

QUESTIONS FOR REVIEW OF KEY TOPICS

Chapter 10 Property, Plant, and Equipment and Intangible Assets: Acquisition

Question 10–1

The difference between tangible and intangible long-lived, revenue-producing assets is that intangible assets lack physical substance and they primarily refer to the ownership of rights.

Question 10–2

The cost of property, plant, and equipment and intangible assets includes the purchase price (less any discounts received from the seller); transportation costs paid by the buyer to transport the asset to the location in which it will be used; expenditures for installation, testing, and legal fees to establish title; and any other costs of bringing the asset to its condition and location for use.

Question 10–3

The cost of a developed natural resource includes the acquisition costs for the use of land, the exploration and development costs incurred before production begins, and the restoration costs incurred during or at the end of extraction.

Question 10–4

Purchased intangibles are valued at their original cost to include the purchase price and all other necessary costs to bring the asset to condition and location for use. Research and development costs incurred to internally develop an intangible asset are expensed in the period incurred. Filing and legal costs for both purchased and developed intangibles are capitalized.

Answers to Questions (continued)

Question 10–5

Goodwill represents the unique value of the company as a whole over and above all identifiable tangible and intangible assets. This value results from a company's clientele and reputation, its trained employees and management team, its unique business location, and any other unique features of the company that can't be associated with a specific asset.

Because goodwill can't be separated from a company, it is not possible for a buyer to acquire it without also acquiring the whole company or a substantial portion of it. Goodwill will appear as an asset in a balance sheet only when it was paid for in connection with the acquisition of another company. The capitalized cost of goodwill equals the acquisition consideration exchanged for the acquired company less the fair value of the net assets acquired. The fair value of the net assets equals the fair value of all identifiable tangible and intangible assets less the fair value of any liabilities of the acquired company assumed by the buyer.

Question 10–6

A lump-sum purchase price generally is allocated based on the relative fair values of the individual assets. The relative fair value percentages are multiplied by the lump-sum purchase price to arrive at the initial valuation of each of the separate assets.

Question 10–7

Assets acquired in exchange for deferred payment contracts are valued at their fair value or the present value of payments using a realistic interest rate. Theoretically, both alternatives should lead to the same valuation.

Question 10–8

Assets acquired through the issuance of equity securities are valued at the fair value of the securities if known. If not known, the fair value of the assets received is used.

Question 10–9

Donated assets are valued at their fair values.

Answers to Questions (continued)

Question 10–10

Revenue. The rationale is that the company receiving the donation is performing a service for the donor in exchange for the asset donated.

Question 10–11

The basic principle used to value assets acquired in a nonmonetary exchange is to use the fair value of asset(s) given up plus (minus) monetary consideration—cash—paid (received).

Question 10–12

The two exceptions are (1) when fair value is not determinable and (2) when the exchange lacks commercial substance resulting in a gain.

Question 10–13

GAAP requires the capitalization of interest incurred during the construction of assets for a company's own use as well as for assets constructed for sale or lease. Assets qualifying for capitalization *exclude* inventories that are routinely manufactured in large quantities on a repetitive basis and assets that are in use or ready for their intended purpose. Only assets that are constructed as discrete projects qualify for interest capitalization.

Answers to Questions (continued)

Question 10–14

Average accumulated expenditures for a period is an approximation of the average amount of debt the company would have had outstanding if it borrowed all of the funds necessary for construction. If construction expenditures are incurred equally throughout the period, the average accumulated expenditures for the period can be estimated by adding the accumulated expenditures at the beginning of the period to the accumulated expenditures at the end of the period and dividing by two. If expenditures on the project are unequal throughout the period, individual expenditures, perhaps expenditures grouped by month, should be weighted by the amount of time outstanding until the end of the construction period or the end of the company's fiscal year, whichever comes first.

Question 10–15

Applying the specific interest method, the interest rate on any construction-related debt is used up to the amount of the construction debt and any excess average accumulated expenditures is multiplied by a weighted-average interest rate of all other debt. The weighted-average method multiplies average accumulated expenditures by the weighted-average interest rate of all debt, including any construction-related debt.

Question 10–16

GAAP defines research and development as follows:

Research is planned search or critical investigation aimed at discovery of new knowledge with the hope that such knowledge will be useful in developing a new product or service or a new process or technique or in bringing about a significant improvement to an existing product or process.

Development is the translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process whether intended for sale or use.

Question 10–17

GAAP specifically excludes from current R&D expense the cost of property, plant, and equipment and intangible assets that have “alternative future uses” beyond the current R&D project. However, the depreciation or amortization of these assets will be included as R&D expenses in the future periods the assets are used for R&D activities. If the asset has no alternative future use, its cost is expensed as R&D immediately.

Answers to Questions (continued)

Question 10–18

GAAP requires the capitalization of software development costs incurred after technological feasibility is established. Technological feasibility is established “when the enterprise has completed all planning, designing, coding, and testing activities that are necessary to establish that the product can be produced to meet its design specifications including functions, features, and technical performance requirements.” Costs incurred *after* technological feasibility but *before* the product is available for general release to customers are capitalized as an intangible asset. These costs include coding and testing costs and the production of product masters. Costs incurred after commercial production begins usually are not R&D expenditures.

Question 10–19

The cost of developed technology is capitalized and expensed over its expected useful life. Developed technology relates to those projects that have reached technological feasibility. The cost of in-process R&D is capitalized and treated as an indefinite life intangible asset and not amortized. If the R&D project is completed successfully, we switch to the way we account for developed technology and amortize the capitalized amount over the estimated period the product or process developed will provide benefits. If the project instead is abandoned, we expense the entire balance immediately. After the acquisition of in-process R&D, research and development costs incurred to complete the project are expensed as incurred, consistent with the treatment of any other R&D not acquired in an acquisition.

Question 10–20

Under U.S. GAAP, donated assets are recorded as revenue. However, *IAS No. 20* requires that *government* grants be recognized in income over the periods necessary to match them on a systematic basis with the related costs that they are intended to compensate. For example, for grants related to assets, companies can either (1) deduct the amount of the grant in determining the initial cost of the asset, or (2) record the grant as a liability, deferred income, in the balance sheet and recognize it in the income statement systematically over the asset’s useful life.

Answers to Questions (concluded)

Question 10–21

Other than software development costs incurred after technological feasibility has been established, U.S. GAAP requires all research and development expenditures to be expensed in the period incurred. *IAS No. 38* draws a distinction between research activities and development activities. Research expenditures are expensed in the period incurred. However, development expenditures that meet specified criteria are capitalized as an intangible asset.

Question 10–22

Capitalization of software development costs is similar under U.S. GAAP and IFRS.

Question 10–23

The successful efforts method allows companies to capitalize only exploration costs resulting in successful wells. The full-cost method allows companies to capitalize all exploration costs incurred within a geographical area.

BRIEF EXERCISES

Brief Exercise 10–1

Capitalized cost of the equipment:

Purchase price	\$35,000
Freight	1,500
Installation	3,000
Testing	<u>2,000</u>
Total capitalized cost	<u>\$41,500</u>

Note: Personal property taxes on the equipment for the period after acquisition are not part of acquisition cost. They are expensed in the period incurred.

Brief Exercise 10–2

Capitalized cost of land:

Purchase price	\$600,000
Broker's commission	30,000
Title insurance	3,000
Miscellaneous closing costs	6,000
Demolition of old building	<u>18,000</u>
Total capitalized cost	<u>\$657,000</u>

All of the expenditures, including the costs to demolish the old building, are included in the initial cost of the land.

Brief Exercise 10–3

Cost of land and building:

Purchase price	\$600,000
Broker's commission	30,000
Title insurance	3,000
Miscellaneous closing costs	<u>6,000</u>
Total capitalized cost	<u>\$639,000</u>

The total must be allocated to the land and building based on their relative fair values:

Asset	Fair Value	Percent of Total Fair Value	Initial Valuation (Percent × \$639,000)
Land	\$420,000	60%	\$383,400
Building	<u>280,000</u>	<u>40</u>	<u>255,600</u>
	<u>\$700,000</u>	<u>100%</u>	<u>\$639,000</u>

Brief Exercise 10–4

Cost of silver mine:

Acquisition, exploration, and development	\$5,600,000
Restoration costs	<u>429,675[†]</u>
Total capitalized cost	<u>\$6,029,675</u>

$$\begin{aligned}
 \dagger \ \$500,000 \times 20\% &= \$100,000 \\
 550,000 \times 45\% &= 247,500 \\
 650,000 \times 35\% &= \underline{227,500} \\
 \$575,000 \times .74726^* &= \mathbf{\$429,675}
 \end{aligned}$$

*Present value of \$1, $n = 5$, $i = 6\%$ (from Table 2)

Brief Exercise 10–5

After one year, the liability will increase to **\$455,456**.
($\$429,675^\dagger + (\$429,675 \times 6\%) = \$455,456$)

$$\begin{aligned} \dagger \$500,000 \times 20\% &= \$100,000 \\ 550,000 \times 45\% &= 247,500 \\ 650,000 \times 35\% &= \underline{227,500} \\ \$575,000 \times .74726^* &= \$429,675 \end{aligned}$$

*Present value of \$1, $n = 5$, $i = 6\%$ (from Table 2)

Actual restoration costs	\$596,000
Less: Asset retirement liability	<u>(575,000)</u>
Loss on retirement	<u>\$ (21,000)</u>

Brief Exercise 10–6

Purchase price	\$1,200,000
Legal fees	<u>20,000</u>
Total capitalized cost	<u>\$1,220,000</u>

The costs of advertising and employee training would be expensed immediately.

Brief Exercise 10–7

Only the legal fees of **\$20,000** would be capitalized. The costs of internal development are recorded as research and development expense. Advertising and employee training would be expensed immediately as well.

Brief Exercise 10–8

Calculation of goodwill:

Fair value of consideration given		\$14,000,000
Less <i>fair</i> value of identifiable net assets acquired:		
Book value of assets	\$8,300,000	
Plus: Excess of fair value over book value of intangible assets	<u>2,500,000</u>	<u>(10,800,000)</u>
Goodwill		<u>\$ 3,200,000</u>

Brief Exercise 10–9

The initial value of equipment and note will be the present value of the note payment:

$$PV = \$60,000 (0.85734^*) = \mathbf{\$51,440}$$

* Present value of \$1: $n = 2$, $i = 8\%$ (from Table 2)

Interest expense for July 1 to December 31, 2024:

$$\$51,440 \times 8\% \times \frac{6}{12} = \mathbf{\$2,058}$$

Brief Exercise 10–10

The initial value of the franchise and note will be the fair value (cash price) of the franchise = **\$356,000**.

The implicit interest rate in the agreement is determined as:

$$\$356,000 \text{ (present value)} = \$400,000 \text{ (face amount)} \times \text{PV factor}^*$$

* Present value of \$1: $n = 2$, $i = ?\%$ (from Table 2)

$$\text{PV factor} = \$356,000 / \$400,000 = 0.89 \text{ (PV factor for } n = 2, i = \mathbf{6\%})$$

Interest expense for September 30 to December 31, 2024:

$$\$356,000 \times 6\% \times \frac{3}{12} = \mathbf{\$5,340}$$

Brief Exercise 10–11

The cost of the patent equals the fair value of the stock given in exchange:

$$50,000 \times \$22 = \mathbf{\$1,100,000}$$

Brief Exercise 10–12

Net sales \div Average PP&E = Fixed-asset turnover ratio

Huebert: $\$1,850 \div (\$220 + \$210) / 2 = \mathbf{8.60}$

Winslow: $\$5,120 \div (\$680 + \$650) / 2 = \mathbf{7.70}$

Because **Huebert** has a higher ratio, we would conclude that it more efficiently generates sales with its fixed assets.

Brief Exercise 10–13

$$\text{Average PP\&E for 2024} = (\$740,000 + 940,000) \div 2 = \$840,000$$

Net sales \div Average PP&E = Fixed-asset turnover ratio

$$\mathbf{?} \div \$840,000 = 3.25$$

Average PP&E \times Fixed-asset turnover ratio = Net sales

$$\$840,000 \times 3.25 = \mathbf{\$2,730,000}$$

Brief Exercise 10–14

1. Pickup trucks = Fair value of equipment given, plus cash paid
 $\$17,000 + \$8,000 = \mathbf{\$25,000}$

2. Gain or loss to recognize on the exchange:

Fair value of equipment given up		\$17,000
Less: Book value of equipment		
Original cost of equipment	\$65,000	
Accumulated depreciation	(45,000)	(20,000)
Loss on exchange of assets.....		<u>\$ (3,000)</u>

Journal entry (not required):

Pickup trucks—new (determined above)	25,000	
Accumulated depreciation (account balance)	45,000	
Loss on exchange of assets (determined above).....	3,000	
Equipment—old (account balance).....		65,000
Cash		8,000

Brief Exercise 10–15

1. Pickup trucks = Fair value of equipment given, plus cash paid
 $\$24,000 + \$8,000 = \mathbf{\$32,000}$

2. Gain or loss to recognize on the exchange:

Fair value of equipment given up		\$24,000
Less: Book value of equipment		
Original cost of equipment	\$65,000	
Accumulated depreciation	(45,000)	(20,000)
Gain on exchange of assets.....		<u>\$ 4,000</u>

Journal entry (not required):

Pickup trucks—new (determined above)	32,000	
Accumulated depreciation (account balance)	45,000	
Equipment—old (account balance)		65,000
Cash		8,000
Gain on exchange of assets (determined above).....		4,000

Brief Exercise 10–16

1. Pickup trucks = Book value of equipment given, plus cash paid
 $\$20,000 + \$8,000 = \mathbf{\$28,000}$

2. Gain or loss to recognize on the exchange:

Fair value of equipment given up		\$24,000
Less: Book value of equipment		
Original cost of equipment	\$65,000	
Accumulated depreciation	(45,000)	(20,000)
Gain on exchange of assets		<u>\$ 4,000</u>

There is a gain on the exchange of assets, but **no gain is recognized** because the exchange lacks commercial substance and no cash was received.

Journal entry (not required):

Pickup trucks—new (determined above)	28,000	
Accumulated depreciation (account balance)	45,000	
Equipment—old (account balance).....		65,000
Cash		8,000

Brief Exercise 10–17

Average accumulated expenditures:

January 1	\$500,000 × 12/12	= \$ 500,000
March 31	600,000 × 9/12	= 450,000
June 30	400,000 × 6/12	= 200,000
October 30	600,000 × 2/12	= <u>100,000</u>
		<u>\$1,250,000</u>

Interest capitalized:

\$1,250,000			
<u>– 700,000</u>	(construction loan)	× 7%	= \$49,000
\$ 550,000		× 6.75%*	= <u>37,125</u>
			<u>\$86,125</u> = Interest capitalized

* Weighted-average rate of all other debt:

\$3,000,000	× 8%	= \$240,000
<u>5,000,000</u>	× 6%	= <u>300,000</u>
<u>\$8,000,000</u>		<u>\$540,000</u>
\$540,000		
<hr/>		
\$8,000,000		= 6.75% weighted average

Brief Exercise 10–18

Average accumulated expenditures:

January 1	\$500,000 × 12/12	= \$ 500,000
March 31	600,000 × 9/12	= 450,000
June 30	400,000 × 6/12	= 200,000
October 30	600,000 × 2/12	= <u>100,000</u>
		<u>\$1,250,000</u>

Interest capitalized:

$$\$1,250,000 \times 6.77\%* = \mathbf{\$84,625}$$

* Weighted-average rate of all other debt:

\$ 700,000	× 7%	= \$ 49,000
3,000,000	× 8%	= 240,000
<u>5,000,000</u>	× 6%	= <u>300,000</u>
<u>\$8,700,000</u>		<u>\$589,000</u>

$$\frac{\$589,000}{\$8,700,000} = 6.77\% \text{ weighted average}$$

Brief Exercise 10–19

Research and development:

Salaries	\$220,000
Depreciation on R & D facilities and equipment	125,000
Utilities and other direct costs	66,000
Payment to another company	<u>120,000</u>
Total R & D expense	<u>\$531,000</u>

Note: The patent filing and related legal costs and the costs of adapting the product to a particular customer's needs are not included as research and development expense.

Brief Exercise 10–20

The software costs to be capitalized include those made after technological feasibility = **\$500,000** (\$800,000 – \$300,000).

Brief Exercise 10–21

The software costs to be capitalized include those incurred after application development = **\$125,000** (\$150,000 – \$25,000).

Brief Exercise 10–22

The software costs to be capitalized include the cost of the arrangement plus all implementation costs = **\$50,000** (\$35,000 + \$15,000).

Costs related to preliminary planning (\$5,000) or post-implementation operation (\$10,000) are not capitalized but are expensed as incurred.

Brief Exercise 10–23

Research and development:

Internal projects	\$620,000
Payment to acquire R&D from a third party	<u>75,000</u>
Total R & D expense	<u>\$695,000</u>

Note: The costs of an R&D project to be sold under contract would be included as part of inventory. The in-process R&D associated with the acquisition would be recorded as an indefinite-life intangible asset.

Brief Exercise 10–24

Start-up costs:

Market appraisal	\$ 50,000
Consulting fees	72,000
Advertising	47,000
Traveling to train employees	<u>31,000</u>
Total start-up expense	<u>\$200,000</u>

EXERCISES

Exercise 10–1

Capitalized cost of land:

Purchase price		\$60,000
Demolition of old building	\$4,000	
Less: Sale of materials	<u>(2,000)</u>	2,000
Legal fees for title investigation		<u>2,000</u>
Total cost of land		<u>\$64,000</u>

Capitalized cost of building:

Construction costs		\$500,000
Architect's fees		12,000
Interest on construction loan		<u>5,000</u>
Total cost of building		<u>\$517,000</u>

Note: Property taxes on the land for the period after acquisition are not part of acquisition cost. They are expensed in the period incurred.

Exercise 10–2

To record the purchase of equipment.

Equipment (\$45,000 + \$2,200 + \$700 + \$1,000)	48,900	
Accounts payable.....		47,200
Cash		1,700

To record prepaid insurance for the equipment.

Prepaid insurance.....	900	
Cash		900

Exercise 10–3

Requirement 1

Cost of land and building:

Purchase price	\$4,000,000
Title insurance	16,000
Legal fees	5,000
State transfer fees	<u>4,000</u>
Total cost	<u>\$4,025,000</u>

Note: The pro-rated property taxes for the period after acquisition are not included in the initial valuation of the land and building. They are recorded instead as prepaid taxes and expensed over the related period.

The total is allocated to the land and building based on their relative fair values:

Asset	Fair Value	Percent of Total Fair Value	Initial Valuation (Percent × \$4,025,000)
Land	\$3,300,000	75%	\$3,018,750
Building	<u>1,100,000</u>	<u>25</u>	<u>1,006,250</u>
	<u>\$4,400,000</u>	<u>100%</u>	<u>\$4,025,000</u>

Assets:

Land	\$3,018,750
Building	\$1,006,250
Land improvements:	
Parking lot	\$ 82,000
Landscaping	<u>40,000</u>
	\$122,000

Exercise 10–3 (concluded)

Requirement 2

Cost of land:		
Purchase price		\$4,000,000
Title insurance		16,000
Legal fees		5,000
State transfer fees		4,000
Demolition of old building	\$250,000	
Less: Sale of materials	<u>(6,000)</u>	244,000
Clearing and grading costs		<u>86,000</u>
Total cost of land		<u>\$4,355,000</u>
Land improvements:		
Parking lot		\$ 82,000
Landscaping		<u>40,000</u>
		<u>\$122,000</u>

Exercise 10–4

Requirement 1

Cost of copper mine:	
Mining site	\$1,000,000
Development costs	600,000
Restoration costs	<u>303,939</u> †
	<u>\$1,903,939</u>

† \$300,000 × 25%	=	\$ 75,000
400,000 × 40%	=	160,000
600,000 × 35%	=	<u>210,000</u>
		\$445,000
		<u>× .68301</u> *

Present value of Restoration costs	\$303,939
= Asset retirement liability	

*Present value of \$1, $n = 4$, $i = 10\%$ (from Table 2)

Requirement 2

Copper mine (determined above)	1,903,939	
Cash (\$1,000,000 + \$600,000)		1,600,000
Asset retirement liability (determined above)		303,939
Equipment (cost)	120,000	
Cash		120,000

Exercise 10–5

Patent (\$200,000 + \$10,000)	210,000	
Franchise*	300,000	
Equipment	400,000	
Copyright	25,000	
Cash		935,000

*The ongoing expense each month of operating as a franchise would be expensed as incurred.

Exercise 10–6

Calculation of goodwill:

Fair value of consideration given		\$17,000,000
Less: Fair value of identifiable net assets acquired:		
Fair value of identifiable assets acquired	\$23,000,000	
Less: Fair value of liabilities assumed	<u>(9,500,000)</u>	<u>(13,500,000)</u>
Goodwill		<u>\$ 3,500,000</u>

Exercise 10–7

Requirement 1

Calculation of goodwill:

Fair value of consideration given		\$11,000,000
Less: Fair value of identifiable net assets acquired:		
Fair value of assets	\$11,700,000*	
Less: Fair value of liabilities	<u>(1,700,000)</u>	<u>10,000,000</u>
Goodwill		<u>\$ 1,000,000</u>

* \$1,100,000 + \$1,500,000 + \$7,900,000 + \$1,200,000 = \$11,700,000

Requirement 2

Accounts receivable	1,100,000
Land	1,500,000
Equipment	7,900,000
Patent	1,200,000
Goodwill	1,000,000
Accounts payable	1,700,000
Cash.....	11,000,000

Exercise 10–8

Asset	Fair Value	Percent of Total Fair Value	Initial Valuation (Percent × \$900,000)
Land	\$ 300,000	30%	\$270,000
Building A	450,000	45	405,000
Building B	<u>250,000</u>	<u>25</u>	<u>225,000</u>
Totals	<u>\$1,000,000</u>	<u>100%</u>	<u>\$900,000</u>

Exercise 10–9

Requirement 1

Tractor (\$5,000 cash + \$18,783 [†] present value of note)	23,783	
Discount on notes payable (difference)	6,217	
Cash.....		5,000
Notes payable (face amount).....		25,000

[†] Present value of note payment:

$$PV = \$25,000 (.75131^*) = \$18,783$$

* Present value of \$1: $n = 3$, $i = 10\%$ (from Table 2)

Requirement 2

$$\begin{aligned} 2024: \text{Interest expense } (\$18,783 \times 10\%) &= \mathbf{\$1,878} \\ 2025: \text{Interest expense } [(\$18,783 + \$1,878) \times 10\%] &= \mathbf{2,066} \end{aligned}$$

Requirement 3

$$\begin{aligned} 2024: \$25,000 - (\$6,217 - \$1,878) &= \mathbf{\$20,661} \\ 2025: \$25,000 - (\$6,217 - \$1,878 - \$2,066) &= \mathbf{22,727} \end{aligned}$$

Exercise 10–10

Land:

Purchase price	\$1,200,000
Demolition and removal of old building	80,000
Clearing and grading	150,000
Closing costs	<u>42,000</u>
Total cost of land	\$1,472,000

Building:

Architect's fees	\$ 50,000
Construction costs	<u>3,250,000</u>
Total cost of building	\$3,300,000

Equipment:

Purchase price	\$860,000
Freight charges	32,000
Special platforms and wire installation	12,000
Cost of trial runs	<u>7,000</u>
Total cost of equipment	\$911,000

Land improvements:

Landscaping	\$45,000
Sprinkler system	<u>5,000</u>
	\$50,000

Fork lifts:

$$PV = \$16,000 + \$70,000 (.93458^*) = \mathbf{\$81,421}$$

* Present value of \$1: $n = 1$, $i = 7\%$ (from Table 2)

Prepaid insurance: \$24,000

Exercise 10–11

Requirement 1

To record the acquisition of land in exchange for common stock.

February 1, 2024	
Land	900,000
Common stock (50,000 shares × \$18)	900,000

To record the acquisition of a building through purchase and donation.

November 2, 2024	
Building	6,000,000
Cash	4,000,000
Revenue – donation of asset (difference)	2,000,000

Requirement 2

As with U.S. GAAP, the building would be valued at fair value. However, the amount donated (\$2,000,000) would not be recorded as revenue. Instead, IFRS requires that government grants be recognized in income over the periods necessary to match them on a systematic basis with the related costs that they are intended to compensate. For grants related to assets, companies can either (1) deduct the amount of the grant in determining the initial cost of the asset, or (2) record the grant as a liability, deferred income, in the balance sheet and recognize it in the income statement systematically over the asset's useful life.

Exercise 10–12

Requirement 1

IFRS requires that government grants be recognized in income over the periods necessary to match them on a systematic basis with the related costs that they are intended to compensate. For grants related to assets, companies can either (1) deduct the amount of the grant in determining the initial cost of the asset, or (2) record the grant as a liability, deferred income, in the balance sheet and recognize it in the income statement systematically over the asset's useful life.

Requirement 2

Alternative 1:

A correcting entry is necessary to eliminate the revenue recognized and reduce the cost of the equipment:

Revenue	2,000,000
Equipment.....	2,000,000

Alternative 2:

A correcting entry is necessary to eliminate the revenue recognized and record deferred income.

Revenue	2,000,000
Deferred income	2,000,000

Exercise 10–13

Requirement 1

(\$ in thousands)

Average PP&E for 2020 = $(\$1,674 + \$1,404) \div 2 = \$1,539$

Net sales \div Average PP&E = Fixed-asset turnover ratio
 $\$10,918 \div \$1,539 = 7.1$ times

Requirement 2

The fixed-asset turnover ratio indicates the level of sales generated by the company's investment in property, plant, and equipment. Nvidia is able to generate \$7.1 in sales for every \$1 invested in property, plant, and equipment.

Exercise 10–14

Equipment—new (\$200,000 FV given + \$60,000 cash paid) ..	260,000
Accumulated depreciation (account balance)	220,000
Equipment—old (account balance).....	400,000
Cash.....	60,000
Gain on exchange of assets (\$200,000 FV – \$180,000 BV)	20,000

Exercise 10–15

Equipment—new (\$170,000 FV given + \$60,000 cash paid) ..	230,000
Loss on exchange of assets (\$170,000 FV – \$180,000 BV) ..	10,000
Accumulated depreciation (remove account balance)	220,000
Equipment—old (remove account balance)	400,000
Cash.....	60,000

Exercise 10–16

Requirement 1

$$\begin{array}{rclcl} \text{Fair value of land} + \text{Cash given} & = & \text{Fair value of equipment} & & \\ \$150,000 & + & \$10,000 & = & \mathbf{\$160,000} \end{array}$$

Requirement 2

Equipment—new (\$150,000 FV given+ \$10,000 cash paid) ..	160,000	
Land—old (remove account balance)		120,000
Cash		10,000
Gain on exchange of assets (\$150,000 FV – \$120,000 BV)		30,000

Exercise 10–17

Requirement 1

$$\begin{array}{rclcl} \text{Fair value of land given} - \text{Cash received} & = & \text{Fair value of equipment} & & \\ \$150,000 & - & \$10,000 & = & \mathbf{\$140,000} \end{array}$$

Requirement 2

Equipment—new (\$150,000 FV given – \$10,000 cash received)	140,000	
Cash	10,000	
Land—old (remove account balance)		120,000
Gain on exchange of assets (\$150,000 FV – \$120,000 BV)		30,000

Exercise 10–18

Requirement 1

$$\begin{array}{rclcl} \text{Fair value of old land} + \text{Cash given} & = & \text{Fair value of new land} & & \\ \$72,000 & + & \$14,000 & = & \mathbf{\$86,000} \end{array}$$

Requirement 2

Exchange has commercial substance. Cash paid.

Land—new (\$72,000 FV given + \$14,000 paid).....	86,000	
Land—old (remove account balance).....		30,000
Cash.....		14,000
Gain on exchange of assets (\$72,000 FV – \$30,000 BV).		42,000

Requirement 3

Exchange lacks commercial substance. Cash paid.

Land—new (\$30,000 BV given + \$14,000 paid).....	44,000	
Land—old (remove account balance).....		30,000
Cash.....		14,000

Requirement 4

Exchange lacks commercial substance. Cash received.

Land—new (see below).....	26,250	
Cash.....	9,000	
Land—old (remove account balance).....		30,000
Gain on exchange of assets (see below).....		5,250

$$\begin{aligned} \text{Gain recognized} &= (\text{fair value given} - \text{book value given}) \times (\text{cash received} \div \text{total fair value received}) \\ &= (\$72,000 - \$30,000) \times (\$9,000 \div \$72,000^a) \\ &= \$5,250 \end{aligned}$$

^a In normal business transactions, the fair value received will equal the fair value given.

$$\text{Land—new} = \$30,000 \text{ BV given} - \$9,000 \text{ cash received} + \$5,250 \text{ gain recognized}$$

Exercise 10–19

1. To record the purchase of equipment on account.

Equipment ($\$25,000 \times 98\%$)	24,500	
Accounts payable.....		24,500

2. To record the acquisition of equipment in exchange for a note.

Equipment (determined below).....	24,545	
Discount on notes payable (difference)	2,455	
Notes payable (face amount)		27,000

$$PV = \$27,000 (0.90909^*) = \$24,545$$

* Present value of \$1: $n=1$, $i=10\%$ (from Table 2)

3. To record the exchange of old equipment for new equipment.

Equipment—new ($\$2,500$ FV given + $\$22,000$ cash paid)	24,500	
Loss on exchange of assets ($\$2,500$ FV – $\$6,000$ BV)	3,500	
Accumulated depreciation	8,000	
Equipment—old (remove account balance).....		14,000
Cash		22,000

4. To record the acquisition of equipment by the issuance of stock.

Equipment.....	24,000	
Common stock.....		24,000

Exercise 10–20

1. The basic principle for recording nonmonetary transactions at fair value.

FASB ASC **845–10–30–1**: “Nonmonetary Transactions—Overall—Initial Measurement—Basic Principle.”

In general, the accounting for nonmonetary transactions should be based on the fair values of the assets (or services) involved, which is the same basis as that used in monetary transactions. Thus, the cost of a **nonmonetary asset** acquired in **exchange** for another nonmonetary asset is the fair value of the asset surrendered to obtain it, and a gain or loss shall be recognized on the exchange. The fair value of the asset received shall be used to measure the cost if it is more clearly evident than the fair value of the asset surrendered. Similarly, a nonmonetary asset received in a **nonreciprocal transfer** shall be recorded at the fair value of the asset received. A transfer of a nonmonetary asset to a stockholder or to another entity in a nonreciprocal transfer shall be recorded at the fair value of the asset transferred and a gain or loss shall be recognized on the disposition of the asset.

2. Modifications of the principle for recording nonmonetary transactions when fair value is not determinable or the exchange lacks commercial substance.

FASB ASC **845–10–30–3**: “Nonmonetary Transactions—Overall—Initial Measurement—Modifications of the Basic Principle.”

A nonmonetary exchange shall be measured based on the recorded amount (after reduction, if appropriate, for an indicated impairment of value as discussed in paragraph [360-10-40-4](#)) of the nonmonetary asset(s) relinquished, and not on the fair values of the exchanged assets, if any of the following conditions apply:

- a. The fair value of neither the asset(s) received nor the asset(s) relinquished is determinable within reasonable limits.
- b. The transaction is an exchange of a product or property held for sale in the ordinary course of business for a product or property to be sold in the same line of business to facilitate sales to customers other than the parties to the exchange.
- c. The transaction lacks commercial substance (see the following paragraph).

3. The concept of commercial substance.

FASB ASC **845-10-30-4**: “Nonmonetary Transactions—Overall—Initial Measurement—Commercial Substance.”

A nonmonetary exchange has commercial substance if the entity's future cash flows are expected to significantly change as a result of the exchange. The entity's future cash flows are expected to significantly change if either of the following criteria is met:

- a. The configuration (risk, timing, and amount) of the future cash flows of the asset(s) received differs significantly from the configuration of the future cash flows of the asset(s) transferred. The configuration of future cash flows is composed of the risk, timing, and amount of the cash flows. A change in any one of those elements would be a change in configuration.
- b. The entity-specific value of the asset(s) received differs from the entity-specific value of the asset(s) transferred, and the difference is significant in relation to the fair values of the assets exchanged. An entity-specific value (referred to as an entity-specific measurement in FASB Concepts Statement No. 7, Using Cash Flow Information and Present Value in Accounting Measurements) is different from a fair value measurement. As described in paragraph 24(b) of Concepts Statement No. 7, an entity-specific value attempts to capture the value of an asset or liability in the context of a particular entity. For example, an entity computing an entity-specific value of an asset would use its expectations about its use of that asset rather than the use assumed by marketplace participants. If it is determined that the transaction has commercial substance, the exchange would be measured at fair value, rather than at the entity-specific value.

A qualitative assessment will, in some cases, be conclusive in determining that the estimated cash flows of the entity are expected to significantly change as a result of the exchange.

4. The required disclosures for nonmonetary transactions.

FASB ASC **845-10-50-1**: “Nonmonetary Transactions—Overall—Disclosure.”

An entity that engages in one or more nonmonetary transactions during a period shall disclose in financial statements for the period all of the following:

- a. The nature of the transactions
- b. The basis of accounting for the assets transferred
- c. Gains or losses recognized on transfers.

Exercise 10–21

1. The disclosure requirements in the notes to the financial statements for depreciation on property, plant, and equipment:

FASB ASC **360–10–50–1**: “Property, Plant, and Equipment–Overall–Disclosure.” Because of the significant effects on financial position and results of operations of the depreciation method or methods used, all of the following disclosures shall be made in the financial statements or in notes thereto:

- a. Depreciation expense for the period.
- b. Balances of major classes of depreciable assets, by nature or function, at the balance sheet date.
- c. Accumulated depreciation, either by major classes of depreciable assets or in total, at the balance sheet date.
- d. A general description of the method or methods used in computing depreciation with respect to major classes of depreciable assets.

Exercise 10–21 (continued)

2. The criteria for determining commercial substance in a nonmonetary exchange:

FASB ASC **845–10–30–4**: “Nonmonetary Transactions—Overall—Initial Measurement.”

A nonmonetary exchange has commercial substance if the entity's future cash flows are expected to significantly change as a result of the exchange. The entity's future cash flows are expected to significantly change if either of the following criteria is met:

- a. The configuration (risk, timing, and amount) of the future cash flows of the asset(s) received differs significantly from the configuration of the future cash flows of the asset(s) transferred. The configuration of future cash flows is composed of the risk, timing, and amount of the cash flows. A change in any one of those elements would be a change in configuration.
- b. The entity-specific value of the asset(s) received differs from the entity-specific value of the asset(s) transferred, and the difference is significant in relation to the fair values of the assets exchanged. An entity-specific value (referred to as an entity-specific measurement in FASB Concepts Statement No. 7, Using Cash Flow Information and Present Value in Accounting Measurements) is different from a fair value measurement. As described in paragraph 24(b) of Concepts Statement No. 7, an entity-specific value attempts to capture the value of an asset or liability in the context of a particular entity. For example, an entity computing an entity-specific value of an asset would use its expectations about its use of that asset rather than the use assumed by marketplace participants. If it is determined that the transaction has commercial substance, the exchange would be measured at fair value, rather than at the entity-specific value.

A qualitative assessment will, in some cases, be conclusive in determining that the estimated cash flows of the entity are expected to significantly change as a result of the exchange.

Exercise 10–21 (continued)

3. The disclosure requirements for interest capitalization:

FASB ASC **835–20–50–1**: “Interest Capitalization–Overall–Disclosure.”

An entity shall disclose the following information with respect to interest cost in the financial statements or related notes:

- a. For an accounting period in which no interest cost is capitalized, the amount of interest cost incurred and charged to expense during the period
- b. For an accounting period in which some interest cost is capitalized, the total amount of interest cost incurred during the period and the amount thereof that has been capitalized.

Exercise 10–21 (concluded)

4. The elements of costs to be included as R&D activities:

FASB ASC **730–10–25–2**: “Research & Development–Overall–Recognition.”

Elements of costs shall be identified with research and development activities as follows:

- a. Materials, equipment, and facilities. The costs of materials (whether from the entity's normal inventory or acquired specially for research and development activities) and equipment or facilities that are acquired or constructed for research and development activities and that have alternative future uses (in research and development projects or otherwise) shall be capitalized as tangible assets when acquired or constructed. The cost of such materials consumed in research and development activities and the depreciation of such equipment or facilities used in those activities are research and development costs. However, the costs of materials, equipment, or facilities that are acquired or constructed for a particular research and development project and that have no alternative future uses (in other research and development projects or otherwise) and therefore no separate economic values are research and development costs at the time the costs are incurred.
- b. Personnel. Salaries, wages, and other related costs of personnel engaged in research and development activities shall be included in research and development costs.
- c. Intangible assets purchased from others. The costs of intangible assets that are purchased from others for use in research and development activities and that have alternative future uses (in research and development projects or otherwise) shall be accounted for in accordance with Topic 350. The amortization of those intangible assets used in research and development activities is a research and development cost. However, the costs of intangibles that are purchased from others for a particular research and development project and that have no alternative future uses (in other research and development projects or otherwise) and therefore no separate economic values are research and development costs at the time the costs are incurred.
- d. Contract services. The costs of services performed by others in connection with the research and development activities of an entity, including research and development conducted by others in behalf of the entity, shall be included in research and development costs.
- e. Indirect costs. Research and development costs shall include a reasonable allocation of indirect costs. However, general and administrative costs that are not clearly related to research and development activities shall not be included as research and development costs.

Exercise 10–22

Average accumulated expenditures:

$$\frac{\$6,000,000}{2} = \$3,000,000$$

Interest capitalized:

$$\begin{array}{rcl} \$3,000,000 & & \\ - \underline{1,500,000} \text{ (construction loan)} & \times 10\% & = \$150,000 \\ \$1,500,000 & \times 7\% * & = \underline{105,000} \\ & & \underline{\$255,000} = \text{interest capitalized} \end{array}$$

* Weighted-average rate of all other debt:

$$\begin{array}{rcl} \$2,000,000 & \times 9\% & = \$180,000 \\ \underline{4,000,000} & \times 6\% & = \underline{240,000} \\ \underline{\$6,000,000} & & \underline{\$420,000} \\ \\ \frac{\$420,000}{\$6,000,000} & & = 7\% \end{array}$$

Exercise 10–23

Average accumulated expenditures for 2024:

January 1	$\$500,000 \times 12/12$	=	\$ 500,000
March 1	$600,000 \times 10/12$	=	500,000
July 31	$480,000 \times 5/12$	=	200,000
September 30	$600,000 \times 3/12$	=	150,000
December 31	$300,000 \times 0/12$	=	<u>- 0 -</u>
			<u>\$1,350,000</u>

Interest capitalized:

$$\$1,350,000 \times 8\% = \mathbf{\$108,000}$$

Exercise 10–24

Average accumulated expenditures for 2024:

January 1, 2024	\$ 600,000 × 12/12 = \$	600,000
March 31, 2024	1,200,000 × 9/12 =	900,000
June 30, 2024	800,000 × 6/12 =	400,000
September 30, 2024	600,000 × 3/12 =	150,000
December 31, 2024	400,000 × 0/12 =	<u>- 0 -</u>
		<u>\$2,050,000</u>

Interest capitalized:

\$2,050,000			
– 1,500,000 (construction loan)	× 8.0%	=	\$120,000
\$ 550,000	× 10.5%*	=	<u>57,750</u>
			<u>\$177,750</u> = interest capitalized

* Weighted-average rate of all other debt:

\$5,000,000 × 12%	=	\$600,000
<u>3,000,000 × 8%</u>	=	<u>240,000</u>
<u>\$8,000,000</u>		<u>\$840,000</u>

\$840,000	
<u> </u>	= 10.5%
\$8,000,000	

Exercise 10–25

Average accumulated expenditures for 2024:

July 1, 2024	\$ 400,000 × 6/6 =	\$400,000
September 30, 2024	600,000 × 3/6 =	300,000
November 30, 2024	<u>600,000</u> × 1/6 =	<u>100,000</u>
	\$1,600,000	<u>\$800,000</u>

Interest capitalized in 2024:

$$\$800,000 \times 4.8\% * \times 6/12 = \mathbf{\$19,200}$$

* Weighted-average rate of all debt:

\$ 2,000,000 × 8% =	\$160,000
<u>8,000,000</u> × 4% =	<u>320,000</u>
<u>\$10,000,000</u>	<u>\$480,000</u>

$$\frac{\$480,000}{\$10,000,000} = 4.8\%$$

Average accumulated expenditures for 2025:

January 1, 2025 (\$1,600,000 + \$19,200)	\$1,619,200 × 3/3 =	\$1,619,200
January 30, 2025	540,000 × 2/3 =	<u>360,000</u>
		<u>\$1,979,200</u>

Interest capitalized in 2025:

$$\$1,979,200 \times 4.8\% * \times 3/12 = \mathbf{\$23,750}$$

Exercise 10–26

To expense R&D costs incorrectly capitalized.

Research and development expense (below).....	3,180,000	
Patent.....		3,180,000

Research and development expenditures:

Basic research to develop the technology	\$2,000,000
Engineering design work	680,000
Development of a prototype	300,000
Testing and modification of the prototype	<u>200,000</u>
Total	<u>\$3,180,000</u>

To capitalize cost of equipment incorrectly capitalized as patent.

Equipment	60,000	
Patent.....		60,000

To record depreciation on equipment used in R&D projects.

Research and development expense.....	10,000	
Accumulated depreciation—equipment.....		10,000

Exercise 10–27

Research and development expense:

Salaries and wages for lab research	\$ 400,000
Materials used in R&D projects	200,000
Fees paid to third parties for R&D projects	320,000
Depreciation on R&D equipment	<u>120,000</u>
Total	<u>\$1,040,000</u>

The patent filing and legal costs are capitalized as the cost of the patent. The salaries, wages, and supplies for R&D performed for another company are included as inventory and expensed as cost of goods sold either when revenue is recognized at the completion of the contract or as revenue is recognized over the life of the contract based on the percentage complete.

Exercise 10–28

Requirement 1

According to U.S. GAAP, the following costs would be expensed as R&D:

Research for new formulas	\$2,425,000
Development of a new formula	<u>1,600,000</u>
Total	<u>\$4,025,000</u>

The legal and filing fees are capitalized as an intangible asset.

Requirement 2

According to IFRS, only the **\$2,425,000** in research costs would be expensed as R&D. Both the development costs incurred after feasibility is established and the legal and filing fees are capitalized as intangible assets.

Exercise 10–29

Requirement 1

NXS should expense only the research expenditures:

Salaries and wages for basic research	\$3,450,000
Materials used in basic research	330,000
Other costs incurred for basic research	<u>1,220,000</u>
Total	<u>\$5,000,000</u>

Requirement 2

Both the development costs incurred after feasibility is established and the legal and filing fees are capitalized as intangible assets and amortized.

Exercise 10–30

List A

- f 1. Property, plant, and equipment
- d 2. Land improvements
- i 3. Capitalize
- g 4. Average accumulated expenditures
- h 5. Revenue
- j 6. Nonmonetary exchange
- k 7. Natural resources
- c 8. Intangible assets
- b 9. Copyright
- a 10. Trademark
- e 11. Goodwill

List B

- a. Exclusive right to display a word, a symbol, or an emblem.
- b. Exclusive right to benefit from a creative work.
- c. Assets that represent rights.
- d. Costs of establishing parking lots, driveways, and private roads.
- e. Purchase price less fair value of net identifiable assets.
- f. Assets such as land, buildings, and machinery.
- g. Approximation of average amount of debt if all construction funds were borrowed.
- h. Account credited when assets are donated to a corporation.
- i. Term meaning to record the cost as an asset.
- j. Basic principle is to value assets acquired using fair value of assets given other than cash.
- k. Assets such as oil and gas deposits, timber tracks, and mineral deposits.

Exercise 10–31

Research and development expense	4,000,000
Software development costs	2,000,000
Cash	6,000,000

Exercise 10–32

2024:

Research and development expense.....	2,200,000
Cash.....	2,200,000

2025:

Research and development expense.....	800,000
Software development costs	400,000
Cash.....	1,200,000

Exercise 10–33

Organization cost expense (\$12,000 + \$3,000)	15,000	
Start-up expenses	40,000	
Patent (\$20,000 + \$2,000).....	22,000	
Equipment.....	30,000	
Cash		107,000

Exercise 10–34

Requirement 1

Oil wells	450,000	
Cash		450,000

Requirement 2

Oil wells (\$50,000 + \$60,000 + \$80,000)	190,000	
Exploration expense	260,000	
Cash		450,000

PROBLEMS

Problem 10–1

1. To record the acquisition of land and building.

Land (determined below)	62,500	
Building (determined below).....	37,500	
Cash.....		100,000

Asset	Fair Value	Percent of Total Fair Value	Initial Valuation (Percent × \$100,000)
Land	\$ 75,000	62.5%	\$ 62,500
Building	<u>45,000</u>	<u>37.5</u>	<u>37,500</u>
Totals	<u>\$120,000</u>	<u>100.0%</u>	<u>\$100,000</u>

2. To record the acquisition of equipment for cash and a note.

Equipment (determined below)	37,037	
Discount on notes payable (difference)	2,963	
Notes payable (face amount).....		40,000

Present value of note payments:

$$PV = \$40,000 (0.92593^*) = \$37,037$$

* Present value of \$1: $n = 1$, $i = 8\%$ (from Table 2)

3. To record the acquisition of a truck by donation.

Truck	2,500	
Revenue—donation of asset		2,500

Problem 10–1 (concluded)

4. To record organization costs.

Organization cost expense	3,000	
Cash		3,000

5. To record the purchase of equipment.

Equipment (\$15,000 + \$500)	15,500	
Cash		15,500

6. To record the acquisition of office equipment by the issuance of common stock.

Equipment	5,500	
Common stock		5,500

7. To record the acquisition of land in exchange for cash and a note.

Land	20,000	
Cash		2,000
Notes payable		18,000

Problem 10–2

Requirement 1

BLACKSTONE CORPORATION
Land Account (Site Number 11)
As of September 30, 2025

Acquisition cost	\$600,000
Real estate broker's commission	36,000
Legal fees	6,000
Title insurance	18,000
Cost of razing existing building	75,000
Balance, September 30, 2025	<u>\$735,000</u>

Requirement 2

BLACKSTONE CORPORATION
Capitalized Cost of Office Building
As of September 30, 2025

Contract cost (fixed-price)	\$3,000,000
Plans, specifications, and blueprints	12,000
Architects' fees for design and supervision	95,000
Capitalized interest for 2024: $\$900,000 \times 14\% \times 10/12$	105,000
Capitalized interest for 2025: $\$1,200,000 \times 14\% \times 9/12$	126,000
Total capitalized cost, September 30, 2025	<u>\$3,338,000</u>

Problem 10–3

PELL CORPORATION Analysis of Changes in Plant Assets For the Year Ended December 31, 2024

	Balance 12/31/2023	Increase	Decrease	Balance 12/31/2024
Land	\$ 350,000	\$438,000 [1]		\$ 788,000
Land improvements	180,000			180,000
Building	1,500,000	17,000 19,000 [3]		1,536,000
Equipment	1,158,000	287,000 [2]		1,445,000
Automobiles	150,000		\$18,000	132,000
Totals	<u>\$3,338,000</u>	<u>\$761,000</u>	<u>\$18,000</u>	<u>\$4,081,000</u>

Explanation of Amounts:

[1]	Cost of land acquired 11/1/2024:	
	Pell stock exchanged (10,000 shares × \$38)	\$380,000
	Legal fees and title insurance	23,000
	Razing existing building	<u>35,000</u>
		<u>\$438,000</u>
[2]	Cost of equipment purchased 1/2/2024:	
	Invoice cost	\$260,000
	Installation cost	<u>27,000</u>
		<u>\$287,000</u>
[3]	Cost recorded for small storage building 12/31/2024:	
	Fair value of automobile given	\$ 3,750
	Cash paid	<u>15,250</u>
		<u>\$ 19,000</u>

Problem 10–4

To reclassify various expenditures incorrectly charged to the intangible asset account.

Organization cost expense	7,000	
Prepaid insurance	6,000	
Copyright.....	20,000	
Research and development expense.....	40,000	
Patent (\$3,000 + \$12,000)	15,000	
Franchise	40,000	
Advertising expense.....	16,000	
Intangible asset.....		144,000

Problem 10–5

1. To expense R&D costs.

Research and development expense	12,000	
Cash		12,000

2. To expense legal fees for unsuccessful defense of patent.

Legal fees expense.....	7,500	
Cash		7,500

3. To capitalize the cost of equipment.

Equipment (cash price).....	23,000	
Discount on notes payable (difference)	1,000	
Cash (amount paid).....		6,000
Notes payable (face amount)		18,000

4. To capitalize cost of the sprinkler system.

Building (sprinkler system)	28,000	
Cash		28,000

5. To capitalize legal fees for successful defense of patent.

Patent	12,000	
Cash		12,000

Problem 10–5 (concluded)

6. To record the exchange of old equipment for new equipment.

Equipment—new (\$2,000 FV given* + \$8,000 cash paid).....	10,000	
Accumulated depreciation (\$7,400 cost – \$3,000 BV).....	4,400	
Loss on exchange of assets (\$2,000 FV* – \$3,000 BV).....	1,000	
Equipment—old (remove account balance)		7,400
Cash.....		8,000

*Fair value of old equipment (Fair value of new equipment – Cash given):

$$\$10,000 - \$8,000 = \$2,000$$

Problem 10–6

Southern Company:

Cash	140,000
Building—new (\$1,400,000 FV given – \$140,000 cash received)	1,260,000
Accumulated depreciation (remove account balance)	1,200,000
Building—old (remove account balance)	2,000,000
Gain on exchange of assets (\$1,400,000 FV– \$800,000 BV)	600,000

Eastern Company:

The fair value of Eastern’s building is \$1,260,000 (\$1,400,000 fair value of Southern’s building less \$140,000 cash given).

Building—new (\$1,260,000 FV given + \$140,000 cash paid).	1,400,000
Accumulated depreciation (remove account balance)	650,000
Building—old (account balance).....	1,600,000
Cash	140,000
Gain on exchange of assets (\$1,260,000 FV – \$950,000 BV)	310,000

Problem 10–7

Robers:

Cash.....	5,000	
Equipment—new (\$75,000 FV given – \$5,000 cash received)	70,000	
Accumulated depreciation (remove account balance)	55,000	
Equipment—old (remove account balance)		120,000
Gain on exchange of assets (\$75,000 FV – \$65,000 BV).		10,000

Phifer:

Equipment—new (\$70,000 FV given + \$5,000 cash paid)	75,000	
Accumulated depreciation (remove account balance)	63,000	
Loss on exchange of assets (\$70,000 FV – \$77,000 BV)	7,000	
Equipment—old (remove account balance)		140,000
Cash.....		5,000

Problem 10–8

Case A.

Requirement 1

Gain or loss to recognize on the exchange:

Fair value of tractor given up		\$9,000
Less: Book value of tractor		
Original cost of tractor	\$28,000	
Accumulated depreciation	(16,000)	(12,000)
Loss on exchange of assets		<u>\$(3,000)</u>

Fair value of old tractor + cash given = Initial value of new tractor
\$9,000 + \$20,000 = **\$29,000**

Journal entry (not required):

Tractor—new (\$9,000 FV given + \$20,000 cash paid).....	29,000	
Accumulated depreciation (remove account balance)	16,000	
Loss on exchange of assets (\$9,000 FV – \$12,000 BV)	3,000	
Tractor—old (remove account balance).....		28,000
Cash		20,000

Requirement 2

Gain or loss to recognize on the exchange:

Fair value of tractor given up		\$14,000
Less: Book value of tractor		
Original cost of tractor	\$28,000	
Accumulated depreciation	(16,000)	(12,000)
Gain on exchange of assets.....		<u>\$ 2,000</u>

Fair value of old tractor + cash given = Initial value of new tractor

$$\$14,000 + \$20,000 = \mathbf{\$34,000}$$

Journal entry (not required):

Tractor—new (\$14,000 FV given + \$20,000 cash paid)	34,000
Accumulated depreciation—old asset (remove account balance)	16,000
Tractor—old (remove account balance)	28,000
Cash	20,000
Gain on exchange of assets (\$14,000 FV – \$12,000 BV).	2,000

Case B.

Requirement 1

Fair value of land given up	\$700,000
Less: Book value of land	
Original cost of land	(500,000)
Gain on exchange of assets	<u>\$200,000</u>

Fair value of old land + cash given = Initial value of new land

$$\$700,000 + \$50,000 = \mathbf{\$750,000}$$

Journal entry (not required):

Land—new (\$700,000 FV given + \$50,000 cash paid)	750,000
Land—old (remove account balance)	500,000
Cash	50,000
Gain on exchange of assets (\$700,000 FV – \$500,000 BV)	200,000

Problem 10–8 (continued)

Requirement 2

Fair value of land given up	\$ 400,000
Less: Book value of land	
Original cost of land	<u>(500,000)</u>
Loss on exchange of assets	<u><u>\$(100,000)</u></u>

$$\begin{array}{rcl} \text{Fair value of old land + cash given} & = & \text{Initial value of new land} \\ \$400,000 & + & \$50,000 = & \mathbf{\$450,000} \end{array}$$

Journal entry (not required):

Land—new (\$400,000 + \$50,000)	450,000	
Loss on exchange of asset (\$400,000 FV – \$500,000 BV)...	100,000	
Land—old (remove account balance)		500,000
Cash		50,000

Requirement 3

Fair value of land given up	\$700,000
Less: Book value of land	
Original cost of land	<u>(500,000)</u>
Gain on exchange of assets	<u><u>\$200,000</u></u>

There is a gain on the exchange of assets, but **no gain is recognized** because the exchange lacks commercial substance and no cash was received.

$$\begin{array}{rcl} \text{Book value of old land + cash given} & = & \text{Initial value of new land} \\ \$500,000 & + & \$50,000 = & \mathbf{\$550,000} \end{array}$$

Journal entry (not required):

Land—new (\$500,000 FV given + \$50,000 cash paid).....	550,000	
Cash		50,000
Land—old (account balance)		500,000

Problem 10–8 (concluded)

Requirement 4

Fair value of land given up	\$400,000
Less: Book value of land	
Original cost of land	(500,000)
Loss on exchange of assets	<u>\$(100,000)</u>

There is a loss on the exchange of assets. Even though the exchange lacks commercial substance, the **loss is recognized**.

Fair value of old land + cash given = Initial value of new land
\$400,000 + \$50,000 = **\$450,000**

Journal entry (not required):

Land—new (\$400,000 + \$50,000).....	450,000	
Loss on exchange of asset (\$400,000 FV – \$500,000 BV) ...	100,000	
Land—old (remove account balance).....		500,000
Cash		50,000

Problem 10–9

Requirement 1

2024:

Expenditures for 2024:

January 1, 2024	\$1,000,000 × 12/12 =	\$1,000,000
March 1, 2024	600,000 × 10/12 =	500,000
June 30, 2024	800,000 × 6/12 =	400,000
October 1, 2024	<u>600,000</u> × 3/12 =	<u>150,000</u>

Accumulated expenditures (before interest)	<u>\$3,000,000</u>	
Average accumulated expenditures -		<u>\$2,050,000</u>

Interest capitalized:

$$\$2,050,000 \times 10\% = \mathbf{\$205,000} = \text{Interest capitalized in 2024}$$

2025:

January 1, 2025 (\$3,000,000 + 205,000)	\$3,205,000 × 9/9 =	\$3,205,000
January 31, 2025	270,000 × 8/9 =	240,000
April 30, 2025	585,000 × 5/9 =	325,000
August 31, 2025	<u>900,000</u> × 1/9 =	<u>100,000</u>

Accumulated expenditures (before interest)	<u>\$4,960,000</u>	
Average accumulated expenditures -		<u>\$3,870,000</u>

Interest capitalized:

\$3,870,000		
- <u>3,000,000</u> (construction loan)	× 10.0% × 9/12 =	\$225,000
\$ 870,000	× 7.2%* × 9/12 =	<u>46,980</u>
	Interest capitalized in 2025	<u>\$271,980</u>

* Weighted-average rate of all other debt:

\$ 4,000,000 × 6% =	\$240,000	\$720,000	
<u>6,000,000</u> × 8% =	<u>480,000</u>		
<u>\$10,000,000</u>	<u>\$720,000</u>	<u>\$10,000,000</u>	= 7.2%

Problem 10–9 (concluded)

Requirement 2

Accumulated expenditures 9/30/2025 before interest capitalization (above)	\$4,960,000
2025 interest capitalized (above)	<u>271,980</u>
Total cost of building	<u>\$5,231,980</u>

Requirement 3

	2024	
\$3,000,000 × 10% =		\$ 300,000
4,000,000 × 6% =		240,000
6,000,000 × 8% =		<u>480,000</u>
Total interest incurred		1,020,000
Less: Interest capitalized		<u>(205,000)</u>
2024 interest expense		<u>\$ 815,000</u>

	2025	
Total interest incurred		\$1,020,000
Less: Interest capitalized		<u>(271,980)</u>
2025 interest expense		<u>\$ 748,020</u>

Problem 10–10

Requirement 1

2024

Expenditures for 2024

January 1, 2024	\$1,000,000 × 12/12 =	\$1,000,000
March 1, 2024	600,000 × 10/12 =	500,000
June 30, 2024	800,000 × 6/12 =	400,000
October 1, 2024	<u>600,000</u> × 3/12 =	<u>150,000</u>

Accumulated expenditures

(before interest) \$3,000,000

Average accumulated expenditures - \$2,050,000

Interest capitalized:

$\$2,050,000 \times 7.85\% * = \underline{\$160,925}$ = Interest capitalized in 2024

* Weighted-average rate of all debt:

\$ 3,000,000 × 10% =	\$ 300,000	\$1,020,000	
4,000,000 × 6% =	240,000		
<u>6,000,000</u> × 8% =	<u>480,000</u>		
<u>\$13,000,000</u>	<u>\$1,020,000</u>		$\frac{\$1,020,000}{\$13,000,000} = 7.85\%$ (rounded)

2025:

January 1, 2025			
(\$3,000,000 + \$160,925)	\$3,160,925 × 9/9 =	\$3,160,925	
January 31, 2025	270,000 × 8/9 =	240,000	
April 30, 2025	585,000 × 5/9 =	325,000	
August 31, 2025	<u>900,000</u> × 1/9 =	<u>100,000</u>	

Accumulated expenditures

(before interest) \$4,915,925

Average accumulated expenditures - \$3,825,925

Interest capitalized:

$\$3,825,925 \times 7.85\% \times 9/12 = \underline{\$225,251}$ = Interest capitalized in 2025

Problem 10–10 (concluded)

Requirement 2

Accumulated expenditures 9/30/2025, before interest capitalization (above)	\$4,915,925
2025 interest capitalized (above)	<u>225,251</u>
Total cost of building	<u>\$5,141,176</u>

Requirement 3

2024:

\$3,000,000 × 10% =	\$ 300,000
4,000,000 × 6% =	240,000
6,000,000 × 8% =	<u>480,000</u>
Total interest incurred	1,020,000
Less: Interest capitalized	<u>(160,925)</u>
2024 interest expense	<u>\$ 859,075</u>

2025:

Total interest incurred	\$1,020,000
Less: Interest capitalized	<u>(225,251)</u>
2025 interest expense	<u>\$ 794,749</u>

Problem 10–11

To capitalize the cost of equipment to be used on future projects incorrectly charged to R&D expense.

Equipment.....	400,000	
Research and development expense		400,000

To record depreciation on equipment used in R&D projects.
 $\$400,000 \div 5 \text{ years} = \$80,000$

Research and development expense	80,000	
Accumulated depreciation		80,000

To capitalize filing and legal fees for patent incorrectly charged to R&D expense.

Patent	40,000	
Research and development expense		40,000

To reclassify the expenditures made for quality control during commercial production.

Inventory*.....	20,000	
Research and development expense		20,000

*Quality control costs would either be treated as manufacturing overhead and included in the cost of inventory (as in this journal entry), or expensed in the period incurred.

Problem 10–12

Requirement 1

Land

Purchase price (determined below)	\$714,404
Closing costs	20,000
Removal of old building	70,000
Clearing and grading	<u>50,000</u>
	\$854,404

Purchase price of land:

Cash paid	\$200,000
Value of note [†]	<u>514,404</u>
	\$714,404

[†] Present value of note payment:

$$PV = \$600,000 \times 0.85734^* = \$514,404$$

*Present value of \$1: $n = 2$, $i = 8\%$ (from Table 2)

Land improvements

Parking lot and landscaping	\$285,000
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Building

Construction expenditures:

May 1	\$1,200,000
July 30	1,500,000
September 1	900,000
October 1	<u>1,800,000</u>
Total expenditures	5,400,000
Interest capitalized (determined below)	<u>141,072</u>
Total cost of building	<u>\$5,541,072</u>

Problem 10–12 (concluded)

Average accumulated expenditures:

March 28, 2024*	\$734,404	× 7/7 =	\$ 734,404
April 30, 2024*	120,000	× 6/7 =	102,857
May 1, 2024	1,200,000	× 6/7 =	1,028,571
July 30, 2024	1,500,000	× 3/7 =	642,857
September 1, 2024	900,000	× 2/7 =	257,143
October 1, 2024	1,800,000	× 1/7 =	<u>257,143</u>
			<u>\$3,022,975</u>

Interest capitalized:

$$\$3,022,975 \times 8\% \times 7/12 = \quad \quad \quad \mathbf{\$141,072}$$

* According to ASC 835-20-15-8, “If activities are undertaken for the purpose of developing land for a particular use, the expenditures to acquire the land qualify for interest capitalization while those activities are in progress. The interest cost capitalized on those expenditures is a cost of acquiring the asset that results from those activities. If the resulting asset is a structure, such as a plant or a shopping center, interest capitalized on the land expenditures is part of the acquisition cost of the structure.” The amount on March 28 includes the immediate payment of cash for the land (\$200,000), present value of the note (\$514,404), and closing costs (\$20,000). The amount on April 30 includes removal of the old building (\$70,000) and clearing and grading of the land (\$50,000).

Equipment and furniture and fixtures

	Fair Value	Percent of Total Fair Value	Initial Valuation % × \$600,000
Equipment	\$455,000	65%	\$390,000
Furniture & fixtures	<u>245,000</u>	<u>35%</u>	<u>210,000</u>
Totals	\$700,000	100%	\$600,000

Initial valuation:

Equipment	\$390,000
Furniture & fixtures	210,000

Requirement 2

Interest expense:

Note issued to purchase land and building, \$514,404 × 8% × 9/12 =	\$ 30,864
Construction loan, \$3,000,000 × 8% × 8/12	160,000
Long-term note, \$5,250,000 × 8%	<u>420,000</u>
Total	610,864
Less: Interest capitalized (determined above)	<u>(141,072)</u>
Interest expense	<u>\$469,792</u>