

CHAPTER 9

Plant Assets, Natural Resources, and Intangible Assets

ASSIGNMENT CLASSIFICATION TABLE

<u>Learning Objectives</u>	<u>Questions</u>	<u>Brief Exercises</u>	<u>Do It!</u>	<u>Exercises</u>	<u>A Problems</u>	<u>B Problems</u>
1. Describe how the historical cost principle applies to plant assets.	1, 2, 3	1, 2	1	1, 2, 3	1A	1B
2. Explain the concept of depreciation and how to compute it.	4, 5, 6, 7, 8, 9, 10, 24, 25, 26	3, 4, 5, 6, 7, 8, 9	2, 3	4, 5, 6, 7, 8, 9, 10 11	2A, 3A, 4A, 5A	2B, 3B, 4B, 5B
3. Distinguish between revenue and capital expenditures, and explain the entries for each.	11, 27	10				
4. Explain how to account for the disposal of a plant asset.	12, 13	11, 12	4	12, 13	5A, 6A	5B, 6B
5. Compute periodic depletion of extractable natural resources.	14, 15	13		14		
6. Explain the basic issues related to accounting for intangible assets.	16, 17, 18, 19, 20, 21, 22	14, 15	5	15, 16	7A, 8A	7B, 8B
7. Indicate how plant assets, natural resources, and intangible assets are reported.	23	16, 17	6	17	5A, 7A, 9A	5B, 7B, 9B
*8. Explain how to account for the exchange of plant assets.	28, 29	18, 19		18, 19		

ASSIGNMENT CHARACTERISTICS TABLE

Problem Number	Description	Difficulty Level	Time Allotted (min.)
1A	Determine acquisition costs of land and building.	Simple	20–30
2A	Compute depreciation under different methods.	Simple	30–40
3A	Compute depreciation under different methods.	Moderate	30–40
4A	Calculate revisions to depreciation expense.	Moderate	20–30
5A	Journalize a series of equipment transactions related to purchase, sale, retirement, and depreciation.	Moderate	40–50
6A	Record disposals.	Simple	30–40
7A	Prepare entries to record transactions related to acquisition and amortization of intangibles; prepare the intangible assets section.	Moderate	30–40
8A	Prepare entries to correct errors made in recording and amortizing intangible assets.	Moderate	30–40
9A	Calculate and comment on asset turnover ratio.	Moderate	5–10
1B	Determine acquisition costs of land and building.	Simple	20–30
2B	Compute depreciation under different methods.	Simple	30–40
3B	Compute depreciation under different methods.	Moderate	30–40
4B	Calculate revisions to depreciation expense.	Moderate	20–30
5B	Journalize a series of equipment transactions related to purchase, sale, retirement, and depreciation.	Moderate	40–50
6B	Record disposals.	Simple	30–40
7B	Prepare entries to record transactions related to acquisition and amortization of intangibles; prepare the intangible assets section.	Moderate	30–40
8B	Prepare entries to correct errors made in recording and amortizing intangible assets.	Moderate	30–40
9B	Calculate and comment on asset turnover ratio.	Moderate	5–10

WEYGANDT FINANCIAL ACCOUNTING, IFRS EDITION, 3e
CHAPTER 9
PLANT ASSETS, NATURAL RESOURCES,
AND INTANGIBLE ASSETS

Number	LO	BT	Difficulty	Time (min.)
BE1	1	AP	Simple	2–4
BE2	1	AP	Simple	1–2
BE3	2	AP	Simple	2–4
BE4	2	E	Moderate	4–6
BE5	2	AP	Simple	4–6
BE6	2	AP	Simple	2–4
BE7	2	AP	Simple	4–6
BE8	2	AP	Simple	2–4
BE9	2	AP	Simple	4–6
BE10	3	AP	Simple	4–6
BE11	4	AP	Simple	4–6
BE12	4	AP	Simple	2–4
BE13	5	AP	Simple	4–6
BE14	6	AP	Simple	2–4
BE15	6	AP	Simple	4–6
BE16	7	AP	Simple	4–6
BE17	7	AP	Simple	2–4
BE18	8	AP	Simple	4–6
BE19	8	AP	Simple	4–6
DI1	1	C	Simple	4–6
DI2	2	AP	Simple	2–4
DI3	2	AP	Simple	6–8
DI4	4	K	Simple	2–4
DI5	6	K	Simple	2–4
DI6	7	AP	Simple	2–4
EX1	1	C	Simple	6–8
EX2	1	AP	Simple	4–6
EX3	1	AP	Simple	4–6
EX4	2	C	Simple	4–6
EX5	2	AP	Simple	6–8

PLANT ASSETS, NATURAL RESOURCES, AND INTANGIBLE ASSETS (Continued)

Number	LO	BT	Difficulty	Time (min.)
EX6	2	AP	Simple	8–10
EX7	2	AP	Simple	10–12
EX8	2	AP	Simple	4–6
EX9	2	AN	Moderate	8–10
EX10	2	AP	Moderate	6–8
EX11	2	AP	Moderate	6–8
EX12	4	AP	Moderate	8–10
EX13	4	AP	Moderate	10–12
EX14	5	AP	Simple	6–8
EX15	6	AP	Simple	4–6
EX16	6	AP	Simple	6–8
EX17	7	AP	Simple	4–6
EX18	8	AP	Moderate	8–10
EX19	8	AP	Moderate	8–10
P1A	1	C	Simple	20–30
P2A	2	AP	Simple	30–40
P3A	2	AN	Moderate	30–40
P4A	2	AP	Moderate	20–30
P5A	2, 4, 7	AP	Moderate	40–50
P6A	4	AP	Simple	30–40
P7A	6, 7	AP	Moderate	30–40
P8A	6	AP	Moderate	30–40
P9A	7	AN	Moderate	5–10
P1B	1	C	Simple	20–30
P2B	2	AP	Simple	30–40
P3B	2	AN	Moderate	30–40
P4B	2	AP	Moderate	20–30
P5B	2, 4, 7	AP	Moderate	40–50
P6B	4	AP	Simple	30–40
P7B	6, 7	AP	Moderate	30–40
P8B	6	AP	Moderate	30–40
P9B	7	AN	Moderate	5–10
BYP1	2, 6	AN	Simple	15–20
BYP2	7	AN, E	Simple	10–15
BYP3	2	C	Simple	10–15
BYP4	2	AP, E	Moderate	20–25
BYP5	2	C	Simple	5–10
BYP6	2	E	Simple	10–15

Correlation Chart between Bloom's Taxonomy, Learning Objectives and End-of-Chapter Exercises and Problems

Learning Objective	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
1. Describe how the historical cost principle applies to plant assets.		Q9-1 Q9-2 Q9-3 DI9-1	E9-1 P9-1A P9-1B	BE9-1 E9-2 BE9-2 E9-3		
2. Explain the concept of depreciation and how to compute it.	Q9-5	Q9-4 Q9-6 Q9-7 Q9-8 Q9-9 Q9-10 Q9-24 Q9-25 Q9-26	E9-4	BE9-3 E9-5 P9-5A BE9-5 E9-6 P9-2B BE9-6 E9-7 P9-4B BE9-7 E9-8 P9-5B BE9-8 E9-10 BE9-9 E9-11 DI9-2 P9-2A DI9-3 P9-4A	E9-9 P9-3A P9-3B	BE9-4
3. Distinguish between revenue and capital expenditures, and explain the entries for each.		Q9-11 Q9-27		BE9-10		
4. Explain how to account for the disposal of a plant asset.	Q9-12 DI9-4	Q9-13		BE9-11 P9-5A P9-5B BE9-12 P9-6A P9-6B E9-12 E9-13		
5. Compute periodic depletion of natural resources.	Q9-14	Q9-15		BE9-13 E9-14		
6. Explain the basic issues related to accounting for intangible assets.	Q9-20 DI9-5	Q9-16 Q9-17 Q9-18	Q9-19 Q9-21 Q9-22	BE9-14 P9-7A P9-8B BE9-15 P9-8A E9-15 P9-7B E9-16		
7. Indicate how plant assets, natural resources, and intangible assets are reported.				Q9-23 DI9-6 P9-7A BE9-16 E9-17 P9-5B BE9-17 P9-5A P9-7B	P9-9A P9-9B	
*8. Explain how to account for the exchange of plant assets.	Q9-28	Q9-29		BE9-18 E9-18 BE9-19 E9-19		
Broadening Your Perspective		Real-World Focus Communication	Decision-Making Across the Organization	Financial Reporting Comp. Analysis		Comp. Analysis Decision-Making Across the Organization Ethics Case

ANSWERS TO QUESTIONS

1. For plant assets, the historical cost principle means that cost consists of all expenditures necessary to acquire the asset and make it ready for its intended use.
2. Examples of land improvements include driveways, parking lots, fences, and underground sprinklers.
3. (a) When only the land is to be used, all demolition and removal costs of the building less any proceeds from salvaged materials are necessary expenditures to make the land ready for its intended use.
(b) When both the land and building are to be used, necessary costs of the building include remodeling expenditures and the cost of replacing or repairing the roofs, floors, wiring, and plumbing.
4. You should explain to the president that depreciation is a process of allocating the cost of a plant asset to expense over its service (useful) life in a rational and systematic manner. Recognition of depreciation is not intended to result in the accumulation of cash for replacement of the asset.
5. (a) Residual value, also called salvage value, is the expected value of the asset at the end of its useful life.
(b) Residual value is used in determining depreciation in each of the methods except the declining-balance method.
6. (a) Useful life is expressed in years under the straight-line method and in units of activity under the units-of-activity method.
(b) The pattern of periodic depreciation expense over useful life is constant under the straight-line method and variable under the units-of-activity method.
7. The effects of the three methods on annual depreciation expense are: Straight-line—constant amount; units of activity—varying amount; declining-balance—decreasing amounts.
8. Component depreciation is a method of allocating the cost of a plant asset into separate parts based on the estimated useful lives of each component. IFRS requires an entity to use component depreciation whenever significant parts of a plant asset have significantly different useful lives.
9. A revision of depreciation is made in current and future years but not retroactively. The rationale is that continual restatement of prior periods would adversely affect confidence in the financial statements.
10. Revaluation is an accounting procedure that adjusts plant assets to fair value at the reporting date. Revaluation must be applied annually to assets that are experiencing rapid price changes.
11. Revenue expenditures are ordinary repairs made to maintain the operating efficiency and productive life of the asset. Capital expenditures are additions and improvements made to increase operating efficiency, productive capacity, or useful life of the asset. Revenue expenditures are recognized as expenses when incurred; capital expenditures are generally debited to the plant asset affected.
12. In a sale of plant assets, the book value of the asset is compared to the proceeds received from the sale. If the proceeds of the sale exceed the book value of the plant asset, a gain on disposal occurs. If the proceeds of the sale are less than the book value of the plant asset sold, a loss on disposal occurs.

Questions Chapter 9 (Continued)

13. The plant asset and its accumulated depreciation should continue to be reported on the statement of financial position without further depreciation adjustment until the asset is retired. Reporting the asset and related accumulated depreciation on the statement of financial position informs the reader of the financial statements that the asset is still in use. However, once an asset is fully depreciated, even if it is still being used, no additional depreciation should be taken. In no situation can the accumulated depreciation on the plant asset exceed its cost.
14. Extractable natural resources consist of underground deposits of oil, gas, and minerals. These long-lived productive assets have two distinguishing characteristics: they are physically extracted in operations, and they are replaceable only by an act of nature.
15. Depletion is the allocation of the cost of natural resources to expense in a rational and systematic manner over the resource's useful life. It is computed by multiplying the depletion cost per unit by the number of units extracted.
16. The terms depreciation, depletion, and amortization are all concerned with allocating the cost of an asset to expense over the periods benefited. Depreciation refers to allocating the cost of a plant asset to expense, depletion to recognizing the cost of a natural resource as expense, and amortization to allocating the cost of an intangible asset to expense.
17. The intern is not correct. The cost of an intangible asset should be amortized over that asset's useful life (the period of time when operations are benefited by use of the asset). In addition, some intangibles have indefinite lives and therefore are not amortized at all.
18. The favorable attributes which could result in goodwill include exceptional management, desirable location, good customer relations, skilled employees, high-quality products, and harmonious relations with labor unions.
19. Goodwill is the value of many favorable attributes that are intertwined in the business enterprise. Goodwill can be identified only with the business as a whole and, unlike other assets, cannot be sold separately. Goodwill can only be sold if the entire business is sold. And, if goodwill appears on the statement of financial position, it means the company has purchased another company for more than the fair value of its net assets.
20. Goodwill is recorded only when there is a transaction that involves the purchase of an entire business. Goodwill is the excess of cost over the fair value of the net assets (assets less liabilities) acquired. The recognition of goodwill without an exchange transaction would lead to subjective valuations which would reduce the reliability of financial statements.
21. Research and development costs present several accounting problems. It is sometimes difficult to assign the costs to specific projects, and there are uncertainties in identifying the extent and timing of future benefits. As a result, IFRS requires that research costs be recorded as an expense when incurred. Development costs incurred prior to technological feasibility are also expensed but development costs incurred after technological feasibility are capitalized.

Questions Chapter 9 (Continued)

- 22.** Both types of development expenditures relate to the creation of new products but one is expensed and the other is capitalized. Development costs incurred before a new product achieves technological feasibility are recorded as development expenses and appear as part of operating expenses on the income statement. Development costs incurred after the product achieves technological feasibility are recorded as assets, and reported in the statement of financial position.

- 23.** McDonald's asset turnover ratio is computed as follows:

$$\frac{\text{Net sales}}{\text{Average total assets}} = \frac{\$20.5 \text{ billion}}{\$28.9 \text{ billion}} = .71 \text{ times}$$

- 24.** Since Alpha uses the straight-line depreciation method, its depreciation expense will be lower in the early years of an asset's useful life as compared to using an accelerated method. Zito's depreciation expense in the early years of an asset's useful life will be higher as compared to the straight-line method. Alpha's net income will be higher than Zito's in the first few years of the asset's useful life. And, the reverse will be true late in an asset's useful life.
- 25.** Yes, the tax regulations often allow a company to use a different depreciation method on the tax return than is used in preparing financial statements. Wanzo ASA uses an accelerated depreciation method for tax purposes to minimize its income taxes and thereby the cash outflow for taxes.
- 26.** By selecting a longer estimated useful life, Lam Ltd. is spreading the plant asset's cost over a longer period of time. The depreciation expense reported in each period is lower and net income is higher. Shuey's choice of a shorter estimated useful life will result in higher depreciation expense reported in each period and lower net income.
- 27.** Expensing these costs will make current period income lower but future period income higher because there will be no additional depreciation expense in future periods. If the costs are ordinary repairs, they should be expensed.
- *28.** When assets are exchanged, the gain or loss on disposal is computed as the difference between the book value and the fair value of the asset given up at the time of exchange.
- *29.** Yes, Morris should recognize a gain equal to the difference between the fair value of the old machine and its book value. If the fair value of the old machine is less than its book value, Morris should recognize a loss equal to the difference between the two amounts.

SOLUTIONS TO BRIEF EXERCISES

BRIEF EXERCISE 9-1

All of the expenditures should be included in the cost of the land. Therefore, the cost of the land is €75,900, or (€64,000 + €3,000 + €2,500 + €2,000 + €4,400).

BRIEF EXERCISE 9-2

The cost of the truck is £32,200 (cash price £30,000 + sales tax £1,800 + painting and lettering £400). The expenditures for insurance and motor vehicle license should not be added to the cost of the truck.

BRIEF EXERCISE 9-3

Depreciable cost of €33,000, or (€42,000 – €9,000). With a five-year useful life, annual depreciation is €6,600, or (€33,000 ÷ 5). Under the straight-line method, depreciation is the same each year. Thus, depreciation expense is €6,600 for both the first and second years.

BRIEF EXERCISE 9-4

It is likely that management requested this accounting treatment to boost reported net income. Land is not depreciated; thus, by reporting land at HK\$1,250,000 above its actual value the company increased yearly income by HK\$62,500 $\left(\frac{\text{HK\$1,250,000}}{20 \text{ years}} \right)$ or the reduction in depreciation expense. This practice is not ethical because management is knowingly misstating asset values.

BRIEF EXERCISE 9-5

The declining balance rate is 40%, or (20% X 2) and this rate is applied to book value at the beginning of the year. The computations are:

	<u>Book Value</u>	X	<u>Rate</u>	=	<u>Depreciation</u>
Year 1	€42,000		40%		€16,800
Year 2	(€42,000 – €16,800)		40%		€10,080

BRIEF EXERCISE 9-6

The depreciation cost per unit is .22 euros per mile computed as follows:

Depreciable cost $(€33,500 - €500) \div 150,000 = €.22$
Year 1 36,000 miles X € .22 = €7,920
Year 2 22,000 miles X € .22 = €4,840

BRIEF EXERCISE 9-7

Warehouse component: $(£280,000 - £40,000)/20 = £12,000$
HVAC component: $£40,000/8 = \underline{5,000}$
Total component depreciation in first year £17,000

BRIEF EXERCISE 9-8

Book value, 1/1/17	€23,000
Less: Residual value	<u>2,000</u>
Depreciable cost.....	<u>€21,000</u>
Remaining useful life	<u>4 years</u>
Revised annual depreciation $(€21,000 \div 4)$	<u>€ 5,250</u>

BRIEF EXERCISE 9-9

(a) Accumulated Depreciation—Equipment	60,000	
Equipment		12,000
Revaluation Surplus		48,000
(To record revaluation of plant assets)		
(b) Accumulated Depreciation—Equipment	60,000	
Impairment Loss	20,000	
Equipment.....		80,000
(To record revaluation of plant assets)		

BRIEF EXERCISE 9-10

1.	Maintenance and Repairs Expense.....	45	
	Cash.....		45
2.	Equipment.....	580	
	Cash.....		580

BRIEF EXERCISE 9-11

(a)	Accumulated Depreciation—		
	Equipment.....	44,000	
	Equipment		44,000
(b)	Accumulated Depreciation—		
	Equipment.....	37,000	
	Loss on Disposal of Plant Assets	7,000	
	Equipment		44,000

Cost of equipment	CHF44,000
Less accumulated depreciation	<u>37,000</u>
Book value at date of disposal	7,000
Proceeds from sale	<u>0</u>
Loss on disposal	<u><u>CHF 7,000</u></u>

BRIEF EXERCISE 9-12

(a) Depreciation Expense	4,800	
Accumulated Depreciation— Equipment.....		4,800

(b) Cash.....	20,000	
Accumulated Depreciation—Equipment.....	46,800	
Loss on Disposal of Plant Assets.....	5,200	
Equipment.....		72,000

Cost of equipment	£72,000
Less: Accumulated depreciation	<u>46,800*</u>
Book value at date of disposal	25,200
Proceeds from sale	<u>20,000</u>
Loss on disposal	<u>£ 5,200</u>

*£42,000 + £4,800

BRIEF EXERCISE 9-13

- (a) Depletion cost per unit = $\text{¥}7,000,000 \div 28,000,000 = \text{¥}0.25$ depletion cost per ton
 $\text{¥}0.25 \times 4,700,000 = \text{¥}1,175,000$

Inventory	1,175,000	
Accumulated Depletion.....		1,175,000

(b) Ore mine	¥7,000,000	
Less: Accumulated depletion	<u>1,175,000</u>	¥5,825,000

BRIEF EXERCISE 9-14

(a) Amortization Expense (R\$120,000 ÷ 8).....	15,000	
Patents		15,000
(b) Intangible Assets		
Patents		R\$105,000

BRIEF EXERCISE 9-15

Research and Development Expense		
(€260,000 + €400,000)	660,000	
Development Costs	200,000	
Cash.....		860,000
(To record research and development costs)		

BRIEF EXERCISE 9-16

LOOMIS COMPANY, LTD.
Statement of Financial Position (partial)
December 31, 2017

Intangible assets		
Goodwill		£ 410,000
Property, plant, and equipment		
Coal mine	£ 500,000	
Less: Accumulated depletion	<u>122,000</u>	£378,000
Buildings	1,300,000	
Less: Accumulated depreciation— buildings	<u>650,000</u>	<u>650,000</u>
Total property, plant, and equipment.....		1,028,000

BRIEF EXERCISE 9-17

$$\$72.6 \div \left(\frac{\$48.2 + \$44.6}{2} \right) = 1.56 \text{ times}$$

***BRIEF EXERCISE 9-18**

Equipment (new)	24,000	
Accumulated Depreciation—Equipment.....	28,000	
Loss on Disposal of Plant Assets	14,000	
Equipment (old)		61,000
Cash.....		5,000

Fair value of old delivery equipment	€19,000
Cash paid	<u>5,000</u>
Cost of delivery equipment	<u>€24,000</u>

Fair value of old delivery equipment	€19,000
Book value of old delivery equipment (€61,000 – €28,000)	<u>33,000</u>
Loss on disposal	<u>€14,000</u>

***BRIEF EXERCISE 9-19**

Equipment (new)	42,200	
Accumulated Depreciation—Equipment.....	28,000	
Gain on Disposal of Plant Assets		4,200
Equipment (old)		61,000
Cash.....		5,000

Fair value of old delivery equipment	€37,200
Cash paid	<u>5,000</u>
Cost of new delivery equipment	<u>€42,200</u>

Fair value of old delivery equipment	€37,200
Book value of old delivery equipment (€61,000 – €28,000)	<u>33,000</u>
Gain on disposal	<u>€ 4,200</u>

SOLUTIONS FOR DO IT! REVIEW EXERCISES

DO IT! 9-1

The following four items are expenditures necessary to acquire the truck and get it ready for use:

Negotiated purchase price	£24,000
Installation of special shelving.....	1,200
Painting and lettering.....	780
Sales tax	<u>1,300</u>
Total paid	<u>£27,280</u>

Thus, the cost of the truck is £27,280. The payments for the motor vehicle license and for the insurance are operating costs and are expensed in the first year of the truck's life.

DO IT! 9-2

$$\text{Depreciation expense} = \frac{\text{Cost} - \text{Residual value}}{\text{Useful life}} = \frac{£18,000 - £2,000}{8 \text{ years}} = £2,000$$

The entry to record the first year's depreciation would be:

Depreciation Expense.....	2,000	
Accumulated Depreciation—Equipment.....		2,000
(To record annual depreciation on mower)		

DO IT! 9-3

$$\text{Original depreciation expense} = (£50,000 - £2,000) \div 5 \text{ years} = £9,600$$

$$\text{Accumulated depreciation after three years} = 3 \times £9,600 = £28,800$$

Book value, £50,000 – £28,800	£21,200
Less: Residual value.....	<u>4,000</u>
Depreciable cost	<u>£17,200</u>
Remaining useful life	<u>5 years</u>
Revised annual depreciation (£17,200 ÷ 5).....	<u>£ 3,440</u>

DO IT! 9-4

(a) Sale of truck for cash at a gain:

Cash	26,000	
Accumulated Depreciation—Equipment	28,000	
Equipment		48,000
Gain on Disposal of Plant Assets		6,000

(b) Sale of truck for cash at a loss:

Cash	15,000	
Loss on Disposal of Plant Assets	5,000	
Accumulated Depreciation—Equipment	28,000	
Equipment		48,000

DO IT! 9-5

1. b. Intangible assets
2. d. Amortization
3. e. Franchises
4. f. Development costs
5. a. Goodwill
6. c. Development expenses

DO IT! 9-6

$$\begin{aligned}\text{Asset turnover} &= \$400,000 \div [(\$300,000 + \$340,000) \div 2] \\ &= 1.25 \text{ times}\end{aligned}$$

SOLUTIONS TO EXERCISES

EXERCISE 9-1

- (a) Under the historical cost principle, the acquisition cost for a plant asset includes all expenditures necessary to acquire the asset and make it ready for its intended use. For example, the cost of factory machinery includes the purchase price, freight costs paid by the purchaser, insurance costs during transit, and installation costs.
- (b)
1. Land
 2. Equipment
 3. Equipment
 4. Land Improvements
 5. Equipment
 6. Equipment
 7. Prepaid Insurance
 8. License Expense

EXERCISE 9-2

1. Equipment
2. Equipment
3. Equipment
4. Land
5. Prepaid Insurance
6. Land Improvements
7. Land Improvements
8. Land
9. Buildings

EXERCISE 9-3

(a) Cost of land

Cash paid	€86,000
Net cost of removing warehouse (€9,400 – €1,700)	7,700
Attorney's fee	1,100
Real estate broker's fee	<u>5,100</u>
Total	<u>€99,900</u>

- (b) The architect's fee (€7,800) should be debited to the Buildings account. The cost of the driveways and parking lot (€12,700) should be debited to Land Improvements.

EXERCISE 9-4

1. False. Depreciation is a process of *cost allocation*, not *asset valuation*.
2. True.
3. False. The book value of a plant asset *may be quite different* from its fair value.
4. False. Depreciation applies to three classes of plant assets: land *improvements*, buildings, and equipment.
5. False. Depreciation does not apply to *land* because its usefulness and revenue-producing ability generally remain intact over time.
6. True.
7. False. Recognizing depreciation on an asset *does not result* in an accumulation of cash for replacement of the asset.
8. True.
9. False. Depreciation expense is reported on the income statement, and *accumulated depreciation is reported as a deduction from plant assets on the statement of financial position*.
10. True.

EXERCISE 9-5

- (a) Depreciation cost per unit is R\$1.30 per mile
 $[(R\$145,000 - R\$15,000) \div 100,000]$.

Year	Computation		Annual Depreciation Expense	End of Year	
	Units of Activity X	Depreciation Cost/Unit =		Accumulated Depreciation	Book Value
2017	27,000	R\$1.30	R\$35,100	R\$ 35,100	R\$109,900
2018	32,000	1.30	41,600	76,700	68,300
2019	24,000	1.30	31,200	107,900	37,100
2020	17,000	1.30	22,100	130,000	15,000

EXERCISE 9-6

- (a) Straight-line method:

$$\left(\frac{€96,000 - €12,000}{5} \right) = €16,800 \text{ per year.}$$

$$2017 \text{ depreciation} = €16,800 \times 3/12 = \underline{\underline{€4,200.}}$$

- (b) Units-of-activity method:

$$\left(\frac{€96,000 - €12,000}{10,000} \right) = €8.40 \text{ per hour.}$$

$$2017 \text{ depreciation} = 1,700 \text{ hours} \times €8.40 = \underline{\underline{€14,280.}}$$

- (c) Declining-balance method:

$$2017 \text{ depreciation} = €96,000 \times 40\% \times 3/12 = \underline{\underline{€9,600.}}$$

$$\text{Book value January 1, 2018} = €96,000 - €9,600 = \underline{\underline{€86,400.}}$$

$$2018 \text{ depreciation} = €86,400 \times 40\% = \underline{\underline{€34,560.}}$$

EXERCISE 9-7

- (a) (1) 2017: $(R\$38,000 - R\$6,000)/8 = \underline{R\$4,000}$
2018: $(R\$38,000 - R\$6,000)/8 = \underline{R\$4,000}$
- (2) $(R\$38,000 - R\$6,000)/100,000 = R\$0.32$ per mile
2017: $15,000 \times R\$0.32 = \underline{R\$4,800}$
2018: $12,000 \times R\$0.32 = \underline{R\$3,840}$
- (3) 2017: $R\$38,000 \times 25\% = \underline{R\$9,500}$
2018: $(R\$38,000 - R\$9,500) \times 25\% = \underline{R\$7,125}$

(b) (1)	Depreciation Expense	4,000	
	Accumulated Depreciation—Equipment		4,000
(2)	Equipment.....	R\$38,000	
	Less: Accumulated Depreciation—Equipment ...	<u>4,000</u>	
			<u>R\$34,000</u>

EXERCISE 9-8

Building depreciation:	$\pounds 1,920,000/40$ years	= $\pounds 48,000$
Personal property depreciation:	$\pounds 300,000/5$ years	= $60,000$
Land improvement depreciation:	$\pounds 180,000/10$ years	= <u>$18,000$</u>
Total component depreciation		<u><u>$\pounds 126,000$</u></u>

$$*\pounds 2,400,000 - \pounds 300,000 - \pounds 180,000 = \pounds 1,920,000$$

EXERCISE 9-9

(a) Type of Asset	Building	Warehouse
Book value, 1/1/17	£610,000	£82,000
Less: Residual value	<u>18,000</u>	<u>3,700</u>
Depreciable cost	<u>£592,000</u>	<u>£78,300</u>
Remaining useful life in years	<u>40*</u>	<u>15**</u>
Revised annual depreciation	<u>£ 14,800</u>	<u>£ 5,220</u>

*50 – 10

**20 – 5

(b) Dec. 31	Depreciation Expense	14,800	
	Accumulated Depreciation—		
	Buildings		14,800

EXERCISE 9-10

(a)	Depreciation Expense	70,000	
	Accumulated Depreciation—Equipment.....		70,000
	(To record depreciation expense)		
(b)	Accumulated Depreciation—Equipment.....	70,000	
	Equipment.....		30,000
	Revaluation Surplus		40,000
	(To adjust the plant assets to fair value and record revaluation surplus)		
(c)	Depreciation Expense.....	80,000*	
	Accumulated Depreciation—Equipment		80,000
	(To record depreciation expense)		

*€350,000 – €30,000 = €320,000; €320,000/4 years = €80,000

EXERCISE 9-11

(a)	Accumulated Depreciation— Equipment	150,000	
	Equipment.....		90,000
	Revaluation Surplus		60,000
	(To record depreciation expense)		

(b)	Depreciation Expense	165,000*	
	Accumulated Depreciation—Equipment.....		165,000
	(To record depreciation expense)		

*€660,000 – €0 = €660,000; €660,000/4 years = €165,000

(c)	Accumulated Depreciation— Equipment	150,000	
	Impairment Loss.....	80,000	
	Equipment.....		230,000
	(To record revaluation of plant assets)		

(d)	Depreciation Expense	130,000*	
	Accumulated Depreciation—Equipment.....		130,000
	(To record depreciation expense)		

*€520,000 – €0 = €520,000; €520,000/4 years = €130,000

EXERCISE 9-12

Jan. 1	Accumulated Depreciation—Equipment.....	58,000	
	Equipment		58,000
June 30	Depreciation Expense	4,000	
	Accumulated Depreciation—Equipment (£40,000 X 1/5 X 6/12)		4,000
30	Cash	14,600	
	Accumulated Depreciation—Equipment (£40,000 X 3/5 = £24,000; £24,000 + £4,000)	28,000	
	Gain on Disposal of Plant Assets [£14,600 – (£40,000 – £28,000)].....		2,600
	Equipment		40,000
Dec. 31	Depreciation Expense	5,000	
	Accumulated Depreciation—Equipment [(£34,000 – £4,000) X 1/6]		5,000
31	Loss on Disposal of Plant Assets	9,000	
	Accumulated Depreciation—Equipment [(£34,000 – £4,000) X 5/6].....	25,000	
	Equipment		34,000

EXERCISE 9-13

(a)	Cash	28,000	
	Accumulated Depreciation—Equipment [(€50,000 – €8,000) X 3/5].....	25,200	
	Equipment		50,000
	Gain on Disposal of Plant Assets		3,200
(b)	Depreciation Expense [(€50,000 – €8,000) X 1/5 X 4/12]	2,800	
	Accumulated Depreciation—Equipment		2,800
	Cash	28,000	
	Accumulated Depreciation—Equipment (€25,200 + €2,800)	28,000	
	Equipment		50,000
	Gain on Disposal of Plant Assets		6,000

EXERCISE 9-13 (Continued)

(c)	Cash	11,000	
	Accumulated Depreciation—Equipment.....	25,200	
	Loss on Disposal of Plant Assets	13,800	
	Equipment.....		50,000
(d)	Depreciation Expense		
	[(€50,000 – €8,000) ÷ 5 X 9/12]	6,300	
	Accumulated Depreciation—Equipment.....		6,300
	Cash	11,000	
	Accumulated Depreciation—Equipment		
	(€25,200 + €6,300).....	31,500	
	Loss on Disposal of Plant Assets	7,500	
	Equipment.....		50,000

EXERCISE 9-14

(a)	Dec. 31	Inventory	114,080	
		Accumulated Depletion		
		(124,000 X CHF0.92).....		114,080
	Cost	(a)	CHF736,000	
	Units estimated	(b)	800,000 tons	
	Depletion cost per unit [(a) ÷ (b)]		CHF0.92	

- (b) The costs pertaining to the unsold units are reported in current assets as part of inventory (34,000 X CHF0.92 = CHF31,280).

EXERCISE 9-15

Dec. 31	Amortization Expense	11,200	
	Patents (€84,000 ÷ 5 X 8/12)		11,200

Note: No entry is made to amortize goodwill because it has an indefinite life.

EXERCISE 9-16

1/2/17	Patents.....	560,000	
	Cash		560,000
4/1/17	Goodwill	360,000	
	Cash		360,000
	(Part of the entry to record purchase of another company)		
7/1/17	Franchises.....	440,000	
	Cash		440,000
11/1/17	Research and Development Expense	448,000	
	Cash		448,000
12/31/17	Amortization Expense		
	(€560,000 ÷ 7) + [(€440,000 ÷ 8) X 1/2]	107,500	
	Patents		80,000
	Franchises		27,500

Ending balances, 12/31/17:

Patents = €480,000 (€560,000 – €80,000).

Goodwill = €360,000

Franchises = €412,500 (€440,000 – €27,500).

EXERCISE 9-17

$$\text{Asset turnover} = \frac{€5,200,000}{€1,600,000} = 3.25 \text{ times}$$

***EXERCISE 9-18**

(a) Equipment (new).....	54,400	
Accumulated Depreciation—Equipment (old)	22,000	
Loss on Disposal of Plant Assets.....	4,600	
Equipment (old).....		64,000
Cash		17,000

Cost of old trucks	£64,000
Less: Accumulated depreciation	<u>22,000</u>
Book value	42,000
Fair value of old trucks	<u>37,400</u>
Loss on disposal	<u>£ 4,600</u>

Fair value of old trucks	£37,400
Cash paid	<u>17,000</u>
Cost of new trucks	<u>£54,400</u>

(b) Equipment (new).....	12,200	
Accumulated Depreciation—Equipment (old)	4,000	
Gain on Disposal of Plant Assets		1,000
Equipment (old).....		12,000
Cash		3,200

Cost of old machine	£12,000
Less: Accumulated depreciation	<u>4,000</u>
Book value	8,000
Fair value of old machine	<u>9,000</u>
Gain on disposal	<u>£ 1,000</u>

Fair value of old machine	£ 9,000
Cash paid	<u>3,200</u>
Cost of new machine	<u>£12,200</u>

***EXERCISE 9-19**

(a)	Equipment (new).....	4,000	
	Loss on Disposal of Plant Assets	2,000	
	Accumulated Depreciation—Equipment (old)	16,000	
	Equipment (old).....		22,000
	Cost of old truck	€22,000	
	Less: Accumulated depreciation	<u>16,000</u>	
	Book value	6,000	
	Fair value of old truck	<u>4,000</u>	
	Loss on disposal	<u>€ 2,000</u>	
(b)	Equipment (new).....	4,000	
	Accumulated Depreciation—Equipment (old)	7,000	
	Equipment (old).....		10,000
	Gain on Disposal of Plant Assets		1,000
	Cost of old truck	€10,000	
	Less: Accumulated depreciation	<u>7,000</u>	
	Book value	3,000	
	Fair value of old truck	<u>4,000</u>	
	Gain on disposal	<u>€ 1,000</u>	
	Cost of new truck*	<u>€ 4,000</u>	
	*Fair value of old truck		

SOLUTIONS TO PROBLEMS

PROBLEM 9-1A

Item	Land	Buildings	Other Accounts
1	€ 6,600		
2		€780,000	
3			€ 5,000 Property Taxes Expense
4	145,000		
5		35,000	
6		10,500	
7	2,800		
8			14,000 Land Improvements
9	15,000		
10	<u>(3,600)</u>		
	<u>€165,800</u>	<u>€825,500</u>	

PROBLEM 9-2A

(a)

<u>Year</u>	<u>Computation</u>	<u>Accumulated Depreciation 12/31</u>
BUS 1		
2015	£ 90,000 X 20% = £18,000	£ 18,000
2016	£ 90,000 X 20% = £18,000	36,000
2017	£ 90,000 X 20% = £18,000	54,000
BUS 2		
2015	£140,000 X 50% = £70,000	£ 70,000
2016	£ 70,000 X 50% = £35,000	105,000
2017	£ 35,000 X 50% = £17,500	122,500
BUS 3		
2016	24,000 miles X £.70* = £16,800	£ 16,800
2017	36,000 miles X £.70 = £25,200	42,000

*£84,000 ÷ 120,000 miles = £.70 per mile.

(b)

<u>Year</u>	<u>Computation</u>	<u>Expense</u>
BUS 2		
(1) 2015	£140,000 X 50% X 9/12 = £52,500	<u>£52,500</u>
(2) 2016	£87,500 X 50% = £43,750	<u>£43,750</u>

PROBLEM 9-3A

(a) (1)	Purchase price	R\$ 35,000
	Sales tax	2,200
	Shipping costs	150
	Insurance during shipping	80
	Installation and testing	70
	Total cost of machine	<u>R\$ 37,500</u>

Equipment.....	37,500	
Cash.....		37,500

(2)	Recorded cost	R\$ 37,500
	Less: Residual value	<u>5,000</u>
	Depreciable cost.....	R\$ 32,500
	Years of useful life	<u>÷ 5</u>
	Annual depreciation	<u>R\$ 6,500</u>

Depreciation Expense.....	6,500	
Accumulated Depreciation—Equipment....		6,500

(b) (1)	Recorded cost	R\$ 80,000
	Less: Residual value	<u>5,000</u>
	Depreciable cost.....	R\$ 75,000
	Years of useful life	<u>÷ 4</u>
	Annual depreciation	<u>R\$ 18,750</u>

(2)	Book Value at		Annual	
	Beginning	DDB	Depreciation	Accumulated
Year	of Year	Rate	Expense	Depreciation
2017	R\$80,000	50%*	R\$40,000	R\$40,000
2018	40,000	50%	20,000	60,000
2019	20,000	50%	10,000	70,000
2020	10,000	50%	5,000	75,000

***100% ÷ 4-year useful life = 25% X 2 = 50%.**

PROBLEM 9-3A (Continued)

- (3) Depreciation cost per unit = $(R\$80,000 - R\$5,000)/125,000$ units = R\$.60 per unit.

Annual Depreciation Expense

2017:	R\$.60 X 42,000 =	R\$25,200
2018:	.60 X 37,000 =	22,200
2019:	.60 X 28,000 =	16,800
2020:	.60 X 18,000 =	10,800

- (c) The declining-balance method reports the highest amount of depreciation expense the first year while the straight-line method reports the lowest. In the fourth year, the straight-line method reports the highest amount of depreciation expense while the declining-balance method reports the lowest.

These facts occur because the declining-balance method is an accelerated depreciation method in which the largest amount of depreciation is recognized in the early years of the asset's life. If the straight-line method is used, the same amount of depreciation expense is recognized each year. Therefore, in the early years less depreciation expense will be recognized under this method than under the declining-balance method while more will be recognized in the later years.

The amount of depreciation expense recognized using the units-of-activity method is dependent on production, so this method could recognize more or less depreciation expense than the other two methods in any year depending on output.

No matter which of the three methods is used, the same total amount of depreciation expense will be recognized over the four-year period.

PROBLEM 9-4A

<u>Year</u>	<u>Depreciation Expense</u>	<u>Accumulated Depreciation</u>
2015	£12,000 ^(a)	£12,000
2016	12,000	24,000
2017	9,600 ^(b)	33,600
2018	9,600	43,200
2019	9,600	52,800
2020	11,400 ^(c)	64,200
2021	11,400	75,600

$$\begin{array}{l} \text{(a)} \quad \frac{\pounds 80,000 - \pounds 8,000}{6 \text{ years}} = \pounds 12,000 \end{array}$$

$$\begin{array}{l} \text{(b)} \quad \frac{\text{Book value} - \text{Residual value}}{\text{Remaining useful life}} = \frac{\pounds 56,000 - \pounds 8,000}{5 \text{ years}} = \pounds 9,600 \end{array}$$

$$\begin{array}{l} \text{(c)} \quad \frac{\pounds 27,200 - \pounds 4,400}{2 \text{ years}} = \pounds 11,400 \end{array}$$

PROBLEM 9-5A

(a)	Apr. 1	Land	2,200,000	
		Cash.....		2,200,000
May 1		Depreciation Expense.....	25,000	
		Accumulated Depreciation— Equipment (€750,000 X 1/10 X 4/12).....		25,000
1		Cash	466,000	
		Accumulated Depreciation— Equipment.....	325,000	
		Equipment.....		750,000
		Gain on Disposal of Plant Assets		41,000
		Cost €750,000		
		Accum. depreciation— equipment	<u>325,000</u>	
		[(€750,000 X 1/10 X 4) + €25,000]		
		Book value	425,000	
		Cash proceeds	<u>466,000</u>	
		Gain on disposal	<u>€ 41,000</u>	
June 1		Cash	1,800,000	
		Land.....		300,000
		Gain on Disposal of Plant Assets		1,500,000
July 1		Equipment.....	2,450,000	
		Cash.....		2,450,000
Dec. 31		Depreciation Expense.....	50,000	
		Accumulated Depreciation— Equipment (€500,000 X 1/10).....		50,000
31		Accumulated Depreciation— Equipment.....	500,000	
		Equipment.....		500,000

PROBLEM 9-5A (Continued)

Cost	€500,000
Accum. depreciation— equipment (€500,000 X 1/10 X 10)	500,000
Book value	<u>€ 0</u>

(b)	Dec. 31	Depreciation Expense	530,000	
		Accumulated Depreciation— Buildings		530,000
		(€26,500,000 X 1/50)		
	31	Depreciation Expense	3,997,500	
		Accumulated Depreciation— Equipment		3,997,500
		(€38,750,000* X 1/10)	€3,875,000	
		[(€2,450,000 X 1/10) X 6/12]	<u>122,500</u>	
			<u>€3,997,500</u>	

*(€40,000,000 – €750,000 – €500,000)

(c) **JIMENEZ COMPANY SA** **Partial Statement of Financial Position** **December 31, 2017**

Plant Assets*			
Land		€	4,900,000
Buildings.....	€26,500,000		
Less: Accumulated depreciation— buildings.....	<u>12,630,000</u>		13,870,000
Equipment.....	41,200,000		
Less: Accumulated depreciation— equipment	<u>8,247,500</u>		<u>32,952,500</u>
Total plant assets			<u>€51,722,500</u>

*See T-accounts which follow.

PROBLEM 9-5A (Continued)

Land

Bal.	3,000,000	June 1	300,000
Apr. 1	2,200,000		
Bal.	4,900,000		

Buildings

Bal.	26,500,000		
Bal.	26,500,000		

Accumulated Depreciation—Buildings

	Bal.	12,100,000
	Dec. 31 adj.	530,000
	Bal.	12,630,000

Equipment

Bal.	40,000,000	May 1	750,000
July 1	2,450,000	Dec. 31	500,000
Bal.	41,200,000		

Accumulated Depreciation—Equipment

May 1	325,000	Bal.	5,000,000
Dec. 31	500,000	May 1	25,000
		Dec. 31	50,000
		Dec. 31 adj.	3,997,500
		Bal.	8,247,500

PROBLEM 9-6A

(a)	Accumulated Depreciation—Equipment	22,000	
	Loss on Disposal of Plant Assets	28,000	
	Equipment		50,000
(b)	Cash	25,000	
	Accumulated Depreciation—Equipment	22,000	
	Loss on Disposal of Plant Assets	3,000	
	Equipment		50,000
(c)	Cash	31,000	
	Accumulated Depreciation—Equipment	22,000	
	Gain on Disposal of Plant Assets		3,000
	Equipment		50,000

PROBLEM 9-7A

(a)	Jan. 2	Patents	45,000	
		Cash.....		45,000
	Jan.–	Research and Development Expense	168,000	
	June	Cash.....		168,000
	Sept. 1	Advertising Expense.....	58,000	
		Cash.....		58,000
	Oct. 1	Franchises	100,000	
		Cash.....		100,000
(b)	Dec. 31	Amortization Expense.....	11,000	
		Patents		11,000
		[(£60,000 X 1/10) + (£45,000 X 1/9)]		
	31	Amortization Expense.....	5,425	
		Franchises.....		5,425
		[(£48,000 X 1/10) +		
		(£100,000 X 1/40 X 3/12)]		
(c)	Intangible Assets			
		Patents (£105,000 cost – £17,000 amortization) (1)		£ 88,000
		Franchises (£148,000 cost – £24,625 amortization) (2)		<u>123,375</u>
		Total intangible assets.....		<u>£211,375</u>

(1) Cost (£60,000 + £45,000); amortization (£6,000 + £11,000).

(2) Cost (£48,000 + £100,000); amortization (£19,200 + £5,425).

PROBLEM 9-8A

1.	Research and Development Expense	147,000	
	Patents		147,000
	Patents.....	7,350	
	Amortization Expense		
	[€10,350 – (€60,000 X 1/20)]		7,350
2.	Goodwill	800	
	Amortization Expense.....		800

Note: Goodwill should not be amortized because it has an indefinite life unlike Patents.

PROBLEM 9-9A

(a)	Luō		Zhào	
	<hr/>		<hr/>	
Asset turnover	$\frac{\text{HK\$1,240,000}}{\text{HK\$2,000,000}}$	= .62 times	$\frac{\text{HK\$1,110,000}}{\text{HK\$1,500,000}}$	= .74 times

- (b) Based on the asset turnover, Zhào is more effective in using assets to generate sales. Its asset turnover is more than 19% higher than Luō's ratio.

PROBLEM 9-1B

Item	Land	Buildings	Other Accounts	
1	£ 9,000			
2			£ 6,100	Property Taxes Expense
3		£520,000		
4		19,000		
5	100,000			
6			18,000	Land Improvements
7		9,000		
8			6,000	Land Improvements
9	19,000			
10	(4,200)			
	<u>£123,800</u>	<u>£548,000</u>		

PROBLEM 9-2B

(a)			Accumulated Depreciation 12/31
	Year	Computation	
		MACHINE 1	
	2014	¥100,000 X 12.5% = ¥12,500	¥12,500
	2015	¥100,000 X 12.5% = ¥12,500	25,000
	2016	¥100,000 X 12.5% = ¥12,500	37,500
	2017	¥100,000 X 12.5% = ¥12,500	50,000
		MACHINE 2	
	2015	¥150,000 X 20% = ¥30,000	¥30,000
	2016	¥120,000 X 20% = ¥24,000	54,000
	2017	¥ 96,000 X 20% = ¥19,200	73,200
		MACHINE 3	
	2017	1,300 X (¥85,000 ÷ 25,000) = ¥4,420	¥ 4,420
(b)			
	Year	Depreciation Computation	Expense
		MACHINE 2	
(1)	2015	¥150,000 X 20% X 8/12 = ¥20,000	<u>¥20,000</u>
(2)	2016	¥130,000 X 20% = ¥26,000	<u>¥26,000</u>

PROBLEM 9-3B

(a) (1)	Purchase price	€ 55,000
	Sales tax	3,300
	Shipping costs	325
	Insurance during shipping	75
	Installation and testing	<u>1,300</u>
	Total cost of machine	<u>€ 60,000</u>

Equipment.....	60,000	
Cash.....		60,000

(2)	Recorded cost	€ 60,000
	Less: Residual value	<u>6,000</u>
	Depreciable cost.....	€ 54,000
	Years of useful life	<u>÷ 4</u>
	Annual depreciation	<u>€ 13,500</u>

Depreciation Expense.....	13,500	
Accumulated Depreciation—		
Equipment.....		13,500

(b) (1)	Recorded cost	€130,000
	Less: Residual value	<u>10,000</u>
	Depreciable cost.....	€120,000
	Years of useful life	<u>÷ 5</u>
	Annual depreciation	<u>€ 24,000</u>

(2)	Book Value at Beginning of Year	DDB Rate	Annual Depreciation Expense	Accumulated Depreciation
2017	€130,000	40%*	€52,000	€52,000
2018	78,000	40%	31,200	83,200
2019	46,800	40%	18,720	101,920
2020	28,080	40%	11,232	113,152
2021	16,848	40%	6,848**	120,000

*100% ÷ 5-year useful life = 20% X 2 = 40%.

**€16,848 – €10,000 = €6,848.

PROBLEM 9-3B (Continued)

- (3) Depreciation cost per unit = $(€130,000 - €10,000)/24,000$ units = €5.00 per unit.

Annual Depreciation Expense

2017:	€5.00 X 4,700 = €23,500
2018:	5.00 X 8,200 = 41,000
2019:	5.00 X 6,800 = 34,000
2020:	5.00 X 2,500 = 12,500
2021:	5.00 X 1,800 = 9,000

- (c) The units-of-activity method reports the lowest amount of depreciation expense the first year while the declining-balance method reports the highest. In the fifth year, the declining-balance method reports the lowest amount of depreciation expense while the straight-line method reports the highest.

These facts occur because the declining-balance method is an accelerated depreciation method in which the largest amount of depreciation is recognized in the early years of the asset's life. If the straight-line method is used, the same amount of depreciation expense is recognized each year. Therefore, in the early years less depreciation expense will be recognized under this method than under the declining-balance method while more will be recognized in the later years.

The amount of depreciation expense recognized using the units-of-activity method is dependent on production, so this method could recognize more or less depreciation expense than the other two methods in any year depending on output.

No matter which of the three methods is used, the same total amount of depreciation expense will be recognized over the four-year period.

PROBLEM 9-4B

<u>Year</u>	<u>Depreciation Expense</u>	<u>Accumulated Depreciation</u>
2015	£9,000 ^(a)	£ 9,000
2016	9,000	18,000
2017	7,200 ^(b)	25,200
2018	7,200	32,400
2019	7,200	39,600
2020	8,700 ^(c)	48,300
2021	8,700	57,000

$$\text{(a) } \frac{£60,000 - £6,000}{6 \text{ years}} = £9,000$$

$$\text{(b) } \frac{\text{Book value} - \text{Residual value}}{\text{Remaining useful life}} = \frac{£42,000 - £6,000}{5 \text{ years}} = £7,200$$

$$\text{(c) } \frac{£20,400 - £3,000}{2 \text{ years}} = £8,700$$

PROBLEM 9-5B

(a)	Mar. 1	Land	1,350,000	
		Cash.....		1,350,000
Apr. 1		Depreciation Expense.....	10,500	
		Accumulated Depreciation— Equipment		10,500
		(£420,000 X 1/10 X 3/12)		
1		Cash	248,000	
		Accumulated Depreciation— Equipment.....	178,500	
		Equipment		420,000
		Gain on Disposal of Plant Assets		6,500
		Cost	£420,000	
		Accum. depreciation— equipment	178,500	
		[(£420,000 X 1/10 X 4) + £10,500]		
		Book value	241,500	
		Cash proceeds	248,000	
		Gain on disposal	<u>£ 6,500</u>	
June 1		Cash	1,000,000	
		Land.....		310,000
		Gain on Disposal of Plant Assets		690,000
Oct. 1		Equipment.....	1,260,000	
		Cash.....		1,260,000
Dec. 31		Depreciation Expense.....	30,000	
		Accumulated Depreciation— Equipment		30,000
		(£300,000 X 1/10)		
31		Accumulated Depreciation— Equipment.....	300,000	
		Equipment		300,000

PROBLEM 9-5B (Continued)

Cost	£300,000
Accum. depreciation— equipment (£300,000 X 1/10 X 10)	300,000
Book value	<u>£ 0</u>

(b)	Dec. 31	Depreciation Expense	570,000	
		Accumulated Depreciation— Buildings		570,000
		(£28,500,000 X 1/50)		
	31	Depreciation Expense	2,959,500	
		Accumulated Depreciation— Equipment		2,959,500
		(£29,280,000* X 1/10)	£2,928,000	
		[(£1,260,000 X 1/10) X 3/12]	<u>31,500</u>	
			<u>\$2,959,500</u>	

*(£30,000,000 – £420,000 – £300,000)

(c) **DURANGO COMPANY**
Partial Statement of Financial Position
December 31, 2017

Plant Assets*		
Land		£ 3,040,000
Buildings.....	£28,500,000	
Less: Accumulated depreciation— buildings.....	<u>12,670,000</u>	15,830,000
Equipment.....	30,540,000	
Less: Accumulated depreciation— equipment	<u>6,521,500</u>	<u>24,018,500</u>
Total plant assets		<u>£42,888,500</u>

*See T-accounts which follow.

PROBLEM 9-5B (Continued)

Land

Bal.	2,000,000	June 1	310,000
Mar. 1	1,350,000		
Bal.	3,040,000		

Buildings

Bal.	28,500,000		
Bal.	28,500,000		

Accumulated Depreciation—Buildings

	Bal.	12,100,000
	Dec. 31 adj.	570,000
	Bal.	12,670,000

Equipment

Bal.	30,000,000	May 1	420,000
Oct. 1	1,260,000	Dec. 31	300,000
Bal.	30,540,000		

Accumulated Depreciation—Equipment

Apr. 1	178,500	Bal.	4,000,000
Dec. 31	300,000	Apr. 1	10,500
		Dec. 31	30,000
		Dec. 31 adj.	2,959,500
		Bal.	6,521,500

PROBLEM 9-6B

(a)	Accumulated Depreciation—Equipment	29,000	
	Loss on Disposal of Plant Assets	11,000	
	Equipment		40,000
(b)	Cash	24,000	
	Accumulated Depreciation—Equipment	29,000	
	Gain on Disposal of Plant Assets		13,000
	Equipment		40,000
(c)	Cash	10,000	
	Accumulated Depreciation—Equipment	29,000	
	Loss on Disposal of Plant Assets	1,000	
	Equipment		40,000

PROBLEM 9-7B

- | | | | | |
|-----|--|---|---------|-----------------|
| (a) | Jan. 2 | Patents | 48,600 | |
| | | Cash..... | | 48,600 |
| | Jan.–
June | Research and Development Expense.. | 230,000 | |
| | | Cash..... | | 230,000 |
| | Sept. 1 | Advertising Expense | 125,000 | |
| | | Cash..... | | 125,000 |
| | Oct. 1 | Copyrights | 192,000 | |
| | | Cash..... | | 192,000 |
| (b) | Dec. 31 | Amortization Expense..... | 15,400 | |
| | | Patents | | 15,400 |
| | | [(£100,000 X 1/10) + (£48,600 X 1/9)] | | |
| | 31 | Amortization Expense..... | 9,200 | |
| | | Copyrights..... | | 9,200 |
| | | [(£80,000 X 1/10) +
(£192,000 X 1/40 X 3/12)] | | |
| (c) | Intangible Assets | | | |
| | | Patents (£148,600 cost – £25,400 amortization) (1) | | £123,200 |
| | | Copyrights (£272,000 cost – £41,200 amortization) (2) | | <u>230,800</u> |
| | | Total intangible assets..... | | <u>£354,000</u> |
| | (1) Cost (£100,000 + £48,600); amortization (£10,000 + £15,400). | | | |
| | (2) Cost (£80,000 + £192,000); amortization (£32,000 + £9,200). | | | |
| (d) | The intangible assets of the company consist of two patents and two copyrights. One patent with a total cost of £148,600 is being amortized in two segments (£100,000 over 10 years and £48,600 over 9 years); the other patent was obtained at no recordable cost. A copyright with a cost of £80,000 is being amortized over 10 years; the other copyright with a cost of £192,000 is being amortized over 40 years. | | | |

PROBLEM 9-8B

1.	Research and Development Expense	110,000	
	Patents		110,000
	Patents.....	5,500	
	Amortization Expense		
	[₹ 9,000 – (₹ 70,000 X 1/20)].....		5,500
2.	Goodwill	2,500	
	Amortization Expense.....		2,500

Note: Goodwill should not be amortized because it has an indefinite life unlike Patents.

PROBLEM 9-9B

(a)	Ling Ltd.		Tseng Ltd.	
	<hr/>		<hr/>	
Asset turnover	$\frac{\text{NT\$36,000,000}}{\text{NT\$30,000,000}} = 1.20 \text{ times}$		$\frac{\text{NT\$27,900,000}}{\text{NT\$30,600,000}} = .91 \text{ times}$	

- (b) Based on the asset turnover, Ling is more effective in using assets to generate sales. Its asset turnover is 32% higher than Tseng's asset turnover.

CHAPTER 9 COMPREHENSIVE PROBLEM SOLUTION

(a) 1. Equipment	13,780	
Cash		13,780
2. Depreciation Expense.....	450	
Accumulated Depreciation—Equipment		450
Cash	3,500	
Accumulated Depreciation—Equipment	2,250	
Equipment.....		5,000
Gain on Disposal of Plant Assets		750
3. Accounts Receivable	9,400	
Sales Revenue		9,400
Cost of Goods Sold.....	6,600	
Inventory		6,600
4. Bad Debt Expense (£4,000 – £300).....	3,700	
Allowance for Doubtful Accounts		3,700
5. Interest Receivable (£10,000 X .08 X 9/12).....	600	
Interest Revenue		600
6. Insurance Expense (£4,400 X 3/6)	2,200	
Prepaid Insurance		2,200
7. Depreciation Expense		
(£160,000 – £20,000) ÷ 40	3,500	
Accumulated Depreciation—Buildings.....		3,500
8. Depreciation Expense.....	9,900	
Accumulated Depreciation—Equipment		
[(£60,000 – £5,000) – (£55,000 X .10)] ÷ 5		9,900
9. Depreciation Expense.....	1,704	
Accumulated Depreciation—Equipment		
[(£13,780 – £1,000) ÷ 5] X 8/12		1,704

COMPREHENSIVE PROBLEM (Continued)

10. Amortization Expense	800	
Patents		800
11. Salaries and Wages Expense	2,200	
Salaries and Wages Payable		2,200
12. Unearned Rent Revenue (£6,000 ÷ 4)	1,500	
Rent Revenue		1,500
13. Interest Expense (£11,000 + £35,000) X .09	4,140	
Interest Payable		4,140
14. Income Tax Expense	17,000	
Income Taxes Payable		17, 000

COMPREHENSIVE PROBLEM (Continued)

(b)

RAYMOND COMPANY
Adjusted Trial Balance
December 31, 2017

	Debits	Credits
--	--------	---------

Cash.....	£	17,720	
Accounts Receivable.....		46,200	
Notes Receivable		10,000	
Interest Receivable		600	
Inventory.....		29,600	
Prepaid Insurance.....		2,200	
Land		20,000	
Buildings		160,000	
Equipment		68,780	
Patents.....		7,200	
Allowance for Doubtful Accounts.....			£ 4,000
Accumulated Depreciation—Buildings			52,500
Accumulated Depreciation—Equipment			33,804
Accounts Payable			28,300
Income Taxes Payable.....			17,000
Salaries and Wages Payable			2,200
Unearned Rent Revenue.....			4,500
Notes Payable (due in 2018).....			11,000
Interest Payable			4,140
Notes Payable (due after 2018)			35,000
Share Capital—Ordinary.....			50,000
Retained Earnings.....			63,600
Dividends.....		12,000	
Sales Revenue.....			919,400
Interest Revenue			600
Rent Revenue			1,500
Gain on Disposal of Plant Assets			750
Bad Debt Expense.....		3,700	
Cost of Goods Sold.....		636,600	
Depreciation Expense.....		15,554	
Income Tax Expense.....		17,000	
Insurance Expense		2,200	
Interest Expense		4,140	
Other Operating Expenses		61,800	
Amortization Expense		800	
Salaries and Wages Expense.....		112,200	
Total		<u>£1,228,294</u>	<u>£1,228,294</u>

COMPREHENSIVE PROBLEM (Continued)

(c) **RAYMOND COMPANY**
Income Statement
For the Year Ended December 31, 2017

Sales Revenue		£919,400
Cost of Goods Sold		<u>636,600</u>
Gross Profit		282,800
Operating Expenses		
Salaries and Wages Expense	£112,200	
Other Operating Expenses	61,800	
Depreciation Expense	15,554	
Bad Debt Expense	3,700	
Insurance Expense	2,200	
Amortization Expense	<u>800</u>	
Total Operating Expenses		<u>196,254</u>
Income From Operations		86,546
Other Income and Expense		
Rent Revenue	1,500	
Gain on Disposal of Plant Assets	750	
Interest Revenue	<u>600</u>	2,850
Interest Expense		<u>4,140</u>
Income Before Income Taxes		85,256
Income Tax Expense		<u>17,000</u>
Net Income		<u>£ 68,256</u>

RAYMOND COMPANY
Retained Earnings Statement
For the Year Ended December 31, 2017

Retained Earnings, 1/1/17	£ 63,600
Add: Net Income	<u>68,256</u>
	131,856
Less: Dividends	<u>12,000</u>
Retained Earnings, 12/31/17	<u>£119,856</u>

COMPREHENSIVE PROBLEM (Continued)

(d)

RAYMOND COMPANY Statement of Financial Position December 31, 2017

<u>Assets</u>			
Intangible Assets			
Patents			£ 7,200
Property, Plant, and Equipment			
Land		£ 20,000	
Buildings.....	£160,000		
Less Accum. Depr.—Buildings	<u>52,500</u>	107,500	
Equipment	68,780		
Less Accum. Depr.—Equipment.....	<u>33,804</u>	<u>34,976</u>	
Total Property, Plant and Equipment.....			162,476
Current Assets			
Prepaid Insurance		2,200	
Inventory.....		29,600	
Interest Receivable		600	
Notes Receivable		10,000	
Accounts Receivable			
Less Allowance for Doubtful Accounts	46,200		
Cash	<u>4,000</u>	42,200	
Total Current Assets		<u>17,720</u>	<u>102,320</u>
Total Assets.....			<u>£271,996</u>

Equity and Liabilities

Equity			
Share Capital—Ordinary.....		£ 50,000	
Retained Earnings.....		<u>119,856</u>	£ 169,856
Non-current Liabilities			
Notes Payable		35,000	
Current Liabilities			
Notes Payable	11,000		
Accounts Payable	28,300		
Income Taxes Payable	17,000		
Interest Payable.....	4,140		
Unearned Rent Revenue.....	4,500		
Salaries and Wages Payable	<u>2,200</u>		
Total Current Liabilities.....		<u>67,140</u>	
Total Liabilities.....			<u>102,140</u>
Total Equity and Liabilities.....			<u>£271,996</u>

(a)	Purchase price.....	\$36,500
	Painting	2,500
	Shelving	<u>1,500</u>
	Cost of van.....	<u>\$40,500</u>

(b) Straight-line depreciation

<u>Year</u>	<u>Depreciable Cost</u>	X	<u>Deprec. Rate</u>	=	<u>Deprec. Expense</u>	<u>Accum. Deprec.</u>	<u>Net Book Value</u>
							<u>\$40,500</u>
2017	\$33,000*		20% X 4/12		\$2,200	\$ 2,200	38,300
2018	33,000		20%		6,600	8,800	31,700
2019	33,000		20%		6,600	15,400	25,100

*\$40,500 – \$7,500

Double-declining-balance depreciation

<u>Year</u>	<u>NBV (Beg. of Year)</u>	X	<u>Deprec. Rate</u>	=	<u>Deprec. Expense</u>	<u>Accum. Deprec.</u>	<u>Net Book Value</u>
							<u>\$40,500</u>
2017	\$40,500		40% X 4/12		\$ 5,400	\$ 5,400	35,100
2018	35,100		40%		14,040	19,440	21,060
2019	21,060		40%		8,424	27,864	12,636

Units-of-activity depreciation

<u>Year</u>	<u>Units of Activity</u>	X	<u>Deprec. Cost/Unit</u>	=	<u>Deprec. Expense</u>	<u>Accum. Deprec.</u>	<u>Net Book Value</u>
							<u>\$40,500</u>
2017	15,000		\$0.165*		\$ 2,475	\$ 2,475	38,025
2018	45,000		0.165		7,425	9,900	30,600
2019	50,000		0.165		8,250	18,150	22,350

*(\$40,500 – \$7,500) ÷ 200,000 = \$0.165 per mile

MC9 (Continued)

- (c) Impact on Matcha Creation's statement of financial position and income statement in 2017:

	<u>Straight-Line</u>	<u>Double declining Balance</u>	<u>Units-of-Activity</u>
Cost of asset	\$40,500	\$40,500	\$40,500
Accumulated depreciation	<u>(2,200)</u>	<u>(5,400)</u>	<u>(2,475)</u>
Net book value	<u>\$38,300</u>	<u>\$35,100</u>	<u>\$38,025</u>
 Depreciation expense	 <u>\$ 2,200</u>	 <u>\$ 5,400</u>	 <u>\$ 2,475</u>

The double-declining method of depreciation will result in the lowest amount of net income reported, the lowest amount of equity reported, and the lowest net book value of the asset reported.

The straight-line method of depreciation will result in the greatest amount of net income reported, the greatest amount of equity reported, and the greatest net book value of the asset reported.

- (d) Over the van's 5-year useful life, the total depreciation will be \$33,000 (resulting in a net book value equal to the residual value of \$7,500) under each of the methods. The impact will affect only the timing of the depreciation expense recognized each year.
- (e) The units-of-activity method may provide Mei-ling with a more accurate assessment of usage of the van in relation to the amount of revenue earned. As long as Mei-ling is willing to track the number of miles driven over the course of the year, then this would be the method recommended.

- (a) Property, plant, and equipment is reported at net book value, on the December 31, 2013, statement of financial position at NT\$792,665.9 million. The cost of the property, plant, and equipment is NT\$1,669,955.9 million as shown in Note 15.
- (b) Depreciation expense is calculated on a straight-line basis over an asset's estimated useful life. (see Note 4).
- (c) Depreciation expense was:
- | | |
|-------|------------------------|
| 2013: | NT\$153,979.8 million. |
| 2012: | NT\$129,168.5 million. |
- (d) TSMC's capital spending was:
- | | |
|-------|------------------------|
| 2013: | NT\$287,594.8 million. |
| 2012: | NT\$246,137.4 million. |
- (e) TSMC reports its intangible assets on the statement of financial position, under the non-current assets section and in Note 16. Their intangibles consisted of goodwill, technology license fees, software and system design costs, and patents.

(a)	Petra Foods	Nestlé
Asset turnover ratio	$\text{US\$508,800} \div \frac{\text{US\$1,219,770} + \text{US\$465,896}}{2}$ =.60 times	$\text{CHF92,158} \div \frac{\text{CHF125,877} + \text{CHF120,442}}{2}$ = .75 times

- (b) The asset turnover ratio measures how efficiently a company uses its assets to generate sales. It shows the dollars of sales generated by each dollar invested in assets. Nestlé's asset turnover ratio (.75) was 25% higher than Petra Foods' (.60). Therefore, it can be concluded that Nestlé was more efficient during the most recent period in utilizing assets to generate sales.

Answers will vary depending on the company selected.

(a) Givens Company—Straight-line method

Annual Depreciation

Buildings $[(£320,000 - £20,000) \div 40]$	£ 7,500
Equipment $[(£125,000 - £10,000) \div 10]$	<u>11,500</u>
Total annual depreciation.....	<u>£19,000</u>

Total accumulated depreciation $(£19,000 \times 3)$	<u>£57,000</u>
---	----------------

Runge Company—Double-declining-balance method

Year	Asset	Computation	Annual Depreciation	Accumulated Depreciation
2015	Buildings	$£320,000 \times 5\%$	£16,000	
	Equipment	$£125,000 \times 20\%$	<u>25,000</u>	£41,000
2016	Buildings	$£304,000 \times 5\%$	15,200	
	Equipment	$£100,000 \times 20\%$	<u>20,000</u>	35,200
2017	Buildings	$£288,800 \times 5\%$	14,440	
	Equipment	$£ 80,000 \times 20\%$	<u>16,000</u>	<u>30,440</u>
				<u>£106,640</u>

(b)

Year	Givens Company Net Income	Runge Company Net Income As Adjusted	Computations for Runge Company
2015	£ 84,000	£ 90,000	$£68,000 + £41,000 - £19,000 = £90,000$
2016	88,400	92,200	$£76,000 + £35,200 - £19,000 = £92,200$
2017	<u>90,000</u>	<u>96,440</u>	$£85,000 + £30,440 - £19,000 = £96,440$
Total net income	<u>£262,400</u>	<u>£278,640</u>	

- (c) As shown above, when the two companies use the same depreciation method, Runge Company is more profitable than Givens Company. When the two companies are using different depreciation methods, Runge Company has more cash than Givens Company for two reasons:

BYP 9-4 (Continued)

(1) its earnings are generating more cash than the earnings of Givens Company, and (2) depreciation expense has no effect on cash. Cash generated by operations can be arrived at by adding depreciation expense to net income. If this is done, it can be seen that Runge Company's operations generate more cash ($\text{£}229,000 + \text{£}106,640 = \text{£}335,640$) than Givens Company's ($\text{£}262,400 + \text{£}57,000 = \text{£}319,400$). Based on the above analysis, Linda Yanik should buy Runge Company. It not only is in a better financial position than Givens Company, but it is also more profitable.

To: Instructor

From: Student

Re: American Exploration Company (USA) footnote

American Exploration Company (USA) accounts for its oil and gas activities using the successful efforts approach. Under this method, only the costs of successful exploration are included in the cost of the natural resource, and the costs of unsuccessful explorations are expensed.

Depletion is determined using the units-of-activity method. Under this method, a depletion cost per unit is computed based on the total number of units expected to be extracted. Depletion expense for the year is determined by multiplying the units extracted and sold by the depletion cost per unit.

(a) The stakeholders in this situation are:

- Edward Mohling, president of Dieker Container AG.
- Betty Feters, controller.
- The stockholders of Dieker Container AG.
- Potential investors in Dieker Container AG.

(b) The intentional misstatement of the life of an asset or the amount of the residual value is unethical for whatever the reason. There is nothing per se unethical about changing the estimate either of the life of an asset or of an asset's residual value if the change is an attempt to better match cost and revenues and is a better allocation of the asset's depreciable cost over the asset's useful life. In this case, it appears from the controller's reaction that the revisions in the life are intended only to improve earnings and, therefore, are unethical.

The fact that the competition uses a longer life on its equipment is not necessarily relevant. The competition's maintenance and repair policies and activities may be different. The competition may use its equipment fewer hours a year (e.g., one shift rather than two shifts daily) than Dieker Container AG.

(c) Income before income taxes in the year of change is increased €140,000 by implementing the president's proposed changes.

	<u>Old Estimates</u>
Asset cost	€3,100,000
Estimated residual	<u>300,000</u>
Depreciable cost	<u>2,800,000</u>
Depreciation per year (1/8)	<u>€ 350,000</u>
	<u>Revised Estimates</u>
Asset cost	€3,100,000
Estimated residual	<u>300,000</u>
Depreciable cost	<u>2,800,000</u>
Depreciation taken to date (€350,000 X 2)	<u>700,000</u>
	<u>2,100,000</u>
Remaining life in years	10 years
Depreciation per year	<u>€ 210,000</u>

GAAP9-1

Component depreciation is a method of allocating the cost of a plant asset into separate parts based on the estimated useful lives of each component. IFRS requires an entity to use component depreciation whenever significant parts of a plant asset have significantly different useful lives. GAAP does not require component depreciation, but does allow companies to use it.

GAAP9-2

Revaluation is an accounting procedure that adjusts plant assets to fair value at the reporting date. Under IFRS revaluation must be applied annually to assets that are experiencing rapid price changes. Revaluation of plant assets is not acceptable under GAAP.

GAAP9-3

Both types of development expenditures relate to the creation of new products but under IFRS one is expensed and the other is capitalized. Development costs incurred before a new product achieves technological feasibility are recorded as development expenses and appear as part of operating expenses on the income statement.

Cost incurred after technological feasibility are recorded as development costs and appear as an intangible asset on the statement of financial position. Under GAAP development costs are expensed as incurred.

GAAP9-4

Component depreciation :

Warehouse component: $(\$280,000 - \$40,000)/20 = \$12,000$

HVAC component: $\$40,000/10 = \$4,000$

Total component depreciation in first year \$16,000

Straight-line depreciation-GAAP: $\$280,000/20 = \$14,000$

GAAP9-5

(a) IFRS entry:		
Research and Development Expense	700,000	
Development Costs	200,000	
Cash.....		900,000
(To record research and development costs)		
 (b) GAAP entry:		
Research and Development Expense	900,000	
Cash.....		900,000
(To record research and development costs)		

GAAP9-6

- (a) Property, plant, and equipment is reported net, book value, on the September 28, 2013, balance sheet at \$16,597,000, 000. The cost of the property, plant, and equipment is \$28,519,000,000 as shown in Note 3.
- (b) Depreciation is computed by use of the straight-line method over the estimated useful lives of the assets, which for buildings is the lesser of 30 years or the remaining life of the underlying building; between two to five years for machinery and equipment, including product tooling and manufacturing process equipment; and the shorter of lease terms or ten years for leasehold improvements.
- (c) Depreciation and amortization expense was:
- 2013: \$6,757,000,000.
2012: \$3,277,000,000.
2011: \$1,814,000,000.
- (d) Apple's capital spending was:
- 2013: \$8,165,000,000.
2012: \$8,295,000,000.
- (e) Apple reports (in Note 4) definite-lived intangible assets (net of amortization) of \$4,079,000,000, and definite-lived non-amortizable trademarks of \$100,000,000. In addition, it reported goodwill of \$1,600,000,000.