should be recorded for the fair value of the asset or the fair value of the liability on the date of the transaction. The total costs to Hilltop would be the cash paid ($12,000) plus the fair value of the liability ($25,000) on the date of the acquisition; therefore the amount recorded should be $37,000.

Choice (a) is incorrect because it does not include the $12,000 cash that was paid in addition to the liability at the time of acquisition. Choice (c) is incorrect because this represents the total cash outlay over the entire period the note is outstanding. The cash paid and fair value of the note ($25,000) is a better indicator of the equipment’s value. Choice (d) is incorrect because this represents the total of all payments made on the note and does not include the initial payment of $12,000.

8. Fairdown Co. acquired land, buildings, and equipment for a lump sum price of $210,000. At the time of acquisition, the land was appraised at $80,000, the buildings at $100,000, and the equipment at $60,000. The cost that should be assigned to the equipment is:
(a) $70,000.
(b) $60,000.
(c) $52,500.
(d) $87,500.

**Answer: (c) $52,500.**

When a group of assets is purchased for a lump sum price, the fair value of each item is allocated in proportion to the fair values of all the assets acquired. The fair value of the assets acquired was $80,000 for the land; $100,000 for the building; and $60,000 for the equipment for a total of $240,000 for the entire group. To determine the allocation for each asset you must divide the fair value of each asset by the total fair value of the entire group. Therefore the allocation percentage for the land would be 33.33% ($80,000 ÷ $240,000); the building 41.67% ($100,000 ÷ $240,000); and 25% for the equipment ($60,000 ÷ $240,000). These percentage allocations are applied to the actual price paid ($210,000) to determine the cost to record. Therefore, the cost to record the equipment at would be 25% of the $210,000 total acquisition price, which is $52,500.

Choice (a) is incorrect because this is the value assigned to the land (33.33% of $210,000). Choice (b) is incorrect because $60,000 is the appraised fair value of the equipment and does not reflect the price that was actually paid for the equipment. Choice (d) is incorrect because this is the value assigned to the building (41.67% of $210,000).

**Strategy:** The key to determining the cost of an asset acquisition is to remember that acquisition costs include all costs that are necessary to obtain the asset and put it in operating condition. Remember that discounts available are included whether actually taken or not.
**Lump Sum Purchases:**

Assets are recorded at their fair market value. But what do we do if we purchase several assets and the purchase price is not equal to their fair value? We have to allocate the purchase cost among all of the assets we acquired. To allocate the purchase price we use the fair values of the individual assets.

The easiest way to understand this is with an illustration:

Eikner Enterprises purchases a warehouse, two trucks, and a forklift. The total purchase price was $320,000. The fair value for the warehouse was $240,000, the two trucks had a fair value of $45,000 each, and the forklift had a fair value of $30,000. Therefore, the total fair value of all the assets that we purchased is $360,000. To determine the amount to record each asset at we must allocate the total purchase price of $320,000 among each of the assets. To do this we determine what percentage each asset’s relative value is among all the assets. The problem has now become a simple ratio problem. The warehouse makes up $240,000/$360,000 or 66.67%; each of the two trucks makes up $45,000/$360,000 or 12.50% each; and the forklift is $30,000/$360,000 or 8.33%.

Once we know the relative percentages we use these to determine how much of the purchase price to allocate to each asset. The warehouse would be recorded at $213,344 (0.6667 × $320,000); the trucks would each be recorded at $40,000 (0.125 × $320,000); and the forklift would be recorded at $26,656 (.0833 × $320,000).

To check your work, just add up the recorded amounts and they should equal the total purchase price:

<table>
<thead>
<tr>
<th>Asset</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse</td>
<td>$213,344</td>
</tr>
<tr>
<td>Truck (1)</td>
<td>40,000</td>
</tr>
<tr>
<td>Truck (2)</td>
<td>40,000</td>
</tr>
<tr>
<td>Forklift</td>
<td>26,656</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$320,000</strong></td>
</tr>
</tbody>
</table>

**Nonmonetary Exchanges**

The general principle of nonmonetary exchanges 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 will recognize as a gain or a loss on the asset the difference between the fair value of the asset surrendered and the book value of the asset surrendered. If cash is involved, then the cost of the asset acquired is equal to the fair value of the asset surrendered plus any cash paid or minus any cash received.

Mathematically this is expressed as:

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

To determine the gain or loss on the exchange we use this equation:

\[
\text{Gain (Loss)} = \text{Fair Value of Surrendered Asset} - \text{Book Value of Surrendered Assets}
\]

To illustrate these concepts let’s apply them to the following example:
Meixner, Inc. exchanges a computer system worth $20,000 for land to be used for future expansion. The land has a fair value of $35,000. In addition to the computer system, Meixner pays $15,000 in cash. The computer system had been purchased two years ago at a cost of $45,000 and had been depreciated $21,000 at the time of the exchange. What would Meixner report as the cost of the new land and how much gain or loss would they recognize?

Remember, the cost of the land (asset acquired) is found by this equation:

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

\[
\begin{align*}
\text{Cost of Asset Acquired} & = \$35,000 \\
\text{Fair Value of Surrendered Asset} & = \$20,000 \\
\text{Cash Paid or} & = \$15,000 \\
\text{Cash Received} & = - \$15,000
\end{align*}
\]

Gain (Loss) = Fair Value of Surrendered Asset - Book Value of Surrendered Assets

\[
\begin{align*}
\text{Gain (Loss)} & = \$20,000 - \$24,000 \\
& = \text{(Loss)} \quad \$4,000
\end{align*}
\]

Strategy: Perhaps the easiest way to approach this problem is to use a journal entry. In this journal entry, start by entering what the company is giving up: a computer system that is listed on the books at $45,000, and we are also giving up the accumulated depreciation for the computer system at $21,000.

Next, record the cost of the land. Another way to look at the cost of the land is to ask yourself what we gave up (in terms of fair value) to acquire the land. In this case, we are giving up a computer system that is worth (fair value) of $20,000. We are also giving up $15,000 in cash, so the total we are giving up is $35,000 ($20,000 + $15,000).

Putting this into the journal entry we have the following:

\[
\begin{align*}
\text{Land} & = 35,000 \\
\text{Accumulated Depreciation - Computer} & = 21,000 \\
\text{Computer Equipment} & = 45,000 \\
\text{Cash} & = 15,000
\end{align*}
\]

The debits equal $56,000 and the credits equal $60,000. We obviously need a $4,000 debit to balance this equation. Because this is a debit entry, it means that we will record a loss of $4,000. (If we had needed a credit to balance, we would have reported a gain.)

The final journal entry will look like this:

\[
\begin{align*}
\text{Land} & = 35,000 \\
\text{Accumulated Depreciation - Computer} & = 21,000 \\
\text{Loss on Exchange} & = 4,000 \\
\text{Computer Equipment} & = 45,000 \\
\text{Cash} & = 15,000
\end{align*}
\]

Interest Capitalization

On a self-constructed asset, FASB Statement No. 34 requires a company to complete three steps for interest capitalization:

1. Determine whether an asset qualifies for interest capitalization.
   A company is required to capitalize interest on assets that are constructed either for its own use or as a discrete project for sale or lease to others.
2. Calculate the amount of interest to capitalize.
   The amount of interest capitalized is based on the actual amounts borrowed and the cost of those
   borrowings. To determine the amount to capitalize, a company applies an interest rate to the average
   amount of expenditures for the qualifying asset. If a company has specific borrowing for the asset, it
   applies that interest rate first before applying the rate of nonproject borrowing.

3. Identify the period over which to capitalize interest.
   The capitalization period begins when expenditures for the asset have been made, activities that are
   necessary to get the asset ready for its intended use are in progress, and interest costs are being
   incurred. The capitalization period ends when the asset is substantially complete and is ready for its
   intended use.

Rutledge Construction is constructing a new headquarters for their use. The capitalization period covers
two years; January 1, 2011, to December 31, 2012 (since it is 2 years). The expenditures on the project,
which were extended evenly over the period, were $3,000,000 in 2011 and $1,400,000 in 2012. To finance
this project Rutledge borrowed $1,000,000 at 8%. In addition, Rutledge has the following debt
outstanding: $15,000,000 at 9% and $5,000,000 at 12%.

Interest capitalization problems require the mastering of several steps.

Step 1: Determine what the average cumulative costs are:
   Because the expenditures were made evenly, we can take the beginning expenditure + the
   current year expenditures and divide by 2.

   At the beginning of 2011, we had not expended anything on the project. At the end of 2011,
   we had expended $3,000,000; therefore the average annual cumulative expenditures are:

   \[ \frac{0 + 3,000,000}{2} = 1,500,000 \]

Step 2: We then need to apply the interest rates to the expenditures. We apply the specific borrowing
first:

   \[ 1,000,000 \times 8\% = 80,000 \text{ interest capitalized from the specific borrowing.} \]
   However, the specific borrowing does not cover the average cumulative expenditures of $1,500,000. The
   remaining $500,000 in expenditures will have to be covered by the other outstanding debt.
   But which one do we use? We will use weighted average interest rates because these debts
   are not specifically allocated to our project.

   To determine the weighted average interest rate, we add the debt to determine the total
   amount of nonspecific debt. We then divide each individual debt by the total debt and multiply
   this result by the interest rate associated with that debt. This will give us the amount of
   interest that each debt contributes to the total interest rate. Hopefully the equation below will
   help explain how we accomplish this:

   Remember our other debt was:

   \[ 15,000,000 \text{ at } 9\% \text{ and } 5,000,000 \text{ at } 12\% \]
   Therefore, our total amount of debt is $20,000,000.

   Contribution to interest rate by $15,000,000 debt:

   \[ 6.75\% = 9\% \times \frac{15,000,000}{20,000,000} \]
Contribution to interest rate by $5,000,000 debt:

\[
3.00\% = \frac{12\% \times \$5,000,000}{\$20,000,000}
\]

Therefore, the weighted average interest rate of these two debts is 9.75% (6.75% + 3%).

**Strategy:** Weighted average interest rate is NOT the same as an average interest rate. A weighted average interest rate allows the larger debt ($15,000,000) to contribute more to the final answer since the amount of debt is the largest contributor to the total amount of debt.

Applying this percentage to the remaining $500,000 of expenditures:

\[
$500,000 \times 9.75\% = $48,750.
\]

Adding this to the specific borrowing interest capitalized amount of $80,000, we have determined that in 2011 we need to capitalize $128,750 ($80,000 + $48,750) worth of interest expense.

The journal entry to record the interest capitalization would be:

\[
\begin{align*}
\text{Building} & \quad 128,750 \\
\text{Interest Expense} & \quad 128,750
\end{align*}
\]

Notice that this entry provides a credit for interest expense that is normally a debit entry. In essence, what we have done is removed this interest expense out of the total interest expense and moved it into the cost of the building.

For 2012 we repeat the same process:

**Step 1:** Average cumulative expenditures equal:

\[
$1,514,375 = \frac{$1,628,750 + $1,400,000}{2}
\]

* The original $1,500,000 in expenditures plus the $128,675 of interest expense that we capitalized.

**Step 2:** Interest rate capitalization:

Specific borrowing: \(1,000,000 \times 8\% = $80,000\)

Other debt: \(514,375 \times 9.75\% = $50,152\)

Total capitalized interest for 2012 = $80,000 + $61,303 = $130,152

The journal entry to record the interest capitalization would be:

\[
\begin{align*}
\text{Building} & \quad 130,152 \\
\text{Interest Expense} & \quad 130,152
\end{align*}
\]
Test Your Knowledge

10-1. Costs incurred by Jeremy Corporation that relate to its property, plant, and equipment assets might be recorded in one of the five following classes of accounts:

a. a land account.           d. an accumulated depreciation account.
b. a building account.       e. an expense account.
c. an equipment account.

For each of the costs identified below, indicate the type of account in which the cost should be recorded by placing the appropriate letter (a through e) in the space provided.

___ 1. cost of overhauling certain equipment, thereby extending its depreciable life by four years
___ 2. property taxes paid on land used in the business
___ 3. cost of raw material used in testing new equipment prior to using the equipment in production operations
___ 4. cost to paint and recarpet an old building recently acquired by Jeremy
___ 5. labor costs to install new equipment
___ 6. addition of safety devices to existing equipment with no effect on the useful life of the equipment
___ 7. cost of title search related to land acquisition
___ 8. cost of changing fan belts and lubricating existing equipment
___ 9. cost of an addition to the manufacturing plant that will be used to store spare equipment parts
___ 10. delinquent taxes owed by the former owner of land and paid by Jeremy in the process of acquiring the land
___ 11. one-time costs associated with opening its new warehouse
10-2. Alpha Corporation exchanged a piece of equipment with an original cost of $30,000 for a truck owned by Beta Corporation. Beta's truck originally cost $20,000. Following you will find two independent sets of assumptions related to this exchange. In the spaces provided, show for each corporation the journal entries required to record the exchange given the additional information.

(a) Alpha's equipment had a book value of $14,000, and Beta's had a book value of $9,000. At the exchange date, both assets had a fair value of $12,000. No cash was involved in the transaction.

Alpha Corporation:

Beta Corporation:

(b) Alpha's equipment had a book value of $17,000 and a fair value of $12,000. Beta's equipment had a book value of $7,000 and a fair value of $14,000. Alpha paid Beta $2,000 cash in addition.

Alpha Corporation:
10-3. Butler Dental Products is building a new factory. The expenditures for 2011 were $1,250,000 and 2012 was $2,500,000 and were expended evenly through the year. To help finance this construction, specific funds of $1,000,000 were borrowed at 9% for three years. Butler also had a long-term note payable for $1,500,000 at 11% and 6% bonds outstanding in the amount of $7,000,000.

(a) Determine the amount of interest to capitalize and prepare the journal entry for 2011.

(b) Determine the amount of interest to capitalize and prepare the journal entry for 2012.
Answers to Test Your Knowledge

10-1.  
1. d  
2. e  
3. c  
4. b  
5. c  
6. c  
7. a  
8. e  
9. b  
10. a  
11. e

10-2. (a)  
Alpha:  
- Truck (new): $12,000
- Accumulated Depreciation: Equipment: $16,000
- Loss on Exchange of Equipment: $2,000
  - Equipment (old): $30,000
Beta:  
- Equipment (new): $12,000
- Accumulated Depreciation: Truck: $11,000
  - Truck (old): $20,000
  - Gain on exchange: $3,000

(b)  
Alpha:  
- Truck (new): $14,000
- Accumulated Depreciation: Equipment: $13,000
- Loss on Exchange of Equipment: $5,000
  - Equipment (old): $30,000
  - Cash: $2,000
Beta:  
- Cash: $2,000
- Equipment (new): $12,000
- Accumulated Depreciation: Truck: $13,000
  - Gain on Exchange of Equipment: $7,000
  - Truck (old): $20,000

10-3. (a)  
2011:  
- Average cumulative expenditures: $625,000 = ($0 + $1,250,000) / 2
- Interest capitalized: $625,000 × 9% = $56,250
- Journal entry:
  
  | Building  | 56,250 |
  | Interest Expense | 56,250 |

(b)  
2012:  
- Average cumulative expenditures: $1,903,125 = $1,306,250 + $2,500,000 / 2
Weighted average interest rate:

Contribution to interest rate by $1,500,000 debt:

\[
1.94\% = 11\% \times \frac{1,500,000}{8,500,000}
\]

Contribution to interest rate by $7,000,000 debt:

\[
4.94\% = 6\% \times \frac{7,000,000}{8,500,000}
\]

Therefore, the weighted average interest rate of these two debts is 6.88% (1.94% + 4.94%).

Interest capitalized:

\[
1,500,000 \times 9\% = 135,000
\]
\[
403,125 \times 6.88\% = 27,735
\]

Total interested capitalized = $162,735

Journal entry:

\[
\begin{align*}
&\text{Building} \quad 162,735 \\
&\text{Interest Expense} \quad 162,735
\end{align*}
\]