

CHAPTER 10

LONG-TERM ASSETS: FIXED AND INTANGIBLE

DISCUSSION QUESTIONS

1.
 - a. Property, plant, and equipment or Fixed assets
 - b. Current assets (inventory)
2. Undeveloped land acquired for future resale rather than operations is classified and reported as an investment, below the Current assets section.
3. \$1,100,000
4. 12 years
5. No. A business may use different depreciation methods for different classes of assets.
6.
 - a. The straight-line depreciation method is most appropriate when the revenues generated by the asset are about the same from period to period.
 - b. The units-of-activity depreciation method is most appropriate when the asset's use (and revenues) vary from period to period.
 - c. The double-declining-balance depreciation method is most appropriate when the revenues generated by the asset are greater in the early periods of use rather than in later periods.
7. Capital expenditures include the cost of acquiring fixed assets and the cost of improving an asset. These costs are recorded by increasing (debiting) a fixed asset account. Capital expenditures also include the costs of extraordinary repairs, which are recorded by decreasing (debiting) the asset's accumulated depreciation account. Revenue expenditures are recorded as expenses and are costs that benefit only the current period and are incurred for normal maintenance and repairs of fixed assets.
8. Capital expenditure
9.
 - a. No. The accumulated depreciation for an asset cannot exceed the cost of the asset. To do so would allocate more to depreciation expense than was paid for the asset, which would create a negative book value.
 - b. The cost and accumulated depreciation should be removed from the accounts when the asset is no longer useful and is removed from service. Presumably, the asset will then be sold, traded in, or discarded.
10.
 - a. The cost of a patent should be amortized over the shorter of its legal life or years of usefulness.
 - b. Research and development costs should be expensed as incurred.
 - c. Goodwill should not be amortized but written down when impaired.

PRACTICE EXERCISES

PE 10-1A

- a. **\$1,150,000** ($\$1,450,000 - \$300,000$)
- b. **10%** ($100\% \div 10$)
- c. **\$115,000** ($\$1,150,000 \times 10\%$) or ($\$1,150,000 \div 10$ years)

PE 10-1B

- a. **\$295,000** ($\$340,000 - \$45,000$)
- b. **10%** ($100\% \div 10$)
- c. **\$29,500** ($\$295,000 \times 10\%$) or ($\$295,000 \div 10$ years)

PE 10-2A

- a. **\$57,000** ($\$69,000 - \$12,000$)
- b. **\$0.19 per mile** ($\$57,000 \div 300,000$ miles)
- c. **\$14,630** ($77,000$ miles \times $\$0.19$)

PE 10-2B

- a. **\$390,000** ($\$420,000 - \$30,000$)
- b. **\$15.60 per mile** ($\$390,000 \div 25,000$ miles)
- c. **\$28,860** ($1,850$ miles \times $\$15.60$)

PE 10-3A

- a. **5%** [$(100\% \div 40) \times 2$]
- b. **\$68,750** ($\$1,375,000 \times 5\%$)

PE 10-3B

- a. **20.0%** [$(100\% \div 10) \times 2$]
- b. **\$35,000** ($\$175,000 \times 20.0\%$)

PE 10-4A

- a. **\$10,350** [$(\$180,000 - \$14,400) \div 16$]
- b. **\$76,500** [$\$180,000 - (\$10,350 \times 10)$]
- c. **\$8,250** [$(\$76,500 - \$10,500) \div 8$]

PE 10-4B

- a. **\$5,500** [$(\$82,000 - \$16,000) \div 12$]
- b. **\$43,500** [$\$82,000 - (\$5,500 \times 7)$]
- c. **\$5,250** [$(\$43,500 - \$12,000) \div 6$]

PE 10-5A

Feb.	14	Accumulated Depreciation—Delivery Van	2,300	
		Cash		2,300
	14	Delivery Van	450	
		Cash		450

PE 10-5B

Aug.	7	Delivery Truck	1,675	
		Cash		1,675
	7	Repairs and Maintenance Expense	40	
		Cash		40

PE 10-6A

a. $\$75,000 = \$600,000 \times [(100\% \div 16) \times 2] = \$600,000 \times 12.5\%$

b. \$20,625 gain, computed as follows:

Cost.....	\$600,000	
First-year depreciation.....	(75,000)	
Second-year depreciation.....	<u>(65,625)</u>	[($\$600,000 - \$75,000$) \times 12.5%]
Book value at end of second year.....	<u>\$459,375</u>	

Gain on sale ($\$480,000 - \$459,375$) = \$20,625

c.

Cash	480,000	
Accumulated Depreciation—Equipment	140,625	
Equipment		600,000
Gain on Sale of Equipment		20,625

PE 10-6B

a. $\$28,000 [(\$465,000 - \$45,000) \div 15]$

b. $\$6,000$ loss $\{ \$235,000 - [\$465,000 - (\$28,000 \times 8)] \}$

c.

Cash	235,000	
Accumulated Depreciation—Equipment	224,000	
Loss on Sale of Equipment	6,000	
Equipment		465,000

PE 10-7A

a. $\$1.04 \text{ per ton} = \$494,000,000 \div 475,000,000 \text{ tons}$

b. $\$32,760,000 = 31,500,000 \text{ tons} \times \1.04 per ton

c.

Dec.	31	Depletion Expense	32,760,000	
		Accumulated Depletion		32,760,000
		Depletion of mineral deposit.		

PE 10-7B

a. $\$0.30 \text{ per ton} = \$127,500,000 \div 425,000,000 \text{ tons}$

b. $\$12,600,000 = 42,000,000 \text{ tons} \times \0.30 per ton

c.

Dec.	31	Depletion Expense	12,600,000	
		Accumulated Depletion		12,600,000
		Depletion of mineral deposit.		

PE 10-8A

a.

Dec.	31	Loss from Impaired Goodwill	6,000,000	
		Goodwill		6,000,000
		Impaired goodwill.		

b.

Dec.	31	Amortization Expense—Patents	93,750	
		Patents		93,750
		Amortized patent rights		
		$[(\$1,500,000 \div 12) \times (9 \div 12)]$.		

PE 10-8B

a.

Dec.	31	Loss from Impaired Goodwill	4,000,000	
		Goodwill		4,000,000
		Impaired goodwill.		

b.

Dec.	31	Amortization Expense—Patents	25,000	
		Patents		25,000
		Amortized patent rights		
		$[(\$900,000 \div 15) \times (5 \div 12)]$.		

PE 10-9A

a. Fixed Asset Turnover:

	Year 2	Year 1
Sales.....	\$5,510,000	\$4,880,000
Fixed assets:		
Beginning of year.....	\$1,600,000	\$1,450,000
End of year.....	\$2,200,000	\$1,600,000
Average fixed assets.....	\$1,900,000	\$1,525,000
	[(\$1,600,000 + \$2,200,000) ÷ 2]	[(\$1,450,000 + \$1,600,000) ÷ 2]
Fixed asset turnover.....	2.9	3.2
	(\$5,510,000 ÷ \$1,900,000)	(\$4,880,000 ÷ \$1,525,000)

- b. The decrease in the fixed asset turnover ratio from 3.2 to 2.9 indicates an unfavorable change in the efficiency of using fixed assets to generate sales.

PE 10-9B

a. Fixed Asset Turnover:

	Year 2	Year 1
Sales.....	\$1,668,000	\$1,125,000
Fixed assets:		
Beginning of year.....	\$ 670,000	\$ 580,000
End of year.....	\$ 720,000	\$ 670,000
Average fixed assets.....	\$ 695,000	\$ 625,000
	[(\$670,000 + \$720,000) ÷ 2]	[(\$580,000 + \$670,000) ÷ 2]
Fixed asset turnover.....	2.4	1.8
	(\$1,668,000 ÷ \$695,000)	(\$1,125,000 ÷ \$625,000)

- b. The increase in the fixed asset turnover ratio from 1.8 to 2.4 indicates a favorable change in the efficiency of using fixed assets to generate sales.

EXERCISES

Ex. 10-1

- a. New printing press: 1, 2, 3, 5, 6
- b. Used printing press: 7, 8, 9, 11

Ex. 10-2

- a. Yes. All expenditures incurred for the purpose of making the land suitable for its intended use should be debited to the land account.
- b. No. Land is not depreciated.

Ex. 10-3

Initial cost of land (\$90,000 + \$50,000).....		\$140,000
Legal fees.....	\$ 1,750	
Delinquent taxes.....	25,000	
Demolition of building.....	<u>9,000</u>	<u>35,750</u>
Total costs to acquire and prepare land for use.....		\$175,750
Less salvage of materials.....		<u>1,000</u>
Cost of land to be reported on the balance sheet.....		<u>\$174,750</u>

Ex. 10-4

- a. No. The \$44,500,000 represents the original cost of the equipment. Its replacement cost, which may be more or less than \$44,500,000, is not reported in the financial statements.
- b. No. The \$29,800,000 is the accumulation of the past depreciation charges on the equipment. The recognition of depreciation expense has no relationship to the cash account or accumulation of cash funds.

Ex. 10-5

- (a) 10% (100% ÷ 10), (b) 12.5% (100% ÷ 8), (c) 4% (100% ÷ 25),
- (d) 2.5% (100% ÷ 40), (e) 20% (100% ÷ 5), (f) 25% (100% ÷ 4),
- (g) 5% (100% ÷ 20)

Ex. 10-6

$\$4,900 [(\$64,000 - \$5,200) \div 12]$

Ex. 10-7

$$\frac{\$90,000 - \$15,000}{30,000 \text{ hours}} = \$2.50 \text{ depreciation per hour}$$

120 hours at \$2.50 = \$300 depreciation for April

Ex. 10-8

a. Depreciation Rate per Mile:

Truck 1	$(\$80,000 - \$15,000) \div 250,000 = \$0.26$
Truck 2	$(\$54,000 - \$6,000) \div 300,000 = \$0.16$
Truck 3	$(\$72,900 - \$10,900) \div 200,000 = \$0.31$
Truck 4	$(\$90,000 - \$22,800) \div 240,000 = \$0.28$

Truck No.	Rate per Mile	Miles Operated	Credit to Accumulated Depreciation
1	\$0.26	21,000	\$ 5,460
2	0.16	33,500	5,360
3	0.31	8,000	1,860
4	0.28	22,500	<u>6,300</u>
Total			<u>\$18,980</u>

Note: Mileage depreciation of \$2,480 (31 cents × 8,000) is limited to \$1,860 for Truck 3, which reduces the book value of the truck to \$10,900, its residual value.

b.

Dec. 31	Depreciation Expense—Trucks	18,980	
	Accumulated Depreciation—Trucks		18,980
	Truck depreciation.		

Ex. 10-9

	First Year	Second Year
a.	10% of \$85,000 = \$8,500 or \$85,000 ÷ 10 = \$8,500	10% of \$85,000 = \$8,500 or \$85,000 ÷ 10 = \$8,500
b.	20% of \$85,000 = \$17,000	20% of (\$85,000 - \$17,000) = \$13,600

Ex. 10-10

- a. 5% of (\$75,000 - \$10,000) = \$3,250 or [(\$75,000 - \$10,000) ÷ 20]
- b. Year 1: 10% of \$75,000 = \$7,500
Year 2: 10% of (\$75,000 - \$7,500) = \$6,750

Ex. 10-11

- a. Year 1: $(\$105,000 - \$12,000) \div 10 = \$9,300$; $\$9,300 \times (8 \div 12) = \$6,200$
 Year 2: $(\$105,000 - \$12,000) \div 10 = \$9,300$
- b. Year 1: $8 \div 12 \times 20\%$ of $\$105,000 = \$14,000$
 Year 2: 20% of $(\$105,000 - \$14,000) = \$18,200$

Ex. 10-12

- a. $\$23,750$ [$(\$1,200,000 - \$250,000) \div 40$] or [$(\$1,200,000 - \$250,000) \times 2.5\%$]
- b. $\$535,000$ [$\$1,200,000 - (\$23,750 \times 28 \text{ yrs.})$]
- c. $\$35,500$ [$(\$535,000 - \$180,000) \div 10 \text{ yrs.}$]

Ex. 10-13

Capital expenditures: 1, 3, 5, 7, 8, 9, 10
 Revenue expenditures: 2, 4, 6

Ex. 10-14

Capital expenditures: 2, 3, 4, 8, 9, 10
 Revenue expenditures: 1, 5, 6, 7

Ex. 10-15

Mar.	20	Accumulated Depreciation—Delivery Truck	1,890	
		Cash		1,890
June	11	Delivery Truck	1,350	
		Cash		1,350
Nov.	30	Repairs and Maintenance Expense	55	
		Cash		55

Ex. 10-16

a.	Apr.	30	Carpet	18,000	
			Cash		18,000
b.	Dec.	31	Depreciation Expense—Carpet	800	
			Accumulated Depreciation—Carpet		800
			Carpet depreciation		
			[(\\$18,000 ÷ 15 years) × (8 ÷ 12)].		

Ex. 10-17

a.	Cost of equipment.....	\$168,000
	Less accumulated depreciation at end of fourth year, December 31	
	(4 years at \$8,500 per year).....	<u>34,000</u>
	Book value at end of fourth year, December 31.....	<u>\$134,000</u>

Yearly depreciation = $(\$168,000 - \$15,000) \div 18 = \$8,500$

b.	Apr.	1	Depreciation Expense—Equipment	2,125	
			Accumulated Depreciation—Equipment		2,125
			Equipment depreciation		
			(\$8,500 × 3 ÷ 12).		
		1	Cash	125,000	
			Accumulated Depreciation—Equipment	36,125*	
			Loss on Sale of Equipment	6,875	
			Equipment		168,000

*Accumulated Depreciation—Equipment = $\$34,000 + \$2,125 = \$36,125$

Ex. 10-18

- a. Year 1 depreciation expense: \$17,500 $[(\$375,000 - \$25,000) \div 20]$
 Year 2 depreciation expense: \$17,500
 Year 3 depreciation expense: \$17,500

- b. \$322,500 $[\$375,000 - (\$17,500 \times 3)]$

c.

Year 4				
Jan.	3	Cash	300,000	
		Accumulated Depreciation—Equipment	52,500	
		Loss on Sale of Equipment	22,500	
		Equipment		375,000

d.

Year 4				
Jan.	3	Cash	325,000	
		Accumulated Depreciation—Equipment	52,500	
		Equipment		375,000
		Gain on Sale of Equipment		2,500

Ex. 10-19

- a. $\$67,500,000 \div 30,000,000 \text{ tons} = \$2.25 \text{ depletion per ton}$
 $4,000,000 \text{ tons} \times \$2.25 = \$9,000,000 \text{ depletion expense}$

b.

Dec.	31	Depletion Expense	9,000,000	
		Accumulated Depletion		9,000,000
		Depletion of mineral deposit.		

Ex. 10-20

- a. $(\$2,800,000 \div 8) + (\$38,000 \div 5) = \$357,600 \text{ total patent amortization expense}$

b.

Dec.	31	Amortization Expense—Patents	357,600	
		Patents		357,600
		Amortized patent rights		
		(\$350,000 + \$7,600).		

Ex. 10-21

a. Property, Plant, and Equipment (in millions):

	<u>Current Year</u>	<u>Preceding Year</u>
Land and buildings.....	\$ 6,956	\$ 4,863
Machinery, equipment, and internal-use software.....	37,038	29,639
Other fixed assets	<u>5,263</u>	<u>4,513</u>
Total fixed assets.....	\$49,257	\$39,015
Less accumulated depreciation and amortization.....	<u>26,786</u>	<u>18,391</u>
Book value.....	<u>\$22,471</u>	<u>\$20,624</u>

A comparison of the book values of the current and preceding years indicates that they increased. A comparison of the total cost and accumulated depreciation reveals that Apple purchased \$10,242 million (\$49,257 – \$39,015) of additional fixed assets, which was offset by the additional depreciation expense of \$8,395 million (\$26,786 – \$18,391) taken during the current year.

- b. We would expect Apple’s book value of fixed assets to increase during the year as its sales increase. Although additional depreciation expense will reduce the book value, most companies, such as Apple, invest in new assets in an amount that is at least equal to the depreciation expense. However, during periods of economic downturn, companies purchase fewer fixed assets, and the book value of their fixed assets may decline.

Ex. 10-22

1. Fixed assets should be reported at cost and not replacement cost.
2. Land does not depreciate.
3. Patents and goodwill are intangible assets that should be listed in a separate section following the Fixed assets section. Patents should be reported at their net book values (cost less amortization to date). Goodwill should not be amortized but should be written down only upon impairment.

Ex. 10-23

$$\text{a. Fixed Asset Turnover Ratio} = \frac{\text{Sales}}{\text{Average Book Value of Fixed Assets}}$$

$$\text{Amazon: } \frac{\$107,006}{\$19,403} = 5.5$$

$$\text{Netflix: } \frac{\$6,780}{\$162} = 41.9$$

- b. Netflix is more efficient than Amazon in generating revenue from fixed assets. Netflix's fixed asset turnover ratio is 41.9, which means it is able to generate \$41.90 of revenue for every dollar of fixed assets. Amazon's fixed asset turnover ratio is 5.5, which is only \$5.50 of revenue for every dollar of fixed assets. Netflix's fixed asset turnover ratio is more than 7 times larger than Amazon's ($41.9 \div 5.5$).
- c. The difference in their fixed asset turnover ratios reflects the difference in their core businesses. Netflix is mostly an Internet streaming and DVD rental company. These services do not require significant fixed assets. The most significant fixed assets of Netflix are its information technology assets, followed by its headquarters and DVD mailing operations. Amazon also provides streaming services, media downloads, and other electronic products. In addition, Amazon sells a wide assortment of merchandise and markets Kindle[®] products. This broader assortment of activities requires more extensive use of fixed assets beyond information technology, including warehouses and equipment. These additional fixed assets are the cause of Amazon's lower fixed asset turnover ratio.

Ex. 10-24

$$\text{a. Fixed Asset Turnover Ratio} = \frac{\text{Sales}}{\text{Average Book Value of Fixed Assets}}$$

$$\text{Verizon: } \frac{\$131,620}{(\$89,947 + \$83,541) \div 2} = 1.5$$

- b. Verizon earns \$1.50 revenue for every dollar of fixed assets. Telecommunications requires a significant investment in the network in order to generate revenues. The industry average fixed asset turnover ratio is 1.1. Thus, Verizon is using its fixed assets more efficiently in generating revenues than the industry as a whole. The reason would require further analysis into the nature of Verizon's fixed assets and revenues, but is likely related to having high data volume on its network.

Ex. 10-25

$$\text{a. Fixed Asset Turnover Ratio} = \frac{\text{Sales}}{\text{Average Book Value of Fixed Assets}}$$

$$\text{FedEx: } \frac{\$47,453}{\$20,213} = 2.3$$

$$\text{UPS: } \frac{\$58,363}{\$18,317} = 3.2$$

- b. The ratios show that UPS is 39% more efficient at using its fixed assets than FedEx $[(3.2 - 2.3) \div 2.3]$.
- c. The fixed asset turnover is a measure of how efficiently revenue is generated from underlying fixed assets. In the case of UPS, the fixed assets represent all fixed assets necessary to deliver packages from one location to another. These include aircraft, trucks, sorting and handling facilities, and information technology. For every dollar of these fixed assets, UPS is able to generate \$3.20 in sales. The fixed asset turnover ratio will be influenced by the degree these assets are utilized to their optimal capacity. So, for example, optimally filled planes, trucks, and sorting centers will cause the fixed asset turnover ratio to improve.

Ex. 10-26

$$\text{a. Fixed Asset Turnover Ratio} = \frac{\text{Sales}}{\text{Average Book Value of Fixed Assets}}$$

$$\text{Alphabet (Google) Inc.: } \frac{\$74,989}{\$26,450} = 2.8$$

$$\text{Comcast: } \frac{\$74,510}{\$32,309} = 2.3$$

$$\text{Wal-Mart: } \frac{\$485,651}{\$117,281} = 4.1$$

- b. Comcast's fixed asset turnover is less than the other two companies. This means Comcast is less efficient at generating sales from fixed assets than the other two companies. This can be explained by the nature of Comcast's business. Comcast must build a complete cable network in order to earn revenues. This includes underground cable through cities, neighborhoods, and individual residences. In addition, Comcast must provide the additional technology to carry broadband over this network. As a result, Comcast has a significant investment in fixed assets in order to earn revenues. Alphabet (Google) has a significant investment in servers; however, these servers are able to generate advertising revenue more efficiently than Comcast is able to earn subscription revenues over its cable network. Wal-Mart's

Ex. 10-26 (Concluded)

major fixed assets are its stores. However, Wal-Mart's other major asset is merchandise inventory, which is not included in the fixed asset turnover ratio. Thus, Wal-Mart's higher asset efficiency is only partially explained by the fixed asset turnover ratio. The inventory turnover ratio would also need to be analyzed to fully appreciate Wal-Mart's efficiency in using its total assets. The other two companies do not have merchandise inventory, so the fixed asset turnover ratio is a more complete measure of their total asset efficiency relative to Wal-Mart's.

Appendix Ex. 10-27

a. Price (fair market value) of new equipment.....		\$275,000
Less trade-in allowance of old equipment.....		<u>90,000</u>
Cash paid on the date of exchange.....		<u>\$185,000</u>
 b. Fair market value (trade-in allowance) of old equipment.....		 \$ 90,000
Less book value of old equipment.....		<u>68,000</u>
Gain on exchange of equipment.....		<u>\$ 22,000</u>
 or		
Price (fair market value) of new equipment.....		\$275,000
Assets given up in exchange:		
Book value of old equipment.....	\$ 68,000	
Cash paid on the exchange.....	<u>185,000</u>	<u>253,000</u>
Gain on exchange of equipment.....		<u>\$ 22,000</u>

Appendix Ex. 10-28

a. Price (fair market value) of new equipment.....		\$275,000
Less trade-in allowance of old equipment.....		<u>90,000</u>
Cash paid on the date of exchange.....		<u>\$185,000</u>
 b. Fair market value (trade-in allowance) of old equipment.....		 \$ 90,000
Less book value of old equipment.....		<u>108,500</u>
Loss on exchange of equipment.....		<u>\$ (18,500)</u>
 or		
Price (fair market value) of new equipment.....		\$275,000
Assets given up in exchange:		
Book value of old equipment.....	\$108,500	
Cash paid on the exchange.....	<u>185,000</u>	<u>293,500</u>
Loss on exchange of equipment.....		<u>\$ (18,500)</u>

Appendix Ex. 10-29

a.	July	1	Depreciation Expense—Equipment	6,000	
			Accumulated Depreciation—Equipment		6,000
			Equipment depreciation ($\$12,000 \times 6 \div 12$).		
b.	July	1	Accumulated Depreciation—Equipment	126,000	
			Equipment	220,000	
			Loss on Exchange of Equipment	9,000	
			Equipment		180,000
			Cash		175,000

Appendix Ex. 10-30

a.	Oct.	1	Depreciation Expense—Trucks	5,250	
			Accumulated Depreciation—Trucks		5,250
			Truck depreciation ($\$7,000 \times 9 \div 12$).		
b.	Oct.	1	Accumulated Depreciation—Trucks	40,250	
			Trucks	75,000	
			Trucks		56,000
			Cash		51,000
			Gain on Exchange of Trucks		8,250

PROBLEMS

Prob. 10-1A

1.	<u>Item</u>	<u>Land</u>	<u>Land Improvements</u>	<u>Building</u>	<u>Other Accounts</u>
	a.	\$ 2,500			
	b.	340,000			
	c.	15,500			
	d.	5,000			
	e.	(4,000)*			
	f.	29,000			
	g.			\$ 60,000	
	h.			6,000	
	i.	12,000			
	j.				\$(900,000)*
	k.				5,500
	l.		\$32,000		
	m.		11,000		
	n.		2,000		
	o.				2,500
	p.				(7,500)*
	q.			800,000	
	r.			34,500	
	s.			(500)*	
2.		<u>\$400,000</u>	<u>\$45,000</u>	<u>\$900,000</u>	

* Received cash.

3. Land used as a plant site does not lose its ability to provide services; thus, it is not depreciated. However, land improvements do lose their ability to provide services as time passes and are, therefore, depreciated.
4. Because land improvements are depreciated, depreciation expense of \$1,200 [$\$12,000 \times (100\% \div 20) \times 2$] would be overstated and net income would be understated by \$1,200 on the income statement. On the balance sheet, Land would be understated by \$12,000, Land Improvements would be overstated by \$10,800 ($\$12,000 - \$1,200$), and Retained Earnings would be understated by \$1,200.

Prob. 10-2A

Depreciation Expense			
Year	a. Straight-Line Method	b. Units-of-Activity Method	c. Double-Declining-Balance Method
Year 1	\$22,500	\$28,500	\$48,000
Year 2	22,500	22,500	16,000
Year 3	22,500	16,500	3,500
Total	<u>\$67,500</u>	<u>\$67,500</u>	<u>\$67,500</u>

Calculations:

Straight-line method:

$$(\$72,000 - \$4,500) \div 3 = \$22,500 \text{ each year}$$

Units-of-activity method:

$$(\$72,000 - \$4,500) \div 18,000 \text{ hours} = \$3.75 \text{ per hour}$$

Year 1: 7,600 hours \times \$3.75 = \$28,500

Year 2: 6,000 hours \times \$3.75 = \$22,500

Year 3: 4,400 hours \times \$3.75 = \$16,500

Double-declining-balance method:

Year 1: $\$72,000 \times (2 \div 3) = \$48,000$

Year 2: $(\$72,000 - \$48,000) \times (2 \div 3) = \$16,000$

Year 3: $(\$72,000 - \$48,000 - \$16,000 - \$4,500) = \$3,500$

Note: Book value should not be reduced below the residual value of \$4,500.

- The double-declining-balance method yields the most depreciation expense in Year 1 of \$48,000.
- Over the three-year life of the equipment, all three depreciation methods yield the same total depreciation, \$67,500, which is the cost of the equipment of \$72,000 less the residual value of \$4,500.

Prob. 10-3A

a. Straight-line method:

Year 1:	$(\$270,000 - \$9,000) \div 3 \times 9 \div 12$	\$65,250
Year 2:	$(\$270,000 - \$9,000) \div 3$	87,000
Year 3:	$(\$270,000 - \$9,000) \div 3$	87,000
Year 4:	$(\$270,000 - \$9,000) \div 3 \times 3 \div 12$	21,750

b. Units-of-activity method:

Activity rate = $(\$270,000 - \$9,000) \div 18,000$ hours = \$14.50 per hour

Year 1:	7,500 hours \times \$14.50	\$108,750
Year 2:	5,500 hours \times \$14.50	79,750
Year 3:	4,000 hours \times \$14.50	58,000
Year 4:	1,000 hours \times \$14.50	14,500

c. Double-declining-balance method:

Year 1:	$\$270,000 \times 2 \div 3 \times 9 \div 12$	\$135,000
Year 2:	$(\$270,000 - \$135,000) \times 2 \div 3$	90,000
Year 3:	$(\$270,000 - \$135,000 - \$90,000) \times 2 \div 3$	30,000
Year 4:	$(\$270,000 - \$135,000 - \$90,000 - \$30,000 - \$9,000)$	6,000

Note: Book value should not be reduced below \$9,000, the residual value.

Prob. 10-4A

1.

	<u>Year</u>	<u>Depreciation Expense</u>	<u>Accumulated Depreciation, End of Year</u>	<u>Book Value, End of Year</u>
a.	1.....	\$142,000	\$142,000	\$658,000
	2.....	142,000	284,000	516,000
	3.....	142,000	426,000	374,000
	4.....	142,000	568,000	232,000
	5.....	142,000	710,000	90,000

Yearly depreciation = $[(\$800,000 - \$90,000) \div 5] = \$142,000$

b.	1	$[\$800,000 \times (100\% \div 5) \times 2]$	\$320,000	\$320,000	\$480,000
	2	$[\$480,000 \times (100\% \div 5) \times 2]$	192,000	512,000	288,000
	3	$[\$288,000 \times (100\% \div 5) \times 2]$	115,200	627,200	172,800
	4	$[\$172,800 \times (100\% \div 5) \times 2]$	69,120	696,320	103,680
	5	$(\$800,000 - \$696,320 - \$90,000)$..	13,680	710,000	90,000

Note: Book value should not be reduced below \$90,000, the residual value.

2.

Mar.	4	Cash	135,000	
		Accumulated Depreciation—Equipment	696,320	
		Equipment		800,000
		Gain on Sale of Equipment		31,320

Gain on sale of equipment = $\$135,000 - (\$800,000 - \$696,320) = \$31,320$

3.

Mar.	4	Cash	88,750	
		Accumulated Depreciation—Equipment	696,320	
		Loss on Sale of Equipment	14,930	
		Equipment		800,000

Loss on sale of equipment = $\$88,750 - (\$800,000 - \$696,320) = -\$14,930$

Prob. 10-5A

Year 1				
Jan.	4	Delivery Truck	28,000	
		Cash		28,000
Nov.	2	Truck Repair Expense	675	
		Cash		675
Dec.	31	Depreciation Expense—Delivery Truck	14,000	
		Accum. Depreciation—Delivery Truck		14,000
		Delivery truck depreciation		
		[\$28,000 × (100% ÷ 4) × 2].		

Year 2				
Jan.	6	Delivery Truck	48,000	
		Cash		48,000
Apr.	1	Depreciation Expense—Delivery Truck	1,750	
		Accum. Depreciation—Delivery Truck		1,750
		Delivery truck depreciation		
		[((\$28,000 – \$14,000) ×		
		(100% ÷ 4) × 2 × (3 ÷ 12)].		
	1	Accum. Depreciation—Delivery Truck	15,750	
		Cash	15,000	
		Delivery Truck		28,000
		Gain on Sale of Delivery Truck		2,750
June	11	Truck Repair Expense	450	
		Cash		450
Dec.	31	Depreciation Expense—Delivery Truck	19,200	
		Accum. Depreciation—Delivery Truck		19,200
		Delivery truck depreciation		
		[\$48,000 × (100% ÷ 5) × 2].		

Prob. 10-5A (Concluded)

Year 3				
July	1	Delivery Truck	54,000	
		Cash		54,000
Oct.	2	Depreciation Expense—Delivery Truck	8,640	
		Accum. Depreciation—Delivery Truck		8,640
		Delivery truck depreciation		
		[($\\$48,000 - \\$19,200$) ×		
		($100\% \div 5$) × 2 × ($9 \div 12$)].		
	2	Cash	16,750	
		Accum. Depreciation—Delivery Truck	27,840	
		Loss on Sale of Delivery Truck	3,410	
		Delivery Truck		48,000
Dec.	31	Depreciation Expense—Delivery Truck	6,750	
		Accum. Depreciation—Delivery Truck		6,750
		Delivery truck depreciation		
		[\$$54,000 \times (100\% \div 8) \times 2 \times (1 \div 2)$].		

Prob. 10-6A

1. a. $\$1,600,000 \div 5,000,000$ board feet = \$0.32 per board foot;
 $1,100,000$ board feet × \$0.32 per board foot = \$352,000
- b. Loss from impaired goodwill, \$3,750,000
- c. $\$6,600,000 \div 12$ years = \$550,000;
 $3/4$ of \$550,000 = \$412,500

2. a.	Dec.	31	Depletion Expense	352,000	
			Accumulated Depletion		352,000
			Depletion of timber rights.		
b.	Dec.	31	Loss from Impaired Goodwill	3,750,000	
			Goodwill		3,750,000
			Impaired goodwill.		
c.	Dec.	31	Amortization Expense—Patents	412,500	
			Patents		412,500
			Patent amortization.		

Prob. 10-1B

1.	<u>Item</u>	<u>Land</u>	<u>Land Improvements</u>	<u>Building</u>	<u>Other Accounts</u>
	a.	\$ 3,600			
	b.	780,000			
	c.	23,400			
	d.	15,000			
	e.			\$ 75,000	
	f.	10,000			
	g.	(3,400)*			
	h.	18,000			
	i.			8,400	
	j.				\$(800,000)*
	k.	13,400			
	l.				3,000
	m.				2,000
	n.		\$14,000		
	o.		21,600		
	p.			40,000	
	q.				(4,500)*
	r.			800,000	
	s.			(1,400)*	
2.		<u>\$860,000</u>	<u>\$35,600</u>	<u>\$922,000</u>	

* Received cash.

3. Land used as a plant site does not lose its ability to provide services; thus, it is not depreciated. However, land improvements do lose their ability to provide services as time passes and are, therefore, depreciated.
4. Because land improvements are depreciated, depreciation expense of \$4,320 [$\$21,600 \times (100\% \div 10) \times 2$] would be understated and net income would be overstated by \$4,320 on the income statement. On the balance sheet, Land would be overstated by \$21,600, Land Improvements would be understated by \$17,280 ($\$21,600 - \$4,320$), and Retained Earnings would be overstated by \$4,320.

Prob. 10-2B

Depreciation Expense			
Year	a. Straight-Line Method	b. Units-of-Activity Method	c. Double-Declining-Balance Method
Year 1	\$ 71,250	\$102,600	\$160,000
Year 2	71,250	91,200	80,000
Year 3	71,250	62,700	40,000
Year 4	71,250	28,500	5,000
Total	<u>\$285,000</u>	<u>\$285,000</u>	<u>\$285,000</u>

Calculations:

Straight-line method:

$$(\$320,000 - \$35,000) \div 4 = \$71,250 \text{ each year}$$

Units-of-activity method:

$$(\$320,000 - \$35,000) \div 20,000 \text{ hours} = \$14.25 \text{ per hour}$$

Year 1: 7,200 hours × \$14.25 = \$102,600

Year 2: 6,400 hours × \$14.25 = \$91,200

Year 3: 4,400 hours × \$14.25 = \$62,700

Year 4: 2,000 hours × \$14.25 = \$28,500

Double-declining-balance method:

Year 1: $\$320,000 \times [(1 \div 4) \times 2] = \$160,000$

Year 2: $(\$320,000 - \$160,000) \times [(1 \div 4) \times 2] = \$80,000$

Year 3: $(\$320,000 - \$160,000 - \$80,000) \times [(1 \div 4) \times 2] = \$40,000$

Year 4: $(\$320,000 - \$160,000 - \$80,000 - \$40,000 - \$35,000) = \$5,000$

Note: Book value should not be reduced below the residual value of \$35,000.

2. The double-declining-balance method yields the most depreciation expense in Year 1 of \$160,000.
3. Over the four-year life of the equipment, all three depreciation methods yield the same total depreciation, \$285,000, which is the cost of the equipment of \$320,000 less the residual value of \$35,000.

Prob. 10-3B

a. Straight-line method:

Year 1:	$[(\$108,000 - \$7,200) \div 3] \times 3 \div 12$	\$ 8,400
Year 2:	$[(\$108,000 - \$7,200) \div 3]$	33,600
Year 3:	$[(\$108,000 - \$7,200) \div 3]$	33,600
Year 4:	$[(\$108,000 - \$7,200) \div 3] \times 9 \div 12$	25,200

b. Units-of-activity method:

Activity rate = $(\$108,000 - \$7,200) \div 12,000$ hours = \$8.40 per hour

Year 1:	1,350 hours \times \$8.40	\$11,340
Year 2:	4,200 hours \times \$8.40	35,280
Year 3:	3,650 hours \times \$8.40	30,660
Year 4:	2,800 hours \times \$8.40	23,520

c. Double-declining-balance method:

Year 1:	$\$108,000 \times 2 \div 3 \times 3 \div 12$	\$18,000
Year 2:	$(\$108,000 - \$18,000) \times 2 \div 3$	60,000
Year 3:	$(\$108,000 - \$18,000 - \$60,000) \times 2 \div 3$	20,000
Year 4:	$(\$108,000 - \$18,000 - \$60,000 - \$20,000 - \$7,200)$	2,800

Note: Book value should not be reduced below \$7,200, the residual value.

Prob. 10-4B

1.

	<u>Year</u>	<u>Depreciation Expense</u>	<u>Accumulated Depreciation, End of Year</u>	<u>Book Value, End of Year</u>
a.	1.....	\$25,625	\$ 25,625	\$84,375
	2.....	25,625	51,250	58,750
	3.....	25,625	76,875	33,125
	4.....	25,625	102,500	7,500

Yearly depreciation = $[(\$110,000 - \$7,500) \div 4] = \$25,625$

b.	1	$[\$110,000 \times (100\% \div 4) \times 2]$	\$55,000	\$ 55,000	\$55,000
	2	$[\$55,000 \times (100\% \div 4) \times 2]$	27,500	82,500	27,500
	3	$[\$27,500 \times (100\% \div 4) \times 2]$	13,750	96,250	13,750
	4	$(\$110,000 - \$96,250 - \$7,500)$	6,250	102,500	7,500

Note: Book value should not be reduced below \$7,500, the residual value.

2.

Sept.	6	Cash	18,000	
		Accumulated Depreciation—Equipment	96,250	
		Equipment		110,000
		Gain on Sale of Equipment		4,250

Gain on sale of equipment = $\$18,000 - (\$110,000 - \$96,250) = \$4,250$

3.

Sept.	6	Cash	10,500	
		Accumulated Depreciation—Equipment	96,250	
		Loss on Sale of Equipment	3,250	
		Equipment		110,000

Loss on sale of equipment = $\$10,500 - (\$110,000 - \$96,250) = -\$3,250$

Prob. 10-5B

Year 1				
Jan.	8	Delivery Truck	24,000	
		Cash		24,000
Mar.	7	Truck Repair Expense	900	
		Cash		900
Dec.	31	Depreciation Expense—Delivery Truck	12,000	
		Accum. Depreciation—Delivery Truck		12,000
		Delivery truck depreciation		
		[\$24,000 × (100% ÷ 4) × 2].		

Year 2				
Jan.	9	Delivery Truck	50,000	
		Cash		50,000
Feb.	28	Truck Repair Expense	250	
		Cash		250
Apr.	30	Depreciation Expense—Delivery Truck	2,000	
		Accum. Depreciation—Delivery Truck		2,000
		Delivery truck depreciation		
		[((\$24,000 – \$12,000) ×		
		(100% ÷ 4) × 2 × (4 ÷ 12)].		
	30	Accum. Depreciation—Delivery Truck	14,000	
		Cash	9,500	
		Loss on Sale of Delivery Truck	500	
		Delivery Truck		24,000
Dec.	31	Depreciation Expense—Delivery Truck	12,500	
		Accum. Depreciation—Delivery Truck		12,500
		Delivery truck depreciation		
		[\$50,000 × (100% ÷ 8) × 2].		

Prob. 10-5B (Concluded)

Year 3				
Sept.	1	Delivery Truck	58,500	
		Cash		58,500
	4	Depreciation Expense—Delivery Truck	6,250	
		Accum. Depreciation—Delivery Truck		6,250
		Delivery truck depreciation		
		[($\\$50,000 - \\$12,500$) ×		
		($100\% \div 8$) × 2 × ($8 \div 12$)].		
	4	Cash	36,000	
		Accum. Depreciation—Delivery Truck	18,750	
		Delivery Truck		50,000
		Gain on Sale of Delivery Truck		4,750
Dec.	31	Depreciation Expense—Delivery Truck	3,900	
		Accum. Depreciation—Delivery Truck		3,900
		Delivery truck depreciation		
		[\$58,500 × ($100\% \div 10$) × 2 × ($4 \div 12$)].		

Prob. 10-6B

1 a. Loss from impaired goodwill, \$3,400,000

b. $\$4,800,000 \div 8 \text{ years} = \$600,000$;
 $1/4 \text{ of } \$600,000 = \$150,000$

c. $\$2,975,000 \div 12,500,000 \text{ board feet} = \$0.238 \text{ per board foot}$;
 $4,150,000 \text{ board feet} \times \$0.238 \text{ per board foot} = \$987,700$

2 a.	Dec.	31	Loss from Impaired Goodwill	3,400,000	
			Goodwill		3,400,000
			Impaired goodwill.		
b.	Dec.	31	Amortization Expense—Patents	150,000	
			Patents		150,000
			Patent amortization.		
c.	Dec.	31	Depletion Expense	987,700	
			Accumulated Depletion		987,700
			Depletion of timber rights.		

CASES & PROJECTS**CP 10-1**

- 1. Estimates of the factors determining depreciation expense create a unique financial reporting challenge. Because the useful life and residual value are estimates, there is no “correct” amount. The company must use judgment along with historical data to develop estimates that fairly reflect these items. These estimates are required under GAAP and should be representationally faithful. By subjectively changing these estimates, Mike and James are manipulating financial statement information to meet earnings targets. If this manipulation goes undetected, they will likely meet the owner’s earnings targets and save their jobs. Financial statement users, however, will be harmed by this action because they will be relying on financial statement information that is not a fair representation of the company’s underlying economics.**
- 2. In this case, both Mike and James appear to be acting unethically. The original useful life and residual value estimates were based on good faith estimates. By changing these estimates in order to meet an earnings goal, they have both knowingly manipulated financial statement estimates to improve the company’s reported earnings. Mike and James have used the subjectivity in these estimates inappropriately. The result is a depreciation expense amount that does not faithfully represent the depreciation associated with the equipment.**

CP 10-2

It is considered unprofessional for employees to use company assets for personal reasons because such use reduces the useful life of the assets for normal business purposes. Thus, it is unethical for Dave Elliott to use Lyric Consulting Co.’s computers and laser printers to service his part-time accounting business, even on an after-hours basis. In addition, it is improper for Dave’s clients to call him during regular working hours. Such calls may interrupt or interfere with Dave’s ability to carry out his assigned duties for Lyric Consulting Co.

CP 10-3

A sample solution based on Nike Inc.’s Form 10-K for the fiscal year ended May 31, 2015, follows:

- 1. a. Depreciation is determined on a straight-line basis for buildings and leasehold improvements over 2 to 40 years and for machinery and equipment over 2 to 15 years.**
- b. The company does not report depreciation expense separately on the face of the income statement. However, the amount of depreciation can be obtained from footnotes to the financial statements and is reported at \$606 million.**
- c. \$6,352 million (Note 3)**
- d. \$3,011 (Note 3 and balance sheet)**

CP 10-3 (Concluded)

- e. Identifiable intangible assets, net consists of indefinite-lived trademarks, which are not subject to amortization, and acquired trademarks and other intangible assets, which are subject to amortization. At May 31, 2015 and 2014, indefinite-lived trademarks were \$281 million and \$282 million, respectively. Acquired trademarks and other intangible assets at May 31, 2015 and 2014, were \$17 million and \$39 million, respectively, and were fully amortized at the end of both periods. Goodwill was \$131 million at May 31, 2015.
2. No. Book value is the difference between the fixed asset account and its related accumulated depreciation account. Depreciation does not measure a decline in the market value of a fixed asset. Instead, depreciation is an allocation of a fixed asset's cost to expense over the asset's useful life. Thus, the book value of a fixed asset (cost less accumulated depreciation) normally does not agree with the asset's market value.

CP 10-4

Note to Instructors: The purpose of this activity is to familiarize students with the procedures involved in acquiring a patent, a copyright, and a trademark. You may wish to divide the class into three groups to report back on patents, copyrights, and trademarks separately.

The following is some information on patents, copyrights, and trademarks that you may find helpful in your discussions.

Patents

A patent is requested by filing a written application at the relevant patent office. The person or company filing the application is referred to as "the applicant." The applicant may be the inventor or its assignee. The application contains a description of how to make and use the invention that must provide sufficient detail for a person skilled in the art (i.e., the relevant area of technology) to make and use the invention. In some countries, there are requirements for providing specific information such as the usefulness of the invention, the best mode of performing the invention known to the inventor, or the technical problem or problems solved by the invention. Drawings illustrating the invention may also be provided.

The application also includes one or more claims, although it is not always a requirement to submit these when first filing the application. The claims set out what the applicant is seeking to protect in that they define what the patent owner has a right to exclude others from making, using, or selling, as the case may be. In other words, the claims define what a patent covers or the "scope of protection."

After filing, an application is often referred to as "patent pending." While this term does not confer legal protection, and a patent cannot be enforced until granted, it serves to provide warning to potential infringers that if the patent is issued, they may be liable for damages.

Source: http://en.wikipedia.org/wiki/Patent#Application_and_prosecution.

CP 10-4 (Concluded)**Copyright**

While copyright in the United States automatically attaches upon the creation of an original work of authorship, registration with the Copyright Office puts a copyright holder in a better position if litigation arises over the copyright. A copyright holder wanting to register his or her copyright should do the following:

1. Obtain and complete appropriate form.
2. Prepare clear rendition of material being submitted for copyright.
3. Send both documents to the U.S. Copyright Office in Washington, D.C.

Source: http://en.wikipedia.org/wiki/United_States_copyright_law#Procedural_issues.

Trademark

The law considers a trademark to be a form of property. Proprietary rights in relation to a trademark may be established through actual use in the marketplace or through registration of the mark with the trademarks office (or “trademarks registry”) of a particular jurisdiction. In some jurisdictions, trademark rights can be established through either or both means. Certain jurisdictions generally do not recognize trademarks rights arising through use. In the United States, the only way to qualify for a federally registered trademark is to first use the trademark in commerce. If trademark owners do not hold registrations for their marks in such jurisdictions, the extent to which they will be able to enforce their rights through trademark infringement proceedings will be limited. In cases of dispute, this disparity of rights is often referred to as “first to file” as opposed to “first to use.” Other countries such as Germany offer a limited amount of common law rights for unregistered marks where, to gain protection, the goods or services must occupy a highly significant position in the marketplace—where this could be 40% or more market share for sales in the particular class of goods or services.

Source: http://en.wikipedia.org/wiki/Trademark#Maintaining_rights.

CP 10-5

To: My Teacher

From: IMA Student

Re: Financial Statement Effects of Modifications to Trucks 1 and 2

The modification to Truck 1 is an example of an asset improvement. After this truck was placed into service, a hydraulic lift was added to the truck. This change increased the capabilities of the truck. As a result, the cost of the hydraulic lift is added to the cost of the truck and depreciated over the truck’s remaining useful life. Because the cost of the delivery truck will be increased, depreciation expense for the truck will also increase.

Truck 2 is an example of an extraordinary repair. The overhaul of the engine extends the truck’s useful life, allowing it to operate for a longer period than originally estimated. As a result, the cost of the engine overhaul is recorded as a decrease in the truck’s accumulated depreciation. The truck’s remaining book value is depreciated over the extended useful life of the truck.

CP 10-6

You should explain to Nolan and Stacy that it is acceptable to maintain two sets of records for tax and financial reporting purposes. This can happen when a company uses one method for financial statement purposes, such as straight-line depreciation, and another method for tax purposes, such as MACRS depreciation. This should not be surprising because the methods for taxes and financial statements are established by two different groups with different objectives. That is, tax laws and related accounting methods are established by Congress. The Internal Revenue Service then applies the laws and, in some cases, issues interpretations of the law and congressional intent. The primary objective of the tax laws is to generate revenue in an equitable manner for government use. Generally accepted accounting principles, on the other hand, are established primarily by the Financial Accounting Standards Board. The objective of generally accepted accounting principles is the preparation and reporting of true economic conditions and results of operations of business entities.

You might note, however, that companies are required in their tax returns to reconcile differences in accounting methods. For example, income reported on the company's financial statements must be reconciled with taxable income.

Finally, you might also indicate to Nolan and Stacy that even generally accepted accounting principles allow for alternative methods of accounting for the same transactions or economic events. For example, a company could use straight-line depreciation for some assets and double-declining-balance depreciation for other assets.

