CHAPTER 9

Long-Lived Assets

ASSIGNMENT CLASSIFICATION TABLE

Learning Objectives	Questions	Brief Exercises	Exercises	Problems Set A	Problems Set B
1. Calculate the cost of property, plant, and equipment.	1, 2, 3, 4, 5	1, 2, 3, 4	1, 2, 3, 12	1, 2, 3, 4, 6	1, 2, 3, 4, 6
2. Apply depreciation methods to property, plant, and equipment.	6, 7, 8, 9,	5, 6, 7, 8, 9	2, 3, 4, 5, 12	2, 3, 6, 7, 8, 9	2, 3, 6, 7, 8, 9, 12
3. Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.	9, 10, 11, 12, 13,	10, 11	6, 7, 8	4, 5, 6, 12	4, 5, 6
4. Demonstrate how to account for property, plant, and equipment disposals.	14, 15, 16, 17,	12, 13, 14	9, 10	6, 7, 8, 9	6, 7, 8, 9
5. Record natural resource transactions and calculate depletion.	18, 19, 20	15	11	12	12
6. Identify the basic accounting issues for intangible assets and goodwill.	21, 22	16	12, 13, 14	10, 11	10, 11
7. Illustrate the reporting and analysis of long-lived assets.	23, 24	17, 18, 19	15, 16	9, 11, 12, 13	9, 11, 12, 13

ASSIGNMENT CHARACTERISTICS TABLE

Problem Number	Description	Difficulty Level	Time Allotted (min.)
1A	Record property transactions.	Simple	20-30
2A	Allocate cost and calculate partial period depreciation.	Moderate	20-30
3A	Determine cost; calculate and compare depreciation under different methods.	Moderate	30-40
4A	Account for operating and capital expenditures and asset impairments.	Moderate	20-30
5A	Record impairment and calculate revised depreciation.	Moderate	20-30
6A	Record acquisition, depreciation, impairment and disposal of land and building.	Moderate	25-35
7A	Calculate and compare depreciation and gain or loss on disposal under three methods of depreciation.	Moderate	30-40
8A	Record acquisition, depreciation and disposal of equipment.	Moderate	30-40
9A	Record property, plant and equipment transactions; prepare partial financial statements.	Complex	40-50
10A	Correct errors in recording intangible asset transactions.	Complex	15-20
11A	Record intangible asset transactions; prepare partial balance sheet.	Moderate	30-40
12A	Record natural resource transactions; prepare partial financial statements.	Moderate	25-30
13A	Calculate ratios and comment.	Moderate	15-25
1B	Record property transactions.	Simple	20-30
2B	Allocate cost and calculate partial period depreciation.	Moderate	20-30
3B	Determine cost; calculate and compare depreciation under different methods.	Moderate	30-40
4B	Account for operating and capital expenditures and asset impairments.	Moderate	20-30
5B	Record impairment and calculate revised depreciation.	Moderate	20-30
6B	Record acquisition, depreciation, impairment and disposal of land and buildings.	Moderate	25-35

ASSIGNMENT CHARACTERISTICS TABLE (Continued)

Problem Number	Description	Difficulty Level	Time Allotted (min.)
7B	Calculate and compare depreciation and gain or loss on disposal under three methods of depreciation.	Moderate	30-40
8B	Record acquisition, depreciation and disposal of furniture.	Moderate	30-40
9B	Record property, plant and equipment transactions; prepare partial financial statements.	Complex	40-50
10B	Correct errors in recording intangible asset transactions.	Complex	15-20
11B	Record intangible asset transactions; prepare partial balance sheet.	Moderate	30-40
12B	Record equipment, note payable, and natural resource transactions; prepare partial financial statements.	Moderate	25-30
13B	Calculate ratios and comment.	Moderate	15-25

BLOOM'S TAXONOMY TABLE

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

Learning Objective	Knowledge	Comprehension	Application		Analysis	Synthesis	Evaluation
1. Calculate the cost of property, plant, and equipment.	Q9-1 Q9-2 BE9-3	Q9-3 Q9-4 Q9-5 E9-3	BE9-1 BE9-2 BE9-4 E9-1 E9-2 E9-12 P9-1A	P9-2A P9-3A P9-4A P9-6A P9-1B P9-2B P9-3B P9-4B P9-6B			
2. Apply depreciation methods to property, plant, and equipment.	Q9-7 Q9-9	Q9-6 Q9-8 Q9-10 Q9-11 E9-3	BE9-5 BE9-6 BE9-7 BE9-8 BE9-9 E9-2 E9-4 E9-5 E9-12 P9-2A	P9-3A P9-6A P9-7A P9-8A P9-9A P9-2B P9-3B P9-6B P9-7B P9-8B P9-9B P9-12B			
3. Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.	Q9-9 Q9-12	Q9-10 Q9-11 Q9-13	BE9-10 BE9-11 E9-6 E9-7 E9-8 P9-4A	P9-5A P9-6A P9-12A P9-4B P9-5B P9-6B			
4. Demonstrate how to account for property, plant, and equipment disposals.	Q9-16	Q9-14 Q9-15 Q9-17	BE9-12 BE9-13 BE9-14 E9-9 E9-10 P9-6A P9-7A	P9-8A P9-9A P9-6B P9-7B P9-8B P9-9B			
5. Record natural resource transactions and calculate depletion.	Q9-18	Q9-19 Q9-20	BE9-15 E9-11	P9-12A P9-12B			
6. Identify the basic accounting issues for intangible assets and goodwill.		Q9-21 Q9-22	BE9-16 E9-12 E9-13 E9-14	P9-10A P9-11A P9-10B P9-11B			
7. Illustrate the reporting and analysis of long-lived assets.	Q9-23 BE9-17	Q9-24	BE9-18 BE9-19 E9-15 P9-9A	P9-11A P9-12A P9-9B P9-11B P9-12B	E9-16 P9-13A P9-13B		

BLOOM'S TAXONOMY TABLE (Continued)

Learning Objective	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Broadening Your Perspective			BYP9-1 BYP9-2 BYP9-3	BYP9-4	BYP9-5	

ANSWERS TO QUESTIONS

1. Three characteristics of property, plant, and equipment include: they (1) have a physical substance (a definite size and shape), (2) are used in the operations of the business, and (3) are not intended for sale to customers.

2. Examples of land improvements are: a road, driveway, sidewalks or parking lot on the property, fencing and underground sprinkler systems.

3. The invoice cost, the cost of the safety inspection, and the cost for the required logo painted on the vehicle are capitalized, as they are required costs to put the vehicle into use. The insurance costs benefit the business for the term of the policy and so the costs should be allocated to the period of benefit from the policy, typically by initially recording the payment as prepaid insurance and then reducing the prepayment, charging insurance expense as the policy expires.

4. The purpose of depreciation is not to accumulate the cash needed to replace an asset. Rather, depreciation is a cost allocation method which records an expense in those accounting periods where the asset has been used and has contributed to the earning of revenues. This charge also reduces the carrying amount of the asset, but it does not involve any cash.

5. The purchase cost must be split between the land and building because the building is depreciated and the land is not. In addition, the cost of each item will be needed to determine any gain or loss on disposal if either one is later sold.

6. Residual value is the estimated amount that a company would obtain from disposing of a long-lived asset at the end of its useful life. Residual value is not depreciated, since the amount is expected to be recovered at the end of the asset's useful life. Residual value is used in the formula for calculating periodic depreciation using the straight line and unit-of-production methods. Residual value is used in an indirect way in the diminishing balance method. Rather than using residual value to reduce the depreciable amount, as is done using the other two methods, the amount of the depreciation recorded is limited to the amount that will cause the carrying amount to equal the residual value of the asset.

7. The three factors that affect the calculation of depreciation include: cost, useful life and residual value. The cost of a depreciable asset must include all necessary costs to get the asset ready for use. The useful life is the period of time an asset is expected to be available for use. This length may be measured as a function of time or number of units of production. The residual value is the estimated amount that a company would obtain from disposing of the asset at the end of its useful life.

QUESTIONS (Continued)

8. The amount of annual depreciation is different over the useful life of an asset depending on which of the three depreciation methods are being used. The straight-line method creates a constant amount of depreciation over the useful life. The diminishing-balance method is devised to charge a higher amount of depreciation in the earlier part of the useful life of the asset. Lastly, the unit-of-production method is less predictable in that it is based on the amount of use that is being made of the asset.

9. A company should choose the depreciation method it believes will best reflect the pattern over which the asset's future economic benefits are expected to be consumed. The depreciation method must be revised if the expected pattern of consumption of the future economic benefits has changed.

10. Operating expenditures are ordinary repairs made to maintain the operating efficiency and expected productive life of the asset. Because they are recurring expenditures and normally benefit only the current accounting period, they are expensed when incurred. Capital expenditures are additions and improvements made to increase efficiency, productivity, or expected useful life of the asset. Because they benefit future periods, capital expenditures are debited to the asset account affected. Once capitalized, these expenditures are depreciated over their benefiting period.

11. Revision of the depreciation generally occurs when there is a change to any of the three factors that affect the calculation of depreciation: the asset's cost, useful life, or residual value. Depreciation needs to be revised if there are capital expenditures, impairments in the asset's recoverable amount, changes in the depreciation method, or changes in the estimated remaining useful life or residual value. The revisions are based on new information that will affect only current and future periods so there is no revision of depreciation previously recorded.

12. Factors that may contribute to an impairment loss include: obsolescence of a piece of equipment, loss of a market for a product manufactured, bankruptcy of the supplier of replacement parts for equipment, or environmental concerns causing extra costs of disposal at the end of the useful life.

13. Extending the total service life and consequently the estimated remaining useful life of a depreciable asset will reduce the amount of depreciation recorded in the remaining years of use. The carrying amount of the asset will become the new basis to which the business will apply the formula of the depreciation method. The residual value may also be revised.

QUESTIONS (Continued)

14. Depreciation must be updated from the last time depreciation entries were recorded to the date of the sale because the depreciation expense must properly reflect the total period over which the asset's economic benefits are used. Updating depreciation also aids in determining the correct amount of the gain or loss on disposal.

15. The asset and related accumulated depreciation should continue to be reported on the balance sheet, without further depreciation or adjustment, until the asset is retired. Reporting the asset and related accumulated depreciation on the balance sheet informs the reader of the financial statements that the asset is still being used by the company. However, once an asset is fully depreciated, no additional depreciation should be taken on this asset, even if it is still being used. In no situation can the accumulated depreciation exceed the cost of the asset.

16. In a sale of property, plant, or equipment, the carrying amount of the asset is compared to the proceeds from the sale. If the proceeds of the sale exceed the carrying amount of the asset, a gain on disposal occurs. If the proceeds of the sale are less than the carrying amount of the asset sold, a loss on disposal occurs.

    In an exchange, a new asset is received in an exchange for the old asset given up. The gain or loss is calculated by comparing the fair value of the asset given up to its carrying amount. The trade-in allowance on the asset given up is not relevant because it rarely reflects the fair value of the asset that is given up. Instead of using the trade-in allowance, the fair value of the asset given up is used to calculate the gain or loss on the asset being given up. A loss results if the carrying amount of the asset being given up is more than its fair value. A gain results if the carrying amount is less than its fair value.

17. Carrying amount of an item of property, plant, or equipment is a sub-total amount representing the net amount of the cost less the accumulated depreciation. The amount is not a general ledger account and so is not used in journal entries used to record dispositions. Instead, the asset and accumulated depreciation accounts are used in the journal entry.

18. Natural resources have two characteristics that make them different from other long-lived assets: (1) they are physically extracted in operations such as mining, cutting, or pumping; and (2) only an act of nature can replace them. Similar to property, plant, and equipment, natural resources are tangible long lived assets which are expected to last beyond one year and are therefore classified on the balance sheet as non-current. When natural resources are extracted, depletion is recorded, causing an increase in another asset, inventory, which is subsequently sold.

QUESTIONS (Continued)

19. The units-of-production method is a common and ideal method of recording the depletion of natural resources. There is a finite quantity of units of natural resource to be extracted. As extraction occurs, the conversion from one asset (natural resource) to another (inventory) can be measured in units and cost of the units can be fairly applied. Consequently, a more precise charge for depletion can be arrived at that corresponds to the asset created (inventory) when the natural resource is reduced.

20. I disagree. The useful life of some intangible assets might be limited to the legal life of those assets and in that case, I would agree. I disagree with the limitation of the period of amortization to the legal life of intangibles. Some intangible assets have useful lives that are much shorter than their respective legal lives and so it is appropriate for the proper matching of expenses to revenues for the shorter length of benefiting periods to be used in the calculation of amortization. In some cases, the legal life could be without time limits. In that case it would not be possible to execute a calculation. Finally, in the case of goodwill, GAAP dictates that no depreciation can be recorded under any circumstances. Only impairment losses reduce the carrying amount of goodwill.

21. The accounting for tangible and intangible assets is much the same. Tangible and intangible assets are reported at cost, which includes all expenditures necessary to prepare the asset for its intended use. Both tangible and intangible assets with finite lives are amortized over their useful life. In the case of long-lived tangible assets, the useful life or the physical life of the asset will be used as a limit of the length of time the assets will be depreciated. In the case of intangible life, there is no physical limitation in the usefulness of asset and the length of time the asset will be amortized is the shorter of its useful life or its legal life, usually on a straight-line basis. Due to their lack of substance, intangible assets are more likely to have indefinite useful lives and not need to be amortized, but only tested for impairment. This characteristic is the main difference between the accounting of tangible and intangible assets.

22. Goodwill is the value of many favourable attributes that are intertwined in a business enterprise. Goodwill can be identified only with the business as a whole and, unlike other assets, cannot be sold separately. Goodwill is only recorded on the purchase of a business if the purchaser pays a price that is greater than the fair value of the net assets of the business.

QUESTIONS (Continued)

23. Property, plant, and equipment and natural resources are often combined and reported in the balance sheet as “property, plant, and equipment” or “capital assets”. Intangible assets are listed separately after property, plant, and equipment. Goodwill must be disclosed separately. For assets that are depreciated or amortized, the balances of the accumulated depreciation and/or amortization must be disclosed in the balance sheet or in the notes to the financial statements.

    Depreciation and amortization expense for the period must also be disclosed either on the income statement, elsewhere in the financial statements or in the notes to the financial statements. When impairment losses have occurred they should be shown on a separate line on the income statement, with the details disclosed in a note.

    The notes to financial statements should disclose the depreciation or amortization methods and rates that are used. The carrying amount of each major class of long-lived assets should also be disclosed. Companies should also disclose their impairment policy in the notes to the financial statements.

24. I disagree. Higher turnover of assets does not necessarily result in increased profits. A higher asset turnover just means that more revenue or sales are being generated for each dollar of assets. On the other hand, a higher return on assets means a proportionately higher profit has been generated for each dollar of assets.

SOLUTIONS TO BRIEF EXERCISES

BRIEF EXERCISE 9-1

(a) The cost of the land is $95,000 ($85,000 + $1,500 + $5,000 + $3,500).
(b) The cost of the land improvements is $5,000 (parking lot).

BRIEF EXERCISE 9-2

The cost of the equipment is $42,000 (invoice price $40,375 + transportation $625 + installation and testing $1,000). The payment of $1,750 for the insurance should be recorded as prepaid insurance which will later be expensed as it is consumed.

BRIEF EXERCISE 9-3

(a) O
(b) C
(c) C
(d) C
(e) O*
(f) C
(g) O
(h) C
(i) C
(j) O

***The assumption is that the supplies are to be used in near future. Supplies are not long-lived assets.**

BRIEF EXERCISE 9-4

Jan.	**2**	**Land [$850,000 × ($352,000 ÷ $880,000)]**	**340,000**	
		Building [$850,000 × ($396,000 ÷ $880,000)]	**382,500**	
		Equipment [$850,000 × ($132,000 ÷ $880,000)]	**127,500**	
		Cash		**170,000**
		Mortgage Notes Payable ($850,000 − $170,000)		**680,000**

BRIEF EXERCISE 9-5

Depreciable amount is $36,000 ($42,000 − $6,000). With a 4-year useful life, annual depreciation is $9,000 ($36,000 ÷ 4). Under the straight-line method, depreciation is the same each year. Thus, depreciation expense is $9,000 for each year of the equipment's life.

BRIEF EXERCISE 9-6

The diminishing-balance rate is 50% (200%÷ 4) and this rate is applied to the carrying amount at the beginning of the year. Depreciation expense for each year is as follows:

	Carrying Amount				End of Year	
	Beginning		Depr.	Depr.	Accum.	Carrying
Year	Of Year	×	Rate	= Expense	Depr.	Amount
						$42,000
2017	$42,000		50%	$21,000	$21,000	21,000
2018	21,000		50%	10,500	31,500	10,500
2019	10,500		50%	4,500[1]	36,000	6,000

[1] Limited to the amount that reduces the carrying amount to the residual value of $6,000

BRIEF EXERCISE 9-7

(a) Depreciable amount per unit:
($38,950 − $4,300) ÷ 550,000 km. = $0.063/km.

(b) Annual depreciation expense:

2016:	90,000	× $0.063 =	$5,670
2017:	135,000	× $0.063 =	$8,505

BRIEF EXERCISE 9-8

Depreciation expense for each year:

					End of Year	
Year	Depreciable Amount*	× Depr. Rate	= Depr. Expense		Accum. Depr.	Carrying Amount
						$38,000
2017	$32,000	25% × 9/12	$ 6,000		$ 6,000	32,000
2018	32,000	25%	8,000		14,000	24,000

***Depreciable amount = $38,000 − $6,000 = $32,000**

BRIEF EXERCISE 9-9

The double diminishing-balance rate is 50% (25% × 2) and this rate is applied to the carrying amount at the beginning of the year. Depreciation expense for each year is as follows:

Double Diminishing-balance

	Carrying Amount Beginning					End of Year	
Year	Of Year	×	Depr. Rate	=	Depr. Expense	Accum. Depr.	Carrying Amount
							$ 38,000
2017	$38,000		50% × 1/2		$ 9,500	$ 9,500	28,500
2018	28,500		50%		14,250	23,750	14,250
2019	14,250		50%		7,125	30,875	7,125
2020	7,125		50%		1,125[1]	32,000	6,000

[1] **Limited to the amount that brings the carrying amount to the residual value of $6,000**

BRIEF EXERCISE 9-10

(a) Annual depreciation: ($250,000 − $10,000) ÷ 6 = $40,000

Equipment cost	$250,000
Less accumulated depreciation ($40,000 × 3) for 2015 to 2017	120,000
Carrying amount Dec. 31, 2017	$130,000

(b)

Impairment Loss	30,000	
Accumulated Depreciation—Equipment		30,000

Carrying amount (a)	$130,000
Less: Recoverable amount	100,000
Impairment loss	$ 30,000

BRIEF EXERCISE 9-11

Carrying amount, Jan. 1, 2017 ($32,000 − $9,000).....	**$23,000**
Less: Residual value.....	**(2,000)**
Remaining depreciable amount	**21,000**
Remaining useful life	**÷ 4 years**
Revised annual depreciation expense 2017.....	**$ 5,250**

BRIEF EXERCISE 9-12

Accumulated Depreciation—Equipment.....	**25,700**	
Equipment.....		**25,700**

BRIEF EXERCISE 9-13

(a)	**Mar. 31**	**Depreciation Expense [($86,400 − $2,200) ÷ 5 × 3/12]**	**4,210**	
		Accumulated Depreciation—Equipment		**4,210**
(b)	**Mar. 31**	**Cash**	**35,000**	
		Accumulated Depreciation—Equipment [1]	**54,730**	
		Gain on Disposal		**3,330**
		Equipment		**86,400**

[1] [($86,400 − $2,200) ÷ 60 months × 39 months] = $54,730

$16,840 x 3 years (2014-2016)	**$50,520**
Depreciation for 3 months in 2017	**4,210**
Accumulated Depreciation to March 31	**$54,730[1]**

Cost of equipment	**$86,400**
Less: accumulated depreciation	**54,730**
Carrying amount at date of disposal	**31,670**
Proceeds from sale	**35,000**
Gain on disposal	**$ 3,300**

(c)	**Mar. 31**	**Cash**	**29,000**	
		Accumulated Depreciation—Equipment	**54,730**	
		Loss on Disposal	**2,670**	
		Equipment		**86,400**

Cost of equipment	**$86,400**
Less: accumulated depreciation	**54,730**
Carrying amount at date of disposal	**31,670**
Proceeds from sale	**29,000**
Loss on disposal	**$ 2,670**

BRIEF EXERCISE 9-14

Jan. 7	Equipment (new)	29,000**	
	Accumulated Depreciation —Equipment	30,000	
	Loss on Disposal.....	7,000*	
	Equipment (old)		61,000
	Cash.....		5,000

**Cost of new = consideration paid in cash plus fair value of old asset: ($5,000 + $24,000 = $29,000)

*Loss on disposal = Carrying amount − fair value: [($61,000 − $30,000) − $24,000 = $7,000]

BRIEF EXERCISE 9-15

Depletion base
= $6,500,000 − $500,000
= $6,000,000

Depletion per unit
= $6,000,000 ÷ 25,000,000 tonnes
= $0.24 per tonne

Depletion expense for ore extracted in Year 1:
$0.24 per tonne × 5,000,000 tonnes = $1,200,000

Aug. 31	Inventory	1,200,000	
	Accumulated Depletion—Resource		1,200,000

BRIEF EXERCISE 9-16

(a)	2017				
	Jan.	2	Patents	150,000	
			Cash		150,000
(b)	Dec.	31	Amortization Expense ($150,000 ÷ 8)	18,750	
			Accumulated Amortization—Patents		18,750

BRIEF EXERCISE 9-17

(a)	PPE	(g)	PPE
(b)	NA (expense)	(h)	NA (investment)
(c)	I	(i)	PPE
(d)	NR	(j)	I
(e)	NA (current asset)	(k)	NA (expense)
(f)	PPE	(l)	I

BRIEF EXERCISE 9-18

H. DENT COMPANY
Balance Sheet (Partial)
December 31, 2017

Property, plant, and equipment		
Land		$ 400,000
Buildings	$1,100,000	
Less: Accumulated depreciation	600,000	500,000
Resource	500,000	
Less: Accumulated depletion	108,000	392,000
Total property, plant, and equipment		1,292,000
Goodwill		410,000

BRIEF EXERCISE 9-19

($ in US millions)

Return on assets	**$720 / [($17,108 + $15,977) ÷ 2] = 4.35%**
Asset turnover	**$16,042 / [($17,108 + $15,977) ÷ 2] = 0.97 times**

SOLUTIONS TO EXERCISES

EXERCISE 9-1

(a) The acquisition cost of a property, plant, and equipment includes all expenditures necessary to acquire the asset and make it ready for its intended use. This includes not only the invoice cost of acquisition, but any freight, installation, testing, and similar costs to get the asset ready for use. For example, the cost of factory equipment includes the purchase price, freight costs paid by the purchaser, insurance costs during transit, and installation costs. Costs such as these benefit the life of the factory equipment and not just the current period. Consequently, they should be capitalized and depreciated over the equipment's useful life.

(b)
1. **Land**
2. **Land**
3. **Land**
4. **Land ($4,800 − $900 = $3,900)**
5. **Vehicles**
6. **Vehicles**
7. **Licence Expense**
8. **Land Improvements**

EXERCISE 9-2

(a)

	Appraised Value	% of Total	Cost Allocated
Land	$ 476,000	35%	$ 448,000
Building	748,000	55%	704,000
Land Improvements	136,000	10%	128,000
	$1,360,000		$1,280,000

(b)

Land	448,000	
Building	704,000	
Land Improvements	128,000	
Cash		255,000
Mortgage Payable		1,025,000

(c) Depreciable amount for the building is $654,000 ($704,000 – $50,000). With a 60-year useful life, annual depreciation expense is $10,900 ($654,000 ÷ 60).

Depreciable amount for the land improvements is $128,000. With a fifteen year useful life, annual depreciation expense is $8,533 ($128,000 ÷ 15).

EXERCISE 9-3

1. False. The inverse is true. Depreciation is a process of cost allocation, not asset valuation.

2. True.

3. False. The fair value of a plant asset may exceed the carrying amount of that asset. The best example is land because it is not depreciated.

4. False. Depreciation does not apply to land because its revenue producing ability generally remains intact over time.

5. False. Buildings do not have indefinite physical life and must therefore be depreciated.

6. True. Although there could be exceptions due to the nature of the long-lived asset.

7. False. The process of depreciating a long-lived asset does not involve cash, but a charge as an expense on the income statement. No cash is being accumulated for the purpose of replacing the asset.

8. True.

9. False. Depreciation expense is reported on the income statement but the accumulated depreciation is reported on the balance sheet.

10. False. The fair value of a depreciable asset is not a factor used in the calculation of depreciation.

EXERCISE 9-4

(a) Straight-line

Year	Depreciable Cost**	×	Depr. Rate*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$345,000
2016	$330,000		20% × 1/2		$33,000	$33,000	312,000
2017	330,000		20%		66,000	99,000	246,000

*** Straight-line rate = 100% ÷ 5 years = 20%**
**** $345,000 − $15,000 = $330,000**

(b) Diminishing-balance

Year	Carrying Amount Beginning of Year	×	Depr. Rate*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$345,000
2016	$345,000		40% × 1/2		$69,000	$69,000	276,000
2017	276,000		40%		110,400	179,400	165,600

***Double diminishing balance rate = 200% ÷ 5 years = 40%**

(c) Units-of-Production

Year	Units-of-Production	×	Depr. Cost/Unit*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$345,000
2016	71,000		$0.55		$39,050	$39,050	305,950
2017	118,600		0.55		65,230	104,280	240,720

***Depreciable amount per unit is $0.55 per unit:**
[($345,000 − $15,000) ÷ 600,000 units = $0.55]

EXERCISE 9-4 (Continued)

(d) In this particular case, the unit-of-production can be used as management is able to reliably estimate the amount of total production that will be obtained by using the equipment. This method allows for the best matching of depreciation costs with the related benefits obtained from the asset's use. Another factor affecting the choice of depreciation methods is consistency with methods used in the past for similar type assets. Since this is a rather expensive piece of equipment, Blue Ribbon's policy of recording a half year's depreciation in the year of acquisition could conceivably bias the amount charged for depreciation in 2016. Coincidentally, the date of purchase happens to be within one month of the mid-point of the fiscal year. The choice of methods would consequently not differ tremendously between the unit-of-production and the straight-line methods. Future purchases of depreciable assets could nonetheless unfairly charge depreciation in the year of purchase. By choosing the unit-of-production, the bias is removed.

EXERCISE 9-5

(a)

(1) Straight-line

Year	Depreciable Amount*	×	Depr. Rate**	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$129,200
2016	$115,200		25% × 8/12		$19,200	$19,200	110,000
2017	115,200		25%		28,800	48,000	81,200
2018	115,200		25%		28,800	76,800	52,400
2019	115,200		25%		28,800	105,600	23,600
2020	115,200		25% × 4/12		9,600	115,200	14,000

*** $129,200 − $14,000 = $115,200**
****Straight-line rate = 100% ÷ 4 years = 25%**

(2) Double diminishing-balance

Year	Carrying Amount Beginning of Year	×	Depr. Rate*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$129,200
2016	$129,200		50% × 8/12		$43,067	$43,067	86,133
2017	86,133		50%		43,067	86,134	43,066
2018	43,066		50%		21,533	107,667	21,533
2019	21,533		50%		7,533**	115,200	14,000

***Double diminishing rate = 200% ÷ 4 years = 50%**
**** Limited to the amount that brings the carrying amount to the residual value of $14,000.**

EXERCISE 9-5 (Continued)

(a) (Continued)

(3) Units-of-Production

				End of Year	
Year	Units of Production	× Deprec. Amt/Unit*	= Depr. Expense	Accum. Depr.	Carrying Amount
					$129,200
2016	1,900	$9.60	$18,240	$18,240	110,960
2017	2,800	9.60	26,880	45,120	84,080
2018	3,700	9.60	35,520	80,640	48,560
2019	2,700	9.60	25,920	106,560	22,640
2020	1,100	9.60	8,640**	115,200	14,000

*** Depreciation amount per unit is $9.60/hour**
[($129,200 – $14,000) ÷ 12,000 hours = $9.60]
**** Limited to the amount that brings the carrying amount to the residual value of $14,000 (actual production of 12,200 exceeded estimated total production of 12,000).**

(b) Over the life of the asset, depreciation expense (in total) will be the same for all three methods, so the total profit will also be the same.

(c) Cash flow is the same under all three methods. Depreciation is an allocation of the cost of a long-lived asset and not a cash expenditure.

EXERCISE 9-6

(a)

July 1, 2015	Equipment	500,000	
	Cash		500,000
Dec. 31, 2015	Depreciation Expense	25,000	
	Accumulated Depreciation—Equipment ($500,000 ÷ 10 × 6/12)		25,000
Dec. 31, 2016	Depreciation Expense	50,000	
	Accumulated Depreciation—Equipment ($500,000 ÷ 10)		50,000

(b)

Carrying amount of the equipment—Dec. 31, 2016	
[$500,000 – ($50,000 × 1.5 years)]	$425,000
Recoverable amount	325,000
Impairment loss	$100,000

Dec. 31, 2016	Impairment Loss	100,000	
	Accumulated Depreciation—Equipment		100,000

(c) January 1, 2017 Carrying amount is $325,000
Depreciation expense for 2017:
$325,000 ÷ 8.5 years = $38,235.

December 31, 2017 Carrying amount is $286,765
($325,000 − $38,235).

EXERCISE 9-7

(a) Annual depreciation — current estimate
Building: ($800,000 – $40,000) ÷ 20 yrs
= $38,000 per year
Equipment: ($125,000 – $5,000) ÷ 5 yrs
= $24,000 per year

(b) Carrying amount — Building Jan. 1, 2017: $230,000
[$800,000 – ($38,000 × 15)]
Carrying amount — Equipment Jan. 1, 2017: $77,000
[$125,000 – ($24,000 × 2)]

(c) Annual depreciation — revised estimate — 2017
Building: [($230,000 – $60,500) ÷ (30 − 15 yrs)]
= $11,300 per year
Equipment: [($77,000 – $4,000) ÷ (4 – 2 yrs)]
= $36,500

Carrying amount — Building Dec. 31, 2017: $218,700
($230,000 – $11,300)
Carrying amount — Equipment Dec. 31, 2017: $40,500
($77,000 – $36,500)

EXERCISE 9-8

(a) Annual depreciation — first two years of equipment's life
($90,000 – $9,000) ÷ 6 yrs = $13,500 per year

(b) Carrying amount Building Sept. 30, 2017: $63,000
[$90,000 – ($13,500 × 2)]

(c)

2017				
Oct.	**1**	**Equipment**	**15,000**	
		Cash		**15,000**

(d)

2018				
Sept.	**30**	**Depreciation Expense**	**36,500**	
		Accumulated Depreciation —Equipment		**36,500**

Carrying amount Sept. 30, 2017 (b)	**$63,000**
Add: Upgrade	**15,000**
	78,000
Less: Revised residual value	**5,000**
Remaining depreciable amount	**$73,000**
Remaining useful life (4 − 2)	**÷ 2 years**
Revised annual depreciation expense	**$36,500**

EXERCISE 9-9

(a)

Apr.	1	Depreciation Expense	1,125	
		Accumulated Depreciation—Equipment		1,125
		($45,000 ÷ 10 years × 3/12)		
July	30	Depreciation Expense	2,450	
		Accumulated Depreciation—Equipment		2,450
		($12,600 ÷ 3 years × 7/12)		
Nov.	1	Depreciation Expense	3,125	
		Accumulated Depreciation—Vehicles		3,125
		($35,000 − $5,000) ÷ 8 years × 10/12)		

(b)

Apr.	1	Accumulated Depreciation—Equipment*	41,625	
		Loss on Disposal	3,375	
		Equipment		45,000
		*[($45,000 ÷ 10 years) × 9] + $1,125		
July	30	Cash	1,100	
		Accumulated Depreciation—Equipment*	10,850	
		Loss on Disposal	650	
		Equipment		12,600
		*[($12,600 ÷ 3 years) × 2] + $2,450		
Nov.	1	Vehicles (New) ($7,000+$36,000)	43,000	
		Accumulated Depreciation—Vehicles*	22,500	
		Loss on Disposal** ($7000-$12,500**)	5,500	
		Vehicles (Old)		35,000
		Cash		36,000
		*($35,000 − $5,000) ÷ 8 X 6		
		** ($33,500 - $22,500) - $7,000		

EXERCISE 9-9 (Continued)

***Accumulated depreciation on old truck:**

2011 (3,750 x 2/12)	$ 625
2012-2016 (3,750 x 5 years)	18,750
2017 (from part a)	3,125
Total accumulated depreciation	$22,500

****Carrying value of old truck on November 1, 2017 $12,500 (35,000-22,500)**

EXERCISE 9-10

(a) 2020

Jan.	**2**	**Cash**	**31,000**	
		Accumulated Depreciation—Equipment*	**36,000**	
		Gain on Disposal		**2,000**
		Equipment		**65,000**

***($65,000 − $5,000) ÷ 5 X 3**

(b) 2020

May	**1**	**Cash**	**31,000**	
		Accumulated Depreciation—Equipment*	**40,000**	
		Gain on Disposal		**6,000**
		Equipment		**65,000**

***($65,000 − $5,000) ÷ 5 = $12,000**
$12,000 X (3 years + 4 months) = $40,000

(c) 2020

Jan.	**2**	**Cash**	**11,000**	
		Accumulated Depreciation—Equipment*	**36,000**	
		Loss on Disposal	**18,000**	
		Equipment		**65,000**

***($65,000 − $5,000) ÷ 5 X 3**

(d) 2020

Oct.	**1**	**Cash**	**11,000**	
		Accumulated Depreciation—Equipment*	**45,000**	
		Loss on Disposal	**9,000**	
		Equipment		**65,000**

***($65,000 − $5,000) ÷ 5 = $12,000**
$12,000 X (3 years + 9 months) = $45,000

EXERCISE 9-11

(a) The units-of-production method is recommended for depleting natural resources because it best reflects the pattern over which the assets' future economic benefits are expected to be consumed. It requires that an estimate can be made of the total number of units that are available to be extracted from the resource.

(b)

Dec.	**31**	**Inventory ($1.50 × 100,000)**	**150,000**	
		Accumulated Depletion—Resource		**150,000**

Depreciable amount $1,300,000 − $100,000 = $1,200,000
Depreciable amount per unit:
$1,200,000 ÷ 800,000 tonnes = $1.50 per tonne

(c)

PHILLIPS EXPLORATION
Income Statement (Partial)
Year Ended December 31, 2017

Cost of goods sold: (will include this amount plus other costs)	
($1.50 × 100,000 tonnes)	**$150,000**

PHILLIPS EXPLORATION
Balance Sheet (Partial)
December 31, 2017

Assets

Property, plant, and equipment		
Ore mine	**$1,300,000**	
Less: Accumulated depletion	**150,000**	**$1,150,000**

EXERCISE 9-12

1. The original entry to add the cost of removing the old building, legal fees and clearing and grading the land to the Land account is correct. The student's accounting treatment is incorrect. The costs involved must be added to the cost of land as they were necessary costs to acquire the land and get it ready for its intended use.

2. Although consistency is necessary in applying accounting policies, in this case it should not have been the basis for recording depreciation on the trademarks. Trademarks can have usefulness to the business indefinitely. This is the probable reason that depreciation had not been recorded for trademarks in the past. As long as trademarks continue to assist in producing revenue and their carrying amounts have not been impaired, they should not be depreciated. Rather they should be tested regularly for impairment. If a permanent decline in value has occurred, the trademarks must be written down and an impairment loss recorded on the income statement. Therefore, the depreciation entry should be reversed and no decline in value recorded unless an impairment occurs.

3. This student's reasoning is faulty and an incorrect application of the principle of consistency in accounting. Adjusting property, plant, and equipment for increases to their fair value occurs when the business uses the revaluation model or fair value model under the International Financial Accounting Standards (IFRS). This is very unlikely the case for Chin Company. As well, current fair values are subjective and not reliable; they are not used to increase the recorded value of an asset after acquisition. The appropriate accounting treatment is to leave the building on the books at its zero carrying amount.

EXERCISE 9-13

(a)

2016				
Jan.	**9**	**Patents**	**45,000**	
		Cash		**45,000**
May	**15**	**Goodwill**	**450,000**	
		Cash		**450,000**
Dec.	**31**	**Amortization Expense**	**9,000**	
		Accumulated Amortization—Patents ($45,000 ÷ 5)		**9,000**
	31	**Impairment Loss**	**50,000**	
		Goodwill ($450,000 − $400,000)		**50,000**
2017				
Jan.	**2**	**Patents**	**30,000**	
		Cash		**30,000**
Mar.	**31**	**Research Expense**	**175,000**	
		Cash		**175,000**
Apr.	**1**	**Copyrights**	**66,000**	
		Cash		**66,000**
July	**1**	**Trademark**	**275,000**	
		Cash		**275,000**
Dec.	**31**	**Amortization Expense**	**21,450**	
		Accumulated Amortization—Patents [($45,000 – $9,000 + $30,000) ÷ 4]		**16,500**
		Accumulated Amortization—Copyrights [($66,000 ÷ 10) × 9/12]		**4,950**

EXERCISE 9-13 (Continued)

(b)

Assets

Intangible assets		
Patents	$75,000	
Less: Accumulated amortization	25,500	$49,500
Copyrights	66,000	
Less: Accumulated amortization	4,950	61,050
Trademark		275,000
Total intangible assets		$385,550
Goodwill		$400,000

EXERCISE 9-14

(a)

Patent	Cost	Amort.	Carrying Amount
Purchase price Jan. 1, 2014	$400,000		
Amortization 2014 (1)		$50,000	
Amortization 2015		50,000	
Amortization 2016		50,000	
Balance Dec. 31, 2016			$250,000
Amortization 2017 (2)		$83,333	
Balance Dec. 31, 2017			$166,667

(1) ($400,000 ÷ 8 years)
(2) Carrying amount ÷ (6 – 3 years) = $250,000 ÷ 3

Trademark	Cost	Impairment	Carrying Amount
Purchase price during 2010	$250,000		
Legal defence during 2016	50,000		
Balance Dec. 31, 2016	$300,000		$300,000
Balance Dec. 31, 2017 (3)		$25,000	$275,000

(b)

Income statement – December 31, 2017

Operating expenses:	
Amortization expense—Patents	$83,333
Impairment loss	25,000

EXERCISE 9-15

(a)

Account	Financial Statement	Section
Accumulated amortization—Buildings	Balance Sheet	Property, Plant and Equipment
Accumulated amortization—Leasehold Improvements	Balance Sheet	Property, Plant and Equipment
Accumulated amortization—Fixtures & Equipment	Balance Sheet	Property, Plant and Equipment
Accumulated amortization—Computer Equipment	Balance Sheet	Property, Plant and Equipment
Accumulated amortization—Software	Balance Sheet	Intangibles
Accumulated amortization – Other intangibles	Balance Sheet	Intangibles
Buildings	Balance Sheet	Property, Plant and Equipment
Cost-U-Less banner (trademark)	Balance Sheet	Intangibles
Computer Equipment	Balance Sheet	Property, Plant and Equipment
Fixtures & Equipment	Balance Sheet	Property, Plant and Equipment
Goodwill	Balance Sheet	Intangibles
Interest expenses	Income Statement	Operating Expenses
Land	Balance Sheet	Property, Plant and Equipment
Leasehold improvements	Balance Sheet	Property, Plant and Equipment
Other intangible assets	Balance Sheet	Intangibles
Other non-current assets	Balance Sheet	Non-current Assets
Software	Balance Sheet	Intangibles

EXERCISE 9-15 (Continued)

(b)

The North West Company Inc.
Balance Sheet (Partial)
January 31, 2015
(in thousands)

Non-current assets:		
Other non-current assets		**$12,555**
Property, plant, and equipment		
Land		**16,041**
Buildings	**$377,061**	
Less: Accumulated amortization	**209,584**	**167,477**
Fixtures and equipment	**265,706**	
Less: Accumulated amortization	**186,617**	**79,089**
Leasehold improvements	**51,845**	
Less: Accumulated amortization	**30,296**	**21,549**
Computer equipment	**73,151**	
Less: Accumulated amortization	**62,074**	**11,077**
Total property, plant, and equipment		**295,233**
Intangible assets		
Cost-U-Less banner (trademark)		**8,902**
Software	**$28,376**	
Less: Accumulated amortization	**17,032**	**11,344**
Other intangible assets	**7,989**	
Less: Accumulated amortization	**5,750**	**2,239**
Total intangible assets		**22,485**
Goodwill		**33,653**

EXERCISE 9-16

(a) (in millions)

	December 31, 2014	December 31, 2013
Asset turnover	$\frac{\$39,862}{[(\$79,671 + \$78,315) \div 2]}$ = 0.50 times	$\frac{\$39,593}{[(\$78,315 + \$76,401) \div 2]}$ = 0.51 times
Return on assets	$\frac{\$2,699}{[(\$79,671 + \$78,315) \div 2]}$ = 3.4%	$\frac{\$3,911}{[(\$78,315 + \$76,401) \div 2]}$ = 5.1%

(b) Suncor's asset turnover has essentially remained the same as revenues and total assets changed only slightly from 2013 to 2014. On the other hand, profits declined significantly, in spite of steady revenues. Return on assets has deteriorated from 5.1% to 3.4%.

SOLUTIONS TO PROBLEMS

PROBLEM 9-1A

(a)	Jan.	12	Land	420,000	
			Cash		95,000
			Notes Payable		325,000
		16	Land	8,500	
			Cash		8,500
		31	Land	25,000	
			Cash		25,000
	Feb.	13	Cash	10,000	
			Land		10,000
		28	Land	9,000	
			Cash		9,000
	Mar.	14	Building	38,000	
			Cash		38,000
		31	Building	15,000	
			Cash		15,000
	Apr.	22	Building	17,000	
			Cash		17,000
	Sept.	26	Building	750,000	
			Cash		150,000
			Mortgage Payable		600,000
	Sept.	30	Prepaid Insurance	4,500	
			Cash		4,500

PROBLEM 9-1A (Continued)

(a) (Continued)

Oct.	20	Land Improvements	45,000	
		Cash.....		45,000
Nov.	15	Land Improvements	12,000	
		Cash.....		12,000

(b)

Land

Date	Explanation	Ref.	Debit	Credit	Balance
2017					
Jan. 12			420,000		420,000
16			8,500		428,500
31			25,000		453,500
Feb. 13				10,000	443,500
28			9,000		452,500

Building

Date	Explanation	Ref.	Debit	Credit	Balance
2017					
Mar. 14			38,000		38,000
31			15,000		53,000
Apr. 22			17,000		70,000
Sept.26			750,000		820,000

Land Improvements

Date	Explanation	Ref.	Debit	Credit	Balance
2017					
Oct. 20			45,000		45,000
Nov. 15			12,000		57,000

PROBLEM 9-1A (Continued)

(b) (Continued)

The costs that will appear on Kadlec's December 31, 2017 balance sheet will be:

Land	**$452,500**
Building	**820,000**
Land Improvements	**57,000**

Taking It Further:

Companies should start to record depreciation when the asset is ready for use. In the case of Kadlec, the building was ready for use on September 26, 2017 and land improvements were completed on November 15, 2017 and so depreciation should be calculated from those dates.

Kadlec should depreciate only the building and land improvements. Land has an indefinite useful life and therefore is not depreciated.

PROBLEM 9-2A

(a)

	Appraised Value	% of Total	Cost Allocated
Land	$275,000	40%	$260,000
Building	343,750	50%	325,000
Equipment	68,750	10%	65,000
	$687,500		$650,000

(b)

Building: Straight-line

1. To the nearest whole month

					End of Year	
Year	Depreciable Amount*	× Depr. Rate	= Depr. Expense		Accum. Depr.	Carrying Amount
						$325,000
2016	$300,000	1/60 × 10/12	$4,167		$4,167	320,833
2017	300,000	1/60	5,000		9,167	315,833

*$325,000 − $25,000 = $300,000

2. Half a year in the year of acquisition

					End of Year	
Year	Depreciable Amount*	× Depr. Rate	= Depr. Expense		Accum. Depr.	Carrying Amount
						$325,000
2016	$300,000	1/60 × 6/12	$2,500		$2,500	322,500
2017	300,000	1/60	5,000		7,500	317,500

PROBLEM 9-2A (Continued)

(b) (Continued)

Equipment: Double diminishing-balance

1. To the nearest whole month

	Carrying Amount Beginning		Depr.		Depr.	End of Year Accum.	Carrying
Year	of Year	×	Rate*	=	Expense	Depr.	Amount
							$65,000
2016	$65,000		25% × 10/12		$13,542	$13,542	51,458
2017	51,458		25%		12,865	26,407	38,593

*** 200% ÷ 8 = 25%**

2. Half a year in the year of acquisition

	Carrying Amount Beginning		Depr.		Depr.	End of Year Accum.	Carrying
Year	of Year	×	Rate	=	Expense	Depr.	Amount
							$65,000
2016	$65,000		25% × 1/2		$8,125	$8,125	56,875
2017	56,875		25%		14,219	22,344	42,656

(c) Both options are acceptable. When deciding between adopting policy of recording depreciation to the nearest whole month or recording a half year of depreciation in the year of acquisition, ChalkBoard should consider, for purpose of consistency, the policy used in the past. Since this is the first year of business, ChalkBoard should consider what other categories or types of assets it will be purchasing in the current and future years that will be depreciated using this policy. If for example, the remaining categories of assets will be depreciated using the units-of-production method, the choice will not matter. The impact of the choice will not be significant in the long run, particularly if the assets are bought and sold frequently. Also, the impact is insignificant for assets with very long useful lives, as is demonstrated in part (b) for the building. No matter the choice taken by ChalkBoard, the policy must be followed consistently.

PROBLEM 9-2A (Continued)

Taking It Further:

ChalkBoard should not consider depreciating to the exact day of acquisition as this level of precision is not relevant on the long-run particularly for assets with long useful lives, such as is the case for the building. Since the length of the useful life is an estimate, applying a policy of depreciating to the day will provide an amount for the depreciation expense that is insignificantly different from the amount arrived at using to the nearest month policy.

PROBLEM 9-3A

(a)

Invoice price	$210,000
Delivery cost	4,400
Installation and testing	5,600
Cost of the equipment	$220,000

The $1,975 insurance policy is an annual operating expenditure and not included in the cost of the asset.

(b) 1. STRAIGHT-LINE DEPRECIATION

Year	Depreciable Amount	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$220,000
2016	$205,000*		25%**		$ 51,250	$ 51,250	168,750
2017	205,000		25%		51,250	102,500	117,500
2018	205,000		25%		51,250	153,750	66,250
2019	205,000		25%		51,250	205,000	15,000

* $220,000 − $15,000 = $205,000
** 100% ÷ 4= 25%

PROBLEM 9-3A (Continued)

(b) (Continued)

2. DOUBLE DIMINISHING-BALANCE DEPRECIATION

Year	Carrying Amount Beginning Of Year	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$220,000
2016	$220,000		50%*		$110,000	$110,000	110,000
2017	110,000		50%		55,000	165,000	55,000
2018	55,000		50%		27,500	192,500	27,500
2019	27,500		50%		12,500**	205,000	15,000

*** 200% ÷ 4 = 50%**
**** Limited to the amount that brings carrying amount to the residual value of $15,000.**

3. UNITS-OF-PRODUCTION

Year	Units of Production	×	Depr. Amt/Unit*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$220,000
2016	16,750		$2.50*		$ 41,875	$ 41,875	178,125
2017	27,600		2.50		69,000	110,875	109,125
2018	22,200		2.50		55,500	166,375	53,625
2019	16,350		2.50		38,625**	205,000	15,000

*** Depreciable amount per unit is $2.50 per unit [($220,000 – $15,000) ÷ 82,000 = $2.50]**
**** Equal to the amount that brings the carrying amount to the residual value of $15,000 (actual production of 82,900 exceeded estimated total production of 82,000).**

PROBLEM 9-3A (Continued)

(c) The straight-line method of calculating depreciation provides the lowest amount of depreciation expense for 2017, which results in the highest amount of profit. Over the life of the asset, all three methods result in the same total depreciation expense (equal to the depreciable amount) and therefore the same amount of profit.

Taking It Further:

The cost of recycling the equipment at the end of its useful life is an asset retirement cost and the amount must be estimated and added to the cost the equipment — part (a). These costs would consequently be added to the depreciable amount in the calculation of depreciation under all of the methods and would proportionately increase the amount of depreciation charge — part (b).

PROBLEM 9-4A

(a)

Trans-action	Land	Building	Equip-ment	Accum. Depr.	Total PP&E	Profit
Jan. 12	NE	NE	NE	NE	NE	−$2,200
Feb. 6	NE	NE	NE	NE	NE	−$5,400
Apr. 24	NE	+$75,000	NE	NE	+$75,000	NE
May 17	NE	NE	NE	NE	NE	−$3,100
July 19	NE	NE	NE	NE	NE	−$5,900
Aug. 21	NE	NE	+$26,000	NE	+$26,000	NE
Sept. 20	NE	NE	NE	NE	NE	−$2,700
Oct. 25	NE	NE	+$20,000	NE	+$20,000	NE
Dec. 31	NE	NE	NE	NE	NE	NE
Dec. 31	NE	NE	NE	+$37,500	−$37,500	−$37,500

(b)

Jan.	12	Repairs Expense	2,200	
		Cash.....		2,200
Feb.	6	Repairs Expense	5,400	
		Cash.....		5,400
Apr.	24	Building.....	75,000	
		Cash.....		75,000

Note: Possibly add to as a separate component of the building depending on the type of system, and whether it has the same useful life as the rest of the building.

May.	17	Training Expense	3,100	
		Cash.....		3,100
July	19	Repairs Expense	5,900	
		Cash.....		5,900

PROBLEM 9-4A (Continued)

(b) (Continued)

Aug.	21	Vehicles	26,000	
		Cash.....		26,000
Sept.	20	Repairs Expense	2,700	
		Cash.....		2,700
Oct.	25	Equipment.....	20,000	
		Cash.....		20,000
Dec.	31	Impairment Loss	37,500	
		Accumulated Depreciation—Equipment		37,500
		[($150,000 − $62,500) − $50,000]		

Note: ASPE does not allow the reversal of the impairment loss for the land.

Taking It Further:

Given that the engine has to be replaced frequently, consideration should be given to depreciating this component of the equipment using a four year useful life and the remainder of the equipment the twelve year useful life. The major difficulty with this is determining how much of the cost of the equipment to allocate to the engine. One possibility is to use the value of a replacement motor to establish the cost of the original motor at the date of the purchase of the equipment.

PROBLEM 9-5A

(a)

Year	Depreciable Amount	×	Depr. Rate*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$750,000
2013	$700,000**		10%**		$70,000	$70,000	680,000
2014	700,000		10%		70,000	140,000	610,000
2015	700,000		10%		70,000	210,000	540,000
2016	700,000		10%		70,000	280,000	470,000
2017	700,000		10%		70,000	350,000	400,000

** 100% ÷ 10 years = 10%
** Depreciable amount = $750,000 − $50,000 = $700,000

(b)

Dec. 31 2017	Impairment Loss		80,000	
	Accumulated Depreciation—Equipment			80,000
	($400,000 − $320,000)			

(c) On Slope's income statement will be reported depreciation expense in the amount of $70,000 and the impairment loss of $80,000. On Slope's balance sheet, the equipment will be reported at its cost of $750,000 and accumulated depreciation of $430,000 ($350,000 + $80,000) so that the carrying amount will be $320,000 ($750,000-$430,000) and, equal to the impaired amount.

(d)

Year	Depreciable Amount***	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
						$430,000*	$320,000
2018	$310,000		33.33%**		$103,333	533,333	216,667
2019	310,000		33.33%		103,333	636,666	113,334
2020	310,000		33.33%		103,334	740,000	10,000

*Accumulated Depreciation = $350,000 end of year before impairment loss + $80,000 impairment loss
** 100% ÷ 3 years remaining (8 – 5 years) = 33.33%
*** Carrying amount – revised res. value = $320,000 – $10,000

PROBLEM 9-5A (Continued)

Taking It Further:

One of the major differences between IFRS and ASPE concerns the measurement and reporting of depreciable assets. Under IFRS, it is possible to report these types of assets at their fair value, using the revaluation model, while under ASPE, no revaluation beyond a capital asset's historical cost is possible. Consistent with this distinction, is the treatment of recoveries of previously recorded impairments. The basis for reporting depreciable assets at their fair value under IFRS is that the value used can be reliably measured. As well, under IFRS the frequency of the scrutiny of the assets to determine any impairment is greater and the measures taken more rigorous. Private companies reporting under ASPE typically do not have the same level of resources needed (as a public company reporting under IFRS) to determine if an impairment exists or if it has been reversed. Under ASPE, impairments are recorded less frequently and thus it is reasonable that ASPE does not allow the recording of reversals of impairment losses.

PROBLEM 9-6A

(a)

2015					
Apr.	**1**	**Land**	**150,000**		
		Building	**235,000**		
		Cash			**115,000**
		Notes Payable			**270,000**
Dec.	**31**	**Depreciation Expense**	**6,000**		
		Accumulated Depreciation—Building			**6,000**
		($235,000 - $35,000) × 4% × 9/12 = $6,000)			
	31	**Interest Expense**	**10,125**		
		Cash			**10,125**
		($270,000 × 5% × 9/12 = $10,125)			
2016					
Feb.	**17**	**Repairs Expense**	**225**		
		Cash			**225**
Dec.	**31**	**Depreciation Expense**	**8,000**		
		Accumulated Depreciation—Building			**8,000**
		($235,000 - $35,000) × 4% = $8,000)			
	31	**Interest Expense**	**13,500**		
		Cash			**13,500**
		($270,000 × 5% = $13,500)			
	31	**Impairment Loss**	**30,000**		
		Land*			**30,000**
		($150,000 − $120,000)			

Building — no entry as carrying amount = $221,000; ($235,000 − $6,000 − $8,000 = $221,000) which does not exceed the recoverable amount of $240,000.

***There is no specific guidance given in the text concerning recording impairment losses for land. Since there is no contra account Accumulated Depreciation, the asset Land is reduced directly to reduce the carrying amount.**

PROBLEM 9-6A (Continued)

(a) (Continued)

2017					
Jan.	**31**	**Depreciation Expense**		**667**	
		Accumulated Depreciation—Building			**667**
		($200,000 × 4% × 1/12)			
	31	**Cash**		**320,000**	
		Accumulated Depreciation—Building*		**14,667**	
		Loss on Disposal (see below)		**20,333**	
		Land			**120,000**
		Building			**235,000**
		*** ($6,000 + $8,000 + $667)**			

Land (Carrying amount)		**$120,000**
Building	**$235,000**	
Less: Accumulated dep'n	**14,667**	**220,333**
Carrying amount		**340,333**
Proceeds		**320,000**
Loss on disposal		**$ 20,333**

Feb.	**1**	**Interest Expense ($270,000 × 5% × 1/12)**		**1,125**	
		Notes Payable		**270,000**	
		Cash			**271,125**

(b) The land may have been impaired due to contamination found on it or surrounding properties. It may also have been because plans for a proposed new development on adjacent land that would have increased the value of NW Tool Supply's property at the date of purchase, have been permanently shelved.

PROBLEM 9-6A (Continued)

(c)	**Oct. 31**	**Depreciation Expense**	**6,667**	
		Accumulated Depreciation—Building		**6,667**
		($200,000 × 4% × 10/12)		
	Oct. 31	**Cash**	**400,000**	
		Accumulated Depreciation—Building*	**20,667**	
		Land		**120,000**
		Building		**235,000**
		Gain on Sale (see below)		**65,667**

*** ($6,000 + $8,000 + $6,667)**

Land (Carrying amount)		**$120,000**
Building	**$235,000**	
Less: Accumulated dep'n	**20,667**	**214,333**
Carrying amount		**334,333**
Proceeds		**400,000**
Gain on disposal (sale)		**$ 65,667**

Taking It Further:

For purposes of calculating and recording impairments, the recoverable amount of a property is based on the comparison of the carrying amount of the asset against the higher of the fair value of the asset less the cost to sell it, or its value in use.

In this case, the property is made up of land and a building which are somewhat inseparable. Consequently, the value in use to NW Tool Supply would be the amount management expects to recover in operations by using the assets together. As for establishing the fair value of the combined assets, property of similar location and type that have been recently sold can be used to make comparisons of what would be obtained on sale. Management should be diligent about looking for possible causes for impairment.

PROBLEM 9-6A (Continued)

Taking It Further: (Continued)

When considering impairment of the land on its own, uninsured damages or conditions uncovered during the year may require management to recalculate the value in use or the resale fair value of the land.

Under ASPE the review of property, plant, and equipment for possible impairment need not be performed each year, but must be performed on a regular basis, particularly when changes in circumstance or conditions occur. If the company is using IFRS, annual impairment testing is required.

PROBLEM 9-7A

(a) 1. STRAIGHT-LINE DEPRECIATION

Year	Depreciable Amount	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$107,500
2015	$97,000*		33.33%**		$32,333	$32,333	75,167
2016	97,000		33.33%		32,333	64,666	42,834
2017	97,000		33.33%		32,334	97,000	10,500

*** $107,500 − $10,500 = $97,000**
**** 100% ÷ 3 years = 33.33%**

2. DIMINISHING-BALANCE DEPRECIATION

Year	Carrying Amount Beginning Of Year	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$107,500
2015	$107,500		40%		$43,000	$43,000	64,500
2016	64,500		40%		25,800	68,800	38,700
2017	38,700		40%		15,480	84,280	23,220

PROBLEM 9-7A (Continued)

(a) (Continued)

3. UNITS-OF-PRODUCTION

Year	Units of Production	×	Depr. Amt/Unit*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$107,500
2015	10,000		$1.617*		$ 16,170	$ 16,170	91,330
2016	20,000		1.617		32,340	48,510	58,990
2017	29,000		1.617		46,893	95,403	12,097

* Depreciable amount per unit is $1.617 per unit
[($107,500 – $10,500) ÷ 60,000 = $1.617]

(b)	(1) Straight-Line	(2) Diminishing-Balance	(3) Unit –of-Production
Cost	$107,500	$107,500	$107,500
Accumulated depreciation	97,000	84,280	95,403
Carrying amount	10,500	23,220	12,097
Cash proceeds	15,000	15,000	15,000
Gain (loss) on sale	$ 4,500	$ (8,220)	$ 2,903

(c)	(1) Straight-Line	(2) Diminishing-Balance	(3) Unit –of-Production
Depreciation expense	$97,000	$84,280	$95,403
Add loss (less gain) on sale	(4,500)	8,220	(2,903)
Net expense	$92,500	$92,500	$92,500

The net expense is the same under all three methods. The different depreciation methods results in different accumulated depreciation at the date of sale, which in turn causes a different gain or loss on sale. Consequently, the total depreciation expense recognized over the life of the asset, plus the loss on sale (or less the gain on sale), results in the same net expense of $92,500 over the life of the asset.

PROBLEM 9-7A (Continued)

Taking It Further:

I disagree. Experiencing a gain or loss on the disposal of a depreciable asset is not the result of an error or mistake. Rather, a gain or loss is an expected outcome due to the limitations of the cost allocation that has occurred for the asset up to the date of its disposal. Since estimates are involved in arriving at the factors used in calculating depreciation, such as the estimated useful life and the estimated residual value, it is natural that some differences between the carrying amount and proceeds of disposition will occur when the asset is ultimately disposed of. Depreciation is a cost allocation process and is not intended to ensure the carrying amount of the asset reflects fair value.

PROBLEM 9-8A

(a)

2015				
Mar.	**1**	**Equipment**	**95,000**	
		Accounts Payable		**95,000**

(b)

2015				
Aug.	**31**	**Depreciation Expense**	**9,500**	
		Accumulated Depreciation—Equipment		**9,500**

$95,000 × 20% × 6/12 months = $9,500

2016				
Aug.	**31**	**Depreciation Expense**	**17,100**	
		Accumulated Depreciation—Equipment		**17,100**

($95,000 − $9,500) × 20% = $17,100

2017				
Aug.	**31**	**Depreciation Expense**	**13,680**	
		Accumulated Depreciation—Equipment		**13,680**

($95,000 − $9,500 − $17,100) × 20% = $13,680

(c)

2018				
Feb.	**1**	**Depreciation Expense**	**4,560**	
		Accumulated Depreciation—Equipment		**4,560**

($95,000 − $9,500 − $17,100 − $13,680) × 20% × 5/12 = $4,560

Accumulated Depreciation at February 1, 2018:
$9,500 + $17,100 + $13,680 + $4,560 = $44,840

Carrying Amount at February 1, 2018:
Cost – Accumulated Depreciation
$50,160 = $95,000 − $44,840

PROBLEM 9-8A (Continued)

(c) (Continued)

1.	**Feb.**	**1**	**Accumulated Depreciation—Equipment**	**44,840**	
			Loss on Disposal*	**50,160**	
			Equipment		**95,000**

***Proceeds – Carrying Amount = Gain (loss)**
$0 – [$95,000 – $44,840] = ($50,160)

2.	**Feb.**	**1**	**Cash**	**55,000**	
			Accumulated Depreciation—Equipment	**44,840**	
			Gain on Disposal**		**4,840**
			Equipment		**95,000**

**** $55,000 – [$95,000 – $44,840] = $4,840**

3.	**Feb.**	**1**	**Cash**	**45,000**	
			Accumulated Depreciation—Equipment	**44,840**	
			Loss on Disposal***	**5,160**	
			Equipment		**95,000**

***** $45,000 – [$95,000 – $44,840] = ($5,160)**

4.	**Feb.**	**1**	**Equipment (new) ($47,000 + $45,000)**	**92,000**	
			Accumulated Depreciation—Equipment	**44,840**	
			Loss on Disposal****	**3,160**	
			Cash ($97,000 − $52,000)		**45,000**
			Equipment (old)		**95,000**

****** $47,000 – [$95,000 – $44,840] = ($3,160)**

PROBLEM 9-8A (Continued)

Taking It Further:

The following are the arguments in favour of recording gains and losses on disposal of property, plant, and equipment as:

1. <u>Part of profit from operations</u>:
Gains and losses are basically just adjustments to depreciation expense and should be recorded in the same section of the income statement.

Classifying gains and losses as operations removes the potential for management bias in the selection of depreciation methods or in the estimates concerning useful lives and residual values of the assets. Bias might be at play concerning management's unwillingness to show losses in operations because management bonuses may be based on the amount of profit from operations.

2. <u>Non-operating items</u>:
The same management bias described above would be applied for gains recognized by the business.

A common view is that the disposal of property, plant, and equipment is not an everyday occurrence and gains or losses are not predictable.

It can also be argued that selling property, plant, and equipment is not part of normal operations and thus gains or losses should not be reported as part of profit from operations.

PROBLEM 9-9A

(a)	April	1	Land	2,200,000	
			Cash		550,000
			Notes Payable		1,650,000
	May	1	Depreciation Expense	46,667	
			Accumulated Depreciation—Equip. ($1,400,000 ÷ 10 × 4/12)		46,667
		1	Cash	150,000	
			Accumulated Depreciation—Equipment.	1,166,667	
			Loss on Disposal	83,333	
			Equipment		1,400,000

Cost	$1,400,000
Accumulated depreciation—equip. [($1,400,000 ÷ 10) × 8 + $46,667)]	1,166,667
Carrying amount	233,333
Cash proceeds	150,000
Loss on disposal	$ (83,333)

	June	1	Cash	450,000	
			Notes Receivable	1,350,000	
			Land		700,000
			Gain on Disposal		1,100,000
	July	1	Equipment	1,100,000	
			Cash		1,100,000
	Dec.	31	Depreciation Expense	50,000	
			Accumulated Depreciation—Equipment ($500,000 ÷ 10)		50,000

PROBLEM 9-9A (Continued)

(a) (Continued)

Dec.	31	Accum. Depr.—Equipment.	350,000	
		Loss on disposal*.....	150,000	
		Equipment.....		500,000

Cost	$500,000
Accumulated depreciation—equipment ($500,000 ÷ 10 × 7)	350,000
Carrying amount	150,000
Cash proceeds	0
Gain (loss) on disposal	$ (150,000)*

(b) Dec.	31	Depreciation Expense.....	974,000	
		Accumulated Depreciation —Building ($48,700,000 ÷ 50)		974,000
	31	Depreciation Expense.....	7,365,000	
		Accumulated Depreciation —Equipment		7,365,000

$73,100,000* ÷ 10	$7,310,000
$1,100,000 ÷ 10 × 6/12	55,000
	$7,365,000

*$75,000,000 − $1,400,000 − $500,000 = $73,100,000

	31	Interest Expense	74,250	
		Interest Payable.....		74,250
		($1,650,000 × 6% × 9/12)		
	31	Interest Receivable.....	39,375	
		Interest Revenue.....		39,375
		($1,350,000 × 5% × 7/12)		

PROBLEM 9-9A (Continued)

(c)

HAMSMITH CORPORATION
Balance Sheet (Partial)
December 31, 2017

Property, plant, and equipment[1]		
Land		**$11,500,000**
Buildings	**$48,700,000**	
Less: Accumulated depreciation	**32,074,000**	**16,626,000**
Equipment	**$74,200,000**	
Less: Accumulated depreciation	**32,945,000**	**41,255,000**
Total property, plant, and equipment		**$69,381,000**

[1] See T accounts that follow for balances.

Land

Jan. 1, 2017	**10,000,000**	**June 1, 2017**	**700,000**
April 1, 2017	**2,200,000**		
Dec.31, 2017 Bal.	**11,500,000**		

Building

Jan. 1, 2017	**48,700,000**		
Dec. 31, 2017 Bal.	**48,700,000**		

PROBLEM 9-9A (Continued)

(c) (Continued)

Equipment

Jan. 1, 2017	75,000,000	May 1, 2017	1,400,000
July 1, 2017	1,100,000	Dec. 31, 2017	500,000
Dec.31, 2017	Bal. 74,200,000		

Accumulated Depreciation—Building

		Jan. 1, 2017	31,100,000
		Dec. 31, 2017	974,000
		Dec. 31, 2017	Bal. 32,074,000

Accumulated Depreciation—Equipment

May 1, 2017	1,166,667	Jan. 1, 2017	27,000,000
Dec. 31, 2017	350,000	May 1, 2017	46,667
		Dec. 31, 2017	50,000
		Dec. 31, 2017	7,365,000
		Dec. 31, 2017	Bal. 32,945,000

PROBLEM 9-9A (Continued)

Taking It Further:

Although the use of the revaluation model is permitted for public companies following International Financial Reporting Standards (IFRS), its adoption is voluntary, and somewhat rare. The revaluation model results in more relevant information on the balance sheet, because the long-lived assets are revalued to fair value on a regular basis. An investor may be better able to assess the current economic position of the company with this information. However, the revaluation model increases the risk of error and bias in the financial statements because the revaluation model uses a fair value amount that is not necessarily supported by a transaction with an independent buyer.

PROBLEM 9-10A

1.	**Research Expense ($160,000 × 55%)**	**88,000**	
	Patents		**88,000**
	Accumulated Amortization—Patents	**5,867**	
	Amortization Expense		**5,867**
	$88,000 ÷ 15 years = $5,867		
2.	**Goodwill**	**5,000**	
	Amortization Expense		**5,000**
	($400,000 ÷ 40 years) × 6/12 = $5,000		
3.	**Impairment Loss ($80,000 − $70,000)**	**10,000**	
	Licence		**10,000**

Taking It Further:

The majority of intangible assets that are developed internally cannot be recognized as intangible assets on the balance sheet because the expenditures on internally developed intangibles cannot be distinguished from the cost of other research and development performed by the business. The costs cannot be separately measured and must be expensed as incurred.

PROBLEM 9-11A

(a)	**Jan.**	**2**	**Patent #1**	**23,200**	
			Cash		**23,200**
	June	**30**	**Research Expense**	**180,000**	
			Cash		**180,000**
		30	**Patent #2**	**60,000**	
			Cash		**60,000**
	Sept.	**1**	**Advertising Expense**	**12,000**	
			Cash		**12,000**
	Oct.	**1**	**Copyright #2**	**18,000**	
			Cash		**18,000**
(b)	**Dec.**	**31**	**Amortization Expense**	**12,400**	
			Accumulated Amortization—Patent #1*		**10,900**
			Accumulated Amortization—Patent #2**		**1,500**

*** [($80,000 × 1/10) + ($23,200 × 1/8)]**
At Jan. 1, 2017 Patent # 1 has been amortized 2 years ($16,000 ÷ $80,000 = 2/10) — remaining period to amortize is 8 years.

**** [$60,000 × 1/20 × 6/12 = $1,500]**

		31	**Amortization Expense**	**5,550**	
			Accumulated Amortization—Copyright #1*		**4,800**
			Accumulated Amortization—Copyright #2**		**750**

***($48,000 × 1/10)**
****($18,000 × 1/6 × 3/12)**

PROBLEM 9-11A (Continued)

(c)

IP COMPANY
(Partial) Balance Sheet
December 31, 2017

Assets

Intangible assets		
Patents[1]	**$163,200**	
Less: Accumulated amortization[2]	**28,400**	**$134,800**
Copyrights[3]	**66,000**	
Less: Accumulated amortization[4]	**34,350**	**31,650**
Total intangible assets		**$166,450**
Goodwill		**$220,000**

[1] Cost: Patent #1 ($80,000 + $23,200) + Patent #2 ($60,000) = $163,200
[2] Accumulated Amortization: Patent #1 ($16,000 + $10,900) + Patent #2 ($1,500) = $28,400
[3] Cost: Copyright #1 ($48,000) + Copyright #2 ($18,000) = $66,000
[4] Accumulated Amortization: Copyright #1 ($28,800 + $4,800) + Copyright #2 ($750) = $34,350

Taking It Further:

Although intangible assets do not have physical substance, they have characteristics common to other assets in that they contribute to the revenue producing ability of a business that owns them. They are owned and controlled by the business and therefore fit the definition of assets.

PROBLEM 9-12A

(a)

2016

Mar. 31	Resource	2,860,000	
	Cash		2,860,000
	($2,600,000 + $260,000)		
Dec. 31	Inventory	570,000	
	Accumulated Depletion—Resource		570,000
	($2,860,000 − $200,000) ÷ 560,000 t = $4.75/t		
	$4.75/t × 120,000 t = $570,000		
Dec. 31	Cost of Goods Sold	570,000	
	Inventory		570,000

2017

Dec. 31	Inventory	380,000	
	Accumulated Depletion—Resource		380,000
	($2,860,000 − $570,000 − $200,000) ÷ 550,000 t = $3.80/t		
	$3.80/t ×100,000 t = $380,000		
Dec. 31	Cost of Goods Sold	380,000	
	Inventory		380,000

(b)

RIVERS MINING COMPANY
Income Statement (partial)
Year Ended December 31, 2017

Cost of goods sold	**$380,000**

PROBLEM 9-12A (Continued)

(b) (Continued)

RIVERS MINING COMPANY
(Partial) Balance Sheet
December 31, 2017

Property, plant, and equipment		
Resource	**$2,860,000**	
Less: Accumulated depletion*	**950,000**	**$1,910,000**

*** $570,000 + $380,000 = $950,000**

Taking It Further:

Due to its nature, it is expected that the estimate of the total amount of ore to be extracted from a mine would need to be adjusted as extraction occurs and better estimates can be made. Management should not be influenced by the need for changes in estimates when choosing the units-of-production method for recording depletion of the resource. It is the method that best allocates the cost of the mine to the units of ore that are recorded in inventory.

PROBLEM 9-13A

(a) (in thousands)

	Andruski Company	Brar Company
Asset turnover 2017	$552.0 / [($702.5 + $662.8) ÷ 2] = 0.81 to 1	$1,762.9 / [($1,523.5 + $1,410.7) ÷2] = 1.20 to 1
Asset turnover 2016	$515.9 / [($662.8 + $602.5) ÷ 2] = 0.82 to 1	$1,588.2 / [($1,410.7 + $1,318.4) ÷2] = 1.16 to 1
Return on assets 2017	$21.4 / [($702.5 + $662.8) ÷ 2] = 3.13%	$96.5 / [($1,523.5 + $1,410.7) ÷2] = 6.58%
Return on assets 2016	$20.6 / [($662.8 + $602.5) ÷ 2] = 3.26%	$85.4 / [($1,410.7 + $1,318.4) ÷2] = 6.26%

(b) Brar Company is far more efficient in using its assets to generate sales–its assets turnover of 1.20 times is higher than 0.82 times for Andruski Company and is increasing, while Andruski's is decreasing. Brar is also more efficient in using assets to produce profit–with a return on assets of 6.58% compared to 3.13% for Andruski Company. Brar's ratio is increasing while Andruski's in decreasing.

PROBLEM 9-13A (Continued)

Taking It Further:

Although the ability to compare two companies in the same industry using ratios is affected by the depreciation methods adopted by the companies being compared, absolute conclusions cannot be drawn from these differences. Brar uses the straight-line method of depreciation and Andruski uses the diminishing-balance method which results in higher charges of depreciation in the early years and lower amounts in the later years for Andruski. Assets are acquired throughout the life of a company as well so it is not possible to determine the impact of the different methods without more information.

Notwithstanding this limitation, and assuming a normal turnover of assets, one could generally conclude that the amount of profit and total assets of Andruski would be lower than that of Brar, simply because of the accelerated method of depreciation being used, which generated a higher expense for depreciation and a lower carrying amount for the assets.

PROBLEM 9-1B

(a)	Feb.	7	Land	575,000	
			Cash		115,000
			Notes Payable		460,000
		9	Land	7,500	
			Cash		7,500
		15	Land	19,000	
			Cash		19,000
		17	Cash	8,500	
			Land		8,500
		25	Land	10,500	
			Cash		10,500
	Mar.	2	Building	28,000	
			Cash		28,000
		15	Building	18,000	
			Cash		18,000
	Aug.	31	Building	850,000	
			Cash		170,000
			Notes Payable		680,000
	Sept.	3	Land Improvements	40,000	
			Cash		40,000
		10	Prepaid Insurance	3,750	
			Cash		3,750
	Oct.	31	Land Improvements	37,750	
			Cash		37,750

PROBLEM 9-1B (Continued)

(b)

Land

Date	Explanation	Ref.	Debit	Credit	Balance
2017					
Feb. 7			575,000		575,000
9			7,500		582,500
15			19,000		601,500
17				8,500	593,000
25			10,500		603,500

Building

Date	Explanation	Ref.	Debit	Credit	Balance
2017					
Mar. 2			28,000		28,000
15			18,000		46,000
Aug. 31			850,000		896,000

Land Improvements

Date	Explanation	Ref.	Debit	Credit	Balance
2017					
Sept. 3			40,000		40,000
Oct. 31			37,750		77,750

The costs that will appear on Weisman's December 31, 2017 balance sheet will be:

Land	$603,500
Building	896,000
Land Improvements	77,750

PROBLEM 9-1B (Continued)

Taking It Further:

Companies should start to record depreciation when the asset is ready for use. In the case of Weisman, the building was ready for use on August 31, 2017 and land improvements were completed on October 31, 2017 and so depreciation should be calculated from those dates.

Weisman should depreciate only the building and land improvements. Land has an indefinite useful life and therefore is not depreciated.

PROBLEM 9-2B

(a)

	Appraised Value	% of Total	Cost Allocated
Land	$262,500	35%	$245,000
Building	337,500	45%	315,000
Equipment	150,000	20%	140,000
	$750,000		$700,000

(b)

Building: Straight-line
1. To the nearest month

Year	Depreciable Amount*	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$315,000
2016	$300,000		1/60 × 2/12		$833	$833	314,167
2017	300,000		1/60		5,000	5,833	309,167

*** $315,000 − $15,000 = $300,000**

(2) Half a year in the year of acquisition

Year	Depreciable Amount*	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$315,000
2016	$300,000		1/60 × 6/12		$2,500	$2,500	312,500
2017	300,000		1/60		5,000	7,500	307,500

PROBLEM 9-2B (Continued)

(b) (Continued)

Equipment: Double diminishing-balance

1. To the nearest month

	Carrying Amount					End of Year	
	Beginning		Depr.		Depr.	Accum.	Carrying
Year	of Year	×	Rate*	=	Expense	Depr.	Amount
							$140,000
2016	$140,000		25% × 2/12		$5,833	$5,833	134,167
2017	134,167		25%		33,542	39,375	100,625

*** 200% ÷ 8 = 25%**

2) Half a year in the year of acquisition

	Carrying Amount					End of Year	
	Beginning		Depr.		Depr.	Accum.	Carrying
Year	of Year	×	Rate	=	Expense	Depr.	Amount
							$140,000
2016	$140,000		25% × 6/12		$17,500	$17,500	122,500
2017	122,500		25%		30,625	48,125	91,875

(c) Both options are acceptable. When deciding between the two policies, Solinger should consider, for purpose of consistency, the policy used in the past. Since this is the first year of business, Solinger should consider what other categories or types assets it will be purchasing in the future that will be depreciated using this policy. If for example, the remaining categories of assets will be depreciated using the units-of-production method, the choice will not matter. The impact of the choice will not be significant in the long run, particularly if the assets are bought and sold frequently. Also, the impact is insignificant for assets with very long useful lives, as is demonstrated in part (b) for the building. No matter the choice taken by Solinger, the policy must be followed consistently.

PROBLEM 9-2B (Continued)

Taking It Further:

If Solinger had decided to use the units-of-production method instead of the diminishing-balance method for depreciating its equipment, the decision between the adoption of a policy for depreciating to the nearest month or half a year in the year of acquisition would not matter. When using the units-of-production method, the calculation of depreciation is not calculated as a function of the time the asset is used but is based on the amount of use that is being made of the asset, which in turn is based on some units of output or production. There is no pro-ration for time used in the units-of-production method.

PROBLEM 9-3B

(a) Cost:

Cash price	$442,000
Delivery costs	4,000
Installation and testing	6,000
Total cost	$452,000

The one-year insurance policy is not included as it is an operating expenditure, benefiting only the current period.

(b) 1. STRAIGHT-LINE DEPRECIATION

						End of Year	
Year	Depreciable Amount	×	Depr. Rate	=	Depr. Expense	Accum. Depr.	Carrying Amount
							$452,000
2016	$432,000*		25%		$ 108,000	$ 108,000	344,000
2017	432,000		25%		108,000	216,000	236,000
2018	432,000		25%		108,000	324,000	128,000
2019	432,000		25%		108,000	432,000	20,000

* $452,000 − $20,000 = $432,000
** 100% ÷ 4 years = 25%

PROBLEM 9-3B (Continued)

(b) (Continued)

2. DOUBLE DIMINISHING-BALANCE DEPRECIATION

Year	Carrying Amount Beginning Of Year	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$452,000
2016	$452,000		50%		$226,000	$226,000	226,000
2017	226,000		50%		113,000	339,000	113,000
2018	113,000		50%		56,500	395,500	56,500
2019	56,500		50%		36,500**	432,000	20,000

*** 200% ÷ 4 = 50%**
**** Use the amount that brings carrying amount to the residual value of $20,000.**

3. UNITS-OF-PRODUCTION DEPRECIATION

Year	Units of Production	×	Depr. Amt./Unit*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$452,000
2016	22,600		$2.88*		$65,088	$ 65,088	386,912
2017	45,600		2.88		131,328	196,416	255,584
2018	49,700		2.88		143,136	339,552	112,448
2019	32,200		2.88		92,448**	432,000	20,000

*** Depreciation amount per unit:**
($452,000 − $20,000) ÷ 150,000 units = $2.88
**** Use the amount that makes carrying amount equal to residual value (actual production exceeded estimated total production).**

PROBLEM 9-3B (Continued)

(c) The straight-line method provides the lowest amount of depreciation expense for 2017, thus resulting in the highest profit that year. Over the life of the asset, all three methods result in the same total depreciation expense (equal to the depreciable amount).

Taking It Further:

The cost of recycling the equipment at the end of its useful life is an asset retirement cost which must added to the cost of the equipment — part (a). These costs would consequently be added to the depreciable amount in the calculation of depreciation under all of the methods and would proportionately increase the amount of depreciation expense — part (b).

PROBLEM 9-4B

(a)

Trans-action	Land	Building	Equip-ment	Accum. Depr.	Total PP&E	Profit
Jan. 22	NE	NE	NE	NE	NE	−$4,600
Apr. 10	NE	NE	+$95,000	NE	+$95,000	NE
May 6	NE	NE	NE	NE	NE	−$30,500
July 20	NE	NE	NE	NE	NE	−$10,000
Aug. 7	NE	NE	+$35,000	NE	+$35,000	NE
Aug. 15	NE	NE	NE	NE	NE	−$1,900
Oct. 25	NE	NE	+$18,200*	NE	+18,200	NE
Nov. 6	NE	+$120,000	NE	NE	+$120,000	NE
Dec. 31	NE	NE	NE	+$85,000**	−$85,000	−$85,000
Dec. 31	+$75,000***	NE	NE	NE	+$75,000	+$75,000

*$18,200 = $16,700 + $1,500
**$85,000 = [($250,000 − $75,000) − $90,000]
***$75,000 = $575,000 − $500,000

(b)

Jan.	22	Repairs Expense	4,600	
		Accounts Payable.....		4,600
Apr.	10	Equipment.....	95,000	
		Accounts Payable.....		95,000
May	6	Repairs Expense	30,500	
		Accounts Payable.....		30,500
July	20	Repairs Expense	10,000	
		Accounts Payable.....		10,000
Aug.	7	Equipment.....	35,000	
		Accounts Payable.....		35,000
	15	Training Expense	1,900	
		Accounts Payable.....		1,900

PROBLEM 9-4B (Continued)

(b) (Continued)

	Oct.	25	Equipment.....	16,700	
			Accounts Payable.....		16,700
		25	Equipment.....	1,500	
			Accounts Payable.....		1,500
	Nov.	6	Building.....	120,000	
			Accounts Payable.....		120,000
1.	Dec.	31	Impairment Loss	85,000	
			Accumulated Depreciation—Equipment.....		85,000
2.	Dec.	31	Land	75,000	
			Impairment Loss.....		75,000

Under IFRS, the reversal of the impairment loss is limited to the amount required to increase the asset's carrying amount to what it would have been if the impairment loss had not been recorded. In this case the original cost of the land was $575,000 and the amount of the impairment recorded to date is $75,000 ($575,000 − $500,000). Since the current recoverable amount of $600,000 is greater than the original cost of the land, before impairment was recorded, the recovery entry is limited to $75,000.

Taking It Further:

Given that the engine has to be replaced frequently, consideration should be given to depreciating this component of the equipment using a five year useful life and the remainder of the equipment the fifteen year useful life. If the original equipment does not have an amount specified for the engine as a component, it would be reasonable to use the value of a replacement motor to establish the cost of the original motor at the date of the purchase of the equipment.

PROBLEM 9-5B

(a)

Year	Depreciable Amount	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$600,000
2013	$575,000*		10%		$57,500	$ 57,500	542,500
2014	575,000		10%		57,500	115,000	485,000
2015	575,000		10%		57,500	172,500	427,500
2016	575,000		10%		57,500	230,000	370,000
2017	575,000		10%		57,500	287,500	312,500

*** Depreciable amount = $600,000 − $25,000 = $575,000**
**** 1 ÷ 10 years = 10%**

(b)

Dec. 31 2017	Impairment Loss	52,500	
	Accumulated Depreciation—Equipment ..... ($312,500 − $260,000)		52,500

(c) **On Short Track's income statement will be reported depreciation expense in the amount of $57,500 and the impairment loss of $52,500. On Short Track's balance sheet the equipment will be reported at its cost of $600,000 and the accumulated depreciation of $340,000 ($287,500 + 52,500) so that the book value will be $260,000 equal to the impaired amount.**

(d)

Year	Depreciable Amount	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
						$340,000[1]	$260,000
2018	$250,000[2]		50%[3]		$125,000	465,000	135,000
2019	250,000		50%		125,000	590,000	10,000

[1] **Accumulated Depreciation = $287,500 end of year before impairment loss + $52,500 impairment loss**
[2] **Depreciable amount = Recoverable amount at date of impairment less revised residual value of $10,000**
[3] **1 ÷ 2 years (7 – 5 years) remaining = 50%**

PROBLEM 9-5B (Continued)

Taking It Further:

It is important to record impairment losses when they occur to ensure that the amount of benefit to be derived from long-lived assets is not overstated on the balance sheet. When assets lose their utility, they must be reduced to the recoverable amount expected to be obtained through their use. Postponing a loss until the asset is sold or disposed of would result in mismatching costs and their related revenues and an overstatement of assets.

PROBLEM 9-6B

(a)

2015					
Jul.	**1**	**Equipment**	**395,000**		
		Cash		**100,000**	
		Notes Payable		**295,000**	
Dec.	**31**	**Depreciation Expense**	**19,750**		
		Accumulated Depreciation—Equipment		**19,750**	
		[($395,000 x (200% ÷ 20)) x 6/12]			
	31	**Interest Expense**	**7,375**		
		Cash		**7,375**	
		($295,000 x 5% x 6/12 = $7,375)			
2016					
May	**21**	**Software Expense**	**2,000**		
		Cash		**2,000**	
Dec.	**31**	**Depreciation Expense**	**37,525**		
		Accumulated Depreciation—Equipment		**37,525**	
		($395,000-$19,750) x 10% = $37,525)			
	31	**Interest Expense**	**14,750**		
		Cash		**14,750**	
		($295,000 × 5% = $14,750)			
	31	**Impairment Loss**	**62,725**		
		Accumulated Depreciation—Equipment		**62,725**	
		[$275,000 – ($395,000 - $19,750 - $37,525)]			

Carrying value of equipment: $337,725 ($395,000-$19,750-$37,525)
Impairment loss: $62,725 ($337,725-$275,000)

PROBLEM 9-6B (Continued)

(a) (Continued)

2017

Mar.	31	Depreciation Expense	6,875	
		Accumulated Depreciation—Equipment		6,875
		$275,000 x 10% × 3/12 = $6,875		
	31	Cash	240,000	
		Accumulated Depreciation—Equipment*	126,875	
		Loss on Disposal.....	28,125	
		Equipment		395,000
		* ($19,750+$37,525+$62,725+$6,875)		

Equipment	$395,000
Less: Accumulated depreciation	126,875
Carrying amount	268,125
Proceeds	240,000
Loss on disposal	$ 28,125

Apr.	1	Interest Expense.....	3,688	
		Notes Payable	295,000	
		Cash		298,688

(b)

The products made using the robot may not be as popular so revenue will be declining in the future. Or there could be new technology that will make the robot obsolete and of lower value to the company. Alternatively, there could have been physical damage to the robot that might be the cause of the impairment in value.

PROBLEM 9-6B (Continued)

(c)	**Sept. 30**	**Depreciation Expense**	**20,625**	
		Accumulated Depreciation—Equipment		**20,625**
		($275,000 x 10%) x 9/12 = 20,625		
	30	**Cash**	**260,000**	
		Accumulated Depreciation—Equipment**	**140,625**	
		Gain on Disposal		**5,625**
		Equipment		**395,000**

** **($19,750+$37,525+$62,725+$20,625)**

Equipment	**$395,000**
Less: Accumulated depreciation	**140,625**
Carrying amount	**254,375**
Proceeds	**260,000**
Gain on disposal	**$ 5,625**

Taking It Further:

The recoverable amount of an asset is the higher of the fair value of the asset less the cost to sell it or its value in use calculated using discounted cash flows.

In this case, the industrial robot will be used in production. Consequently, the value in use to SE Parts Supply would be the amount management expects to recover in operations by using the asset. As for establishing the fair value of the asset, equipment of similar type that has been recently sold can be used to make estimates of what would be obtained on sale. Under ASPE, impairment tests of property, plant and equipment need not be done every year, particularly if the likelihood of impairment is remote. Management should be diligent about looking for possible causes for impairment when changes in circumstances or conditions occur. If the company is using IFRS, annual impairment tests are required regardless of circumstances.

PROBLEM 9-7B

(a)

Invoice price	$125,000
Less proceed from sale	21,000
Cost of ownership	$104,000

1. STRAIGHT-LINE DEPRECIATION

Year	Depreciable Amount	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$125,000
2016	$107,000*		33.333%**		$35,667	$35,667	89,333
2017	107,000		33.333%		35,667	71,334	53,666
2018	107,000		33.333%		35,666	107,000	18,000

* $125,000 − $18,000 = $107,000
** 1 ÷ 3 years = 33.333%

2. DIMINISHING-BALANCE DEPRECIATION

Year	Carrying Amount Beginning Of Year	×	Depr. Rate	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$125,000
2016	$125,000		45%		$56,250	$56,250	68,750
2017	68,750		45%		30,938	87,188	37,812
2018	37,812		45%		17,015	104,203	20,797

PROBLEM 9-7B (Continued)

(a) (Continued)

3. UNITS-OF-PRODUCTION

Year	Units of Production	×	Depr. Amt/Unit*	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$125,000
2016	6,000		$8.917*		$ 53,502	$ 53,502	71,498
2017	2,000		8.917		17,834	71,336	53,664
2018	3,800		8.917		33,885	105,221	19,779

* Depreciable amount per unit is $8.917 per unit [($125,000 – $18,000) ÷ 12,000 = $8.917]

(b)	(1) Straight-Line	(2) Diminishing-Balance	(3) Unit –of-Production
Cost	$125,000	$125,000	$125,000
Accumulated depreciation	107,000	104,203	105,221
Carrying amount	18,000	20,797	19,779
Cash proceeds	21,000	21,000	21,000
Gain on sale	$ 3,000	$ 203	$ 1,221

(c)	(1) Straight-Line	(2) Diminishing-Balance	(3) Unit –of-Production
Depreciation expense	$107,000	$104,203	$105,221
Deduct Gain on sale	3,000	203	1,221
Net expense	$104,000	$104,000	$104,000

The net expense is the same under all three methods. The different depreciation methods results in different accumulated depreciation at the date of sale, which in turn causes a different gain on sale. Consequently, the total depreciation expense recognized over the life of the asset, less the gain on sale, results in the same net expense of $104,000 over the life of the asset.

PROBLEM 9-7B (Continued)

Taking It Further:

I disagree. Experiencing a gain or loss on the disposal of a depreciable asset is not the result of an error or mistake. Rather, a gain or loss is an expected outcome due to the limitations of the cost allocation that has occurred for the asset up to the date of its disposal. Since estimates are involved in arriving at the factors used in calculating depreciation, such as the estimated useful life and the estimated residual value, it is natural that some differences between the carrying amount and any proceeds of disposition will occur when the asset is disposed of.

PROBLEM 9-8B

(a)

2015				
Feb.	**4**	**Furniture**	**70,000**	
		Accounts Payable		**70,000**

(b)

2015				
Sept.	**30**	**Depreciation Expense**	**9,333**	
		Accumulated Depreciation—Furniture		**9,333**
		$70,000 × 20% × 8/12 months		
2016				
Sept.	**30**	**Depreciation Expense**	**12,133**	
		Accumulated Depreciation—Furniture		**12,133**
		($70,000 − $9,333) × 20%		
2017				
Sept.	**30**	**Depreciation Expense**	**9,707**	
		Accumulated Depreciation—Furniture		**9,707**
		($70,000 − $9,333 − $12,133) × 20%		

(c)

2018				
Jan.	**26**	**Depreciation Expense**	**2,588**	
		Accumulated Depreciation—Furniture		**2,588**
		($70,000 − $9,333 − $12,133 − $9,707) × 20% × 4/12		

Accumulated Depreciation at January 26, 2018:
$9,333 + $12,133 + $9,707 + $2,588 = $33,761

Carrying Amount at January 26, 2018:
Cost – Accumulated Depreciation
$70,000 − $33,761 = $36,239

PROBLEM 9-8B (Continued)

(c) (Continued)

(1)	**Jan.**	**26**	**Accumulated Depreciation—Furniture**	**33,761**	
			Loss on Disposal*	**36,239**	
			Furniture		**70,000**
			*** $0 – [$70,000 – $33,761] = ($36,239)**		
(2)	**Jan.**	**26**	**Cash**	**30,000**	
			Accumulated Depreciation—Furniture	**33,761**	
			Loss on Disposal**	**6,239**	
			Furniture		**70,000**
			**** $30,000 – [$70,000 – $33,761] = ($6,239)**		
(3)	**Jan.**	**26**	**Cash**	**40,000**	
			Accumulated Depreciation—Furniture	**33,761**	
			Gain on Disposal***		**3,761**
			Furniture		**70,000**
			***** $40,000 – [$70,000 – $33,761] = $3,761**		
(4)	**Jan.**	**26**	**Furniture ($55,000 + $30,000)**	**85,000**	
			Accumulated Depreciation—Furniture	**33,761**	
			Loss on Disposal****	**6,239**	
			Cash ($100,000 − $45,000)		**55,000**
			Furniture		**70,000**
			****** $30,000 – [$70,000 – $33,761] = ($6,239)**		

PROBLEM 9-8B (Continued)

Taking It Further:

The following are the arguments in favour of recording gains and losses on disposal of property, plant, and equipment as:

1. <u>Part of profit from operations</u>:
Gains and losses are basically just adjustments to depreciation expense and should be recorded in the same section of the income statement.

Classifying gains and losses as operations removes the potential for management bias in the selection of depreciation methods or in the estimates concerning useful lives and residual values of the assets. Bias might be at play concerning management's unwillingness to show losses in operations because management bonuses may be based on the amount of profit from operations.

2. <u>Non-operating items</u>:
The same management bias described above would be applied for gains recognized by the business.

A common view is that the disposal of property, plant, and equipment is not an everyday occurrence and gains or losses are not predictable.

It can also be argued that selling property, plant, and equipment is not part of normal operations and thus gains or losses should not be reported as part of profit from operations.

PROBLEM 9-9B

(a)	**April**	**1**	**Land**	**1,900,000**	
			Cash		**475,000**
			Notes Payable		**1,425,000**
	May	**1**	**Depreciation Expense**	**25,000**	
			Accumulated Depreciation—Equipment ($750,000 ÷ 10 × 4/12)		**25,000**
		1	**Cash**	**350,000**	
			Accumulated Depreciation—Equipment	**550,000**	
			Gain on Disposal		**150,000**
			Equipment		**750,000**
			Cost		**$750,000**
			Accumulated depreciation—equipment [($750,000 ÷ 10) × 7 + $25,000)]		**550,000**
			Carrying amount		**200,000**
			Cash proceeds		**350,000**
			Gain on disposal		**$150,000**
	June	**1**	**Cash**	**380,000**	
			Notes Receivable	**820,000**	
			Land		**300,000**
			Gain on Disposal		**900,000**
	July	**1**	**Equipment**	**1,000,000**	
			Accounts Payable		**1,000,000**
	Dec.	**31**	**Depreciation Expense**	**47,000**	
			Accumulated Depreciation—Equipment ($470,000 ÷ 10)		**47,000**

PROBLEM 9-9B (Continued)

(a) (Continued)

Dec.	31	Accumulated Depreciation—Equipment	376,000	
		Loss on disposal	94,000	
		Equipment		470,000

Accumulated Depreciation on equipment: $376,000 [($470,000 ÷ 10) x 8 years]

(b) Dec.	31	Depreciation Expense	570,000	
		Accumulated Depreciation—Building ($28,500,000 ÷ 50)		570,000
	31	Depreciation Expense	4,728,000	
		Accumulated Depreciation—Equipment		4,728,000

$46,780,000* ÷ 10	$4,678,000
$1,000,000 ÷ 10 × 6/12	50,000
	$4,728,000

*$48,000,000 − $750,000 − $470,000 = $46,780,000

	31	Interest Expense	64,125	
		Interest Payable		64,125
		($1,425,000 × 6% × 9/12) = $64,125		
	31	Interest Receivable	28,700	
		Interest Revenue		28,700
		($820,000 × 6% × 7/12) = $28,700		

PROBLEM 9-9B (Continued)

(c)

JAINA COMPANY
Balance Sheet (Partial)
December 31, 2017

Property, plant, and equipment*		
Land		**$ 5,600,000**
Building	**$28,500,000**	
Less: Accumulated depreciation	**12,670,000**	**15,830,000**
Equipment	**$47,780,000**	
Less: Accumulated depreciation	**18,874,000**	**28,906,000**
Total property, plant, and equipment		**$50,336,000**

***See T accounts that follow for balances**

Land

Jan. 1, 2017	**4,000,000**	**June 1, 2017**	**300,000**
April 1, 2017	**1,900,000**		
Dec. 31, 2017 Bal.	**5,600,000**		

Building

Jan. 1, 2017	**28,500,000**		
Dec. 31, 2017 Bal.	**28,500,000**		

Equipment

Jan. 1, 2017	**48,000,000**	**May 1, 2017**	**750,000**
July 1, 2017	**1,000,000**	**Dec. 31, 2017**	**470,000**
Dec. 31, 2017 Bal.	**47,780,000**		

PROBLEM 9-9B (Continued)

(c) (Continued)

Accumulated Depreciation—Building

		Jan. 1, 2017	12,100,000
		Dec. 31, 2017	570,000
		Dec. 31, 2017 Bal.	12,670,000

Accumulated Depreciation—Equipment

May 1, 2017	550,000	Jan. 1, 2017	15,000,000
Dec. 31, 2017	376,000	May 1, 2017	25,000
		Dec. 31, 2017	47,000
		Dec. 31, 2017	4,728,000
		Dec. 31, 2017 Bal.	18,874,000

Taking It Further:

Although the use of the revaluation model is permitted for those companies adopting the International Financial Reporting Standards (IFRS), its adoption is voluntary, and somewhat rare. Once adopted, the business will need to be consistent with the application of the model in the future. Additional evidence will be required each year to support the values that are being used in the revaluation. This could become expensive and the costs may exceed the benefits of implementing the revaluation model. Comparability with other companies might also be affected.

Because the revaluation model is not acceptable under ASPE and most companies are private, this would be the primary reason why most companies use the cost model.

PROBLEM 9-10B

1.	**Research Expense**	**70,000**	
	Patents		**70,000**
2.	**Patents**	**21,000**	
	Professional Fees Expense		**21,000**
3.	**Amortization Expense**	**7,450**	
	Accumulated Amortization—Patents		**7,450**
	{[($45,000 + $21,000) ÷ 5 years] − $5,750}		

Taking It Further:

The majority of intangible assets that are developed internally cannot be recognized as intangible assets on the balance sheet because the expenditures on internally developed intangibles cannot be distinguished from the costs of other research and development performed by the business. The costs cannot be separately measured and are expensed as incurred.

PROBLEM 9-11B

(a)	**Jan.**	**2**	**Trademark**	**7,000**	
			Cash		**7,000**
	July	**1**	**Research Expense**	**275,000**	
			Cash		**275,000**
		1	**Patents**	**50,000**	
			Cash		**50,000**
	Aug.	**1**	**Prepaid Advertising**	**45,000**	
			Cash		**45,000**
	Oct.	**1**	**Copyright #2**	**168,000**	
			Cash		**168,000**
	Dec.	**31**	**Amortization Expense**	**1,250**	
			Accumulated Amortization—Patents		**1,250**
			[($50,000 ÷ 20) × 6/12] = $1,250]		
	Dec.	**31**	**Amortization Expense**	**19,000**	
			Accumulated Amortization—Copyrights		**19,000**
			[($36,000 × 1/3) + ($168,000 × 1/6 × 3/12)]		

PROBLEM 9-11B (Continued)

(b)

GHANI CORPORATION
Balance Sheet (Partial)
December 31, 2017

Assets

Intangible assets		
Patents	$ 50,000	
Less: Accumulated amortization	1,250	$ 48,750
Copyrights[1]	$204,000	
Less: Accumulated amortization	43,000	161,000
Trademark[2]		59,000
Total intangible assets		$268,750
Goodwill		$150,000

[1] Copyright: Cost $36,000 + $168,000 = $204,000
Copyright: Amortization $24,000 + $19,000 = $43,000
[2] Trademark: $52,000 + $7,000 = $59,000

Taking It Further:

Although intangible assets do not have physical substance, they have characteristics common to other assets in that they contribute to the revenue producing ability of a business that owns them. They are owned and controlled by the business and therefore fit the definition of assets.

PROBLEM 9-12B

(a)

2016				
June	**7**	**Resource (Timber Land)**	**50,000,000**	
		Cash		**10,000,000**
		Mortgage Payable		**40,000,000**
	26	**Equipment**	**196,000**	
		Cash		**196,000**
Dec.	**31**	**Inventory**	**5,280,000**	
		Accumulated Depletion—Resource		**5,280,000**
		($50,000,000 − $2,000,000) ÷ 1,000,000 t = $48/t		
		$48/t × 110,000 t = $5,280,000		
	31	**Cost of Goods Sold**	**5,280,000**	
		Inventory		**5,280,000**
	31	**Depreciation Expense**	**14,000**	
		Accumulated Depreciation—Equipment		**14,000**
		$196,000 ÷ 7 × 6/12 = $14,000		
	31	**Interest Expense ($40,000,000 × 7% × 7/12)**	**1,633,333**	
		Cash		**1,633,333**

PROBLEM 9-12B (Continued)

(a) (Continued)

2017				
Dec.	**31**	**Inventory ($48/t × 240,000 t)**	**11,520,000**	
		Accumulated Depletion—Resource		**11,520,000**
	31	**Cost of Goods Sold**	**11,520,000**	
		Inventory		**11,520,000**
	31	**Depreciation Expense**	**28,000**	
		Accumulated Depreciation—Equipment		**28,000**
		($196,000 ÷ 7) = $28,000		
	31	**Interest Expense ($40,000,000 × 7%)**	**2,800,000**	
		Cash		**2,800,000**

(b)

CYPRESS TIMBER COMPANY
Income Statement (partial)
Year Ended December 31, 2017

Cost of goods sold		**$11,520,000**
Operating expenses:		
Depreciation expense	**$ 28,000**	
Other expenses:		
Interest expense	**$ 2,800,000**	

PROBLEM 9-12B (Continued)

(b) (Continued)

CYPRESS TIMBER COMPANY
(Partial) Balance Sheet
December 31, 2017

Property, plant, and equipment		
Resource	**$50,000,000**	
Less: Accumulated depletion[1]	**16,800,000**	**$33,200,000**
Equipment	**$196,000**	
Less: Accumulated depreciation[2]	**42,000**	**154,000**
Total property, plant, and equipment		**$33,354,000**

[1] $5,280,000 + $11,520,000 = $16,800,000
[2] $14,000 (2016) + $28,000 (2017) = $42,000

Taking It Further:

Due to its nature, it is expected that the estimate of the total amount of units to be extracted from a timber tract would need to be adjusted as extraction occurs and better estimates can be made. Management should not be influenced by the need for changes in estimates when choosing the units-of-production method for recording depreciation of the timber tract. It is the depreciation method that best allocates the cost of the tract to the units of timber that are recorded to inventory.

PROBLEM 9-13B

(a) (in thousands)

	Mock Orange Company	Cotoneaster Company
Asset turnover 2017	$\frac{\$9,428.0}{[(\$5,829.1 + \$5,771.4) \div 2]}$ = 1.63 to 1	$\frac{\$3,839.8}{[(\$2,754.5 + \$2,504.1) \div 2]}$ = 1.46 to 1
Asset turnover 2016	$\frac{\$8,894.3}{[(\$5,771.4 + \$5,343.9) \div 2]}$ = 1.60 to 1	$\frac{\$3,656.9}{[(\$2,504.1 + \$2,340.3) \div 2]}$ = 1.51 to 1
Return on assets 2017	$\frac{\$627.7}{[(\$5,829.1 + \$5,771.4) \div 2]}$ = 10.82%	$\frac{\$143.4}{[(\$2,754.5 + \$2,504.1) \div 2]}$ = 5.45%
Return on assets 2016	$\frac{\$597.8}{[(\$5,771.4 + \$5,343.9) \div 2]}$ = 10.76%	$\frac{\$137.9}{[(\$2,504.1 + \$2,340.3) \div 2]}$ = 5.69%

(b) Mock Orange Company is more efficient in using its assets to generate sales–its asset turnover of 1.63 times is higher than the turnover of 1.46 for Cotoneaster Company and its ratio is increasing while Cotoneaster's in decreasing. Mock Orange is also much more efficient in using assets to produce profit–with a return on assets of 10.82% compared to 5.45% for Cotoneaster Company. Moreover, Mock Orange's ratio is increasing while Cotoneaster's is decreasing.

PROBLEM 9-13B (Continued)

Taking it Further:

Although the ability to compare two companies in the same industry using ratios is affected by the depreciation methods adopted by the companies being compared, absolute conclusions cannot be drawn from these differences. In this particular comparison, in the early years of the useful lives of depreciable assets owed by Mock Orange will have lower amounts of depreciation recorded compared to Cotoneaster and will also have higher carrying amounts for the assets. This is the case because Mock Orange uses the straight-line method of depreciation and Cotoneaster uses the diminishing-balance method which results in high charges of depreciation in the early years and lower amounts in the later years. The opposite effect would occur in the amount of depreciation recorded in the later years of the useful lives of the assets being depreciated.

BYP 9-1 FINANCIAL REPORTING PROBLEM

(a) (in thousands)

	Cost	(2) Accumulated Depreciation	(3) Net Carrying Amount
Land	$5,539		$5,539
Broadcasting and computer equipment	146,115	$95,908	50,207
Buildings and Leasehold improvements	107,430	30,198	77,232
Furniture and fixtures	18,575	11,193	7,382
Other	4,560	1,302	3,258
	$282,219	$138,601	$143,618

(b)

	(1) Cost	(2) Impairments	(3) Net Carrying Amount
Broadcast licenses	$997,435	$17,451	$979,984
Goodwill	$1,000,408	65,549	$934,859

(c) As part of the disclosure provided in note 9 to the financial statements, no disposals or retirements were recorded for Broadcast licenses or Goodwill. On the other hand, impairment losses were recorded in the amount of $65,549,000 for Goodwill and $17,451,000 for Broadcast licenses.

BYP 9-1 (Continued)

(d) The amount of depreciation and amortization expense for the fiscal year ending August 31, 2014 was $24,068,000. These expenses were outlined in the Consolidated Statement of Income and Comprehensive Income.

(e) 1) Corus use the cost model

2) Corus uses the straight-line method of depreciation for property and equipment.

3) The estimated useful lives for property and equipment and intangibles are:

Buildings—Structure	**20 to 30 years**
Buildings—Components	**10 to 20 years**
Fixtures and equipment	**7 years**
Leasehold improvements	**lease term**
Computer equipment	**3 to 5 years**
Broadcasting equipment	**5 to 10 years**
Other	**4 to 10 years**

4) Corus derecognized assets upon disposal or when no future economic benefits are expected from their use or disposal. Any gains or losses arising on derecognition of the assets are calculated as the difference between the net disposal proceeds and the carrying amount of the assets.

BYP 9-2 INTERPRETING FINANCIAL STATEMENTS

(a) Westjet could use unit-of-production method of depreciation for engine, airframe and landing gear overhaul. For safety reasons, the overhaul costs are done at fixed points following the use of the specific overhauled equipment. These fixed points are likely based on the number of hours this equipment is used in flight. If the use of the assets varied over time, or were seasonal, the unit-of-production method would provide a better measure of the charge for depreciation against the revenue produced. It is likely that the amount of use of these assets does not vary a great deal over time, which justifies Westjet's choice of the straight-line method. If the amount of use varies greatly over time Westjet should use the unit-of-production method.

(b) Major overhaul expenditures involve equipment that must be overhauled as a function of amount of use, typically hours in flight. These overhauls must be performed for safety reasons. The expected life between overhauls is very predictable, and likely dictated by safety associations or regulators. Since the timing of the benefit is easily measured, the best match of the major overhaul costs to the revenues is achieved by capitalizing the costs and then depreciating the capitalized overhauls over the benefiting periods. This is an appropriate technique as it is the best and fairest way to deal with major overhaul costs. Other fleet maintenance is minor and less predictable and Westjet's policy to expense these costs immediately is appropriate.

BYP 9-2 (Continued)

(c) Leasehold improvements frequently have physical lives that are longer than the terms of the lease. But since the control and enjoyment of leasehold improvements is limited to the term of a lease, it is appropriate to use the term of the lease for purposes of calculating depreciation. Consequently, the maximum length of benefit to the lessee is the term of lease, which is appropriate in the calculation of depreciation. If, on the other hand, the leasehold improvements have a physical life shorter than the term of the lease, the shorter period should be used for purposes of calculating depreciation.

(d) Westjet uses component depreciation for engine, airframe and landing gear overhaul. Engines, in particular are constantly being overhauled, and so spares are needed to ensure that the airplane can be used during the period needed to perform the overhaul. Since the period of benefit of these major overhauls is considerably shorter than the useful life of the aircraft, this technique is a good example of where component depreciation is very appropriate.

BYP 9-3 COLLABORATIVE LEARNING ACTIVITY

All of the material supplementing the collaborative learning activity, including a suggested solution, can be found in the Collaborative Learning section of the Instructor Resources site accompanying this textbook.

BYP 9-4 COMMUNICATION ACTIVITY

Memorandum

To: Jason Long, Owner
From: Ken Bond, Controller

Re: Exchange of Long-Lived Assets

I am writing to you about the proposed exchange of one of our semi-trucks for a garage we could use as a branch of our repair operations.

The truck we intend to exchange has a carrying value on our books of $100,000 but its fair value in its current condition is $75,000. The garage we would get in exchange has a fair value of $90,000. Consequently we would need to pay, in cash, in the amount of $15,000 ($90,000 less $75,000), the difference in the fair values of the two assets exchanged.

(1) Because the fair value of the semi-truck is not the same as the carrying amount on our books, a gain or loss has to be recorded at the date of the exchange. The exchange transaction is a disposal combined with a purchase. In our case, the fair value is lower than the carrying amount and a loss of $25,000 ($100,000 carrying amount less $75,000 fair value) would have to be recorded. This loss will reduce profit for the period. The garage we obtain would be recorded at its fair value of $90,000. Because these are different types of assets with different useful lives, the garage will be depreciated at a different rate than the semi-truck. We will be consistent in our methods of depreciation with other assets in the same group. It is likely the depreciation on the garage will be lower than the depreciation we were recording on the semi-truck. As well, the garage is not likely to need frequent repairs as is the current case for the semi-truck.

BYP 9-4 (Continued)

(2) The exchange of assets would be recorded as follows:

Building	**90,000**	
Accumulated Depreciation—Vehicles	**65,000**	
Loss on Disposal	**25,000**	
Vehicles		**165,000**
Cash		**15,000**

(3) As I mentioned earlier, we will be consistent and use the same depreciation method for the garage as already use for buildings. Once we have established what our intentions are concerning how long we want to use the garage for operations and what the physical life of the garage, we will be able to calculate and record depreciation as soon as the garage is available for use.

BYP 9-5 "ALL ABOUT YOU" ACTIVITY

(a) Generally, copyright means the sole right to produce or reproduce a work or a substantial part of it in any form. It also includes the right to perform a work, or in the case of a lecture to deliver it, and the right to publish an unpublished work.

Copyright applies to all original literary, dramatic, musical, and artistic works. These include books, other writings, music, sculptures, paintings, maps, photographs, films, plays, television and radio programs, and computer programs. Copyright also applies to other subject matter including recordings (such as records, cassettes, DVDs, videos and tapes), performer's performances, and communication signals.

(b) A person acquires a copyright automatically when he or she creates an original work or other subject matter, provided the conditions set out in the *Copyright Act* have been met. Since you automatically obtain copyright, the law automatically protects you. You do not have to register your copyright in order to be protected.

(c) The *Copyright Act* provides that a certificate of registration is evidence that the copyright exists and that the person registered is the owner of the copyright. Being on the Register of Copyrights may also assist those wishing to seek permission to use the work.

(d) Registration of a copyright is done by completing an application and sending it to the Copyright Office, along with the appropriate fee.

BYP 9-5 (Continued)

(e) The fee for filing on-line is $50 and is so small that it is not material. Consequently, most businesses decide to expense the fee immediately. It is possible that with several copyrights, a meaningful amount can be recorded as an asset as the fees have been incurred to protect the right to the works and will bring benefit to the business in the future.

(f) Copyright infringement refers to unlawful use of copyright material. Plagiarism—passing off someone else's work as your own—is a form of infringement.

(g) A copyright generally lasts for the life of the author, plus 50 year following the calendar year the author dies.

BYP 9-6 Santé Smoothie Saga

(a)	**Purchase price**	**$28,400**
	Painting	**3,000**
	Shelving	**1,600**
	Cost of van	**$33,000**

(b) 1. STRAIGHT-LINE METHOD

Year	Depreciable Amount	×	Depr. Rate	=	Depr. Expense	End of Year: Accum. Depr.	End of Year: Carrying Amount
							$33,000
2018	$28,000*		20% × 5/12		$ 2,333	$ 2,333	30,667
2019	28,000		20%		5,600	7,933	25,067
2020	28,000		20%		5,600	13,533	19,467
2021	28,000		20%		5,600	19,133	13,867
2022	28,000		20%		5,600	24,733	8,267
2023	28,000		20% × 7/12		3,267	28,000	5,000
Total					$28,000		

*** ($33,000 − $5,000 = $28,000)**

2. DIMINISHING-BALANCE AT DOUBLE THE STRAIGHT-LINE RATE METHOD

Year	Carrying Amount (Beg. of Year	×	Depr. Rate	=	Depr. Expense	End of Year: Accum. Depr.	End of Year: Carrying Amount
							$33,000
2018	$33,000		40%* × 5/12		$ 5,500	$ 5,500	27,500
2019	27,500		40%		11,000	16,500	16,500
2020	16,500		40%		6,600	23,100	9,900
2021	9,900		40%		3,960	27,060	5,940
2022	5,940		40%		940**	28,000	5,000
					$28,000		

*** 40% = 20% × 2 [double the straight-line rate]**
****amount required for carrying amount to equal residual value**

BYP 9-6 (Continued)

(b) (Continued)

3. UNITS-OF-PRODUCTION METHOD

Year	Units of Production	×	Depreciable Cost/Unit	=	Depr. Expense	End of Year Accum. Depr.	End of Year Carrying Amount
							$33,000
2018	30,000		$0.14*		$ 4,200	$ 4,200	28,800
2019	37,500		0.14		5,250	9,450	23,550
2020	40,000		0.14		5,600	15,050	17,950
2021	47,500		0.14		6,650	21,700	11,300
2022	35,000		0.14		4,900	26,600	6,400
2023	10,000		0.14		1,400	28,000	5,000
					$28,000		

*** ($33,000 − $5,000) ÷ 200,000 km = $0.14 per km**

(c) The units-of-production method of depreciation will result in the greatest amount of profit reported for the year ended May 31, 2019 because it has the lowest depreciation expense for the year. There will be no difference in the total profit over the life of the asset.

(d) As indicated in the three different schedules prepared in part (b), the carrying amount on the balance sheet at May 31, 2019 would be the highest if the straight-line method were used. By the end of the useful life the carrying amount will be the same under all depreciation methods.

(e) I recommend the unit-of-production method of depreciation because this method will provide Natalie with the best pattern to match the economic benefits of the van. It will provide the fairest charge for each year.

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Copyright

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