Fundamental Accounting Principles Vol 2 (Canadian) 16th edition Larson Solutions Manual

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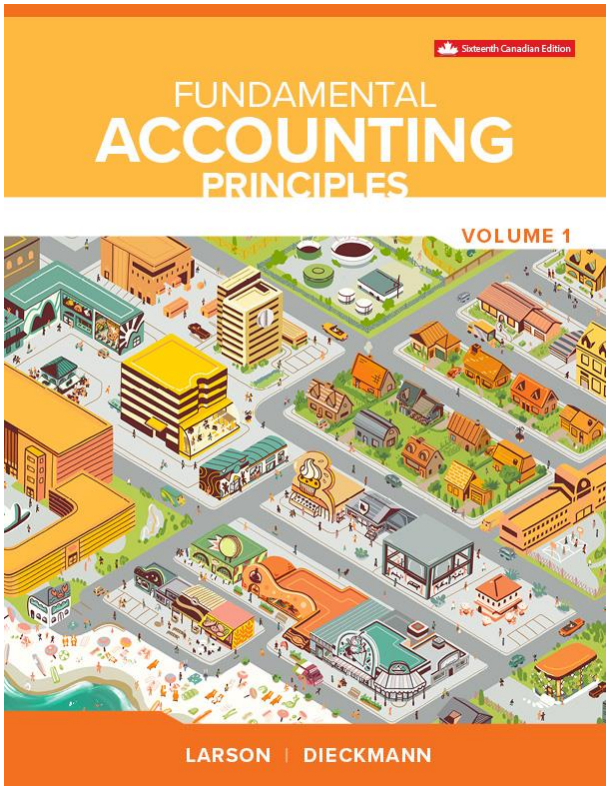
SOLUTIONS MANUAL

to accompany

Fundamental Accounting Principles, Volume 2

16th Canadian Edition

by Larson/Dieckmann



Prepared by:

Laura Dallas, Kwantlen Polytechnic University

Technical checks by:

Rhonda Heninger, Southern Alberta Institute of Technology

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Chapter 9 Property, Plant and Equipment and Intangibles

Chapter Opening Critical Thinking Challenge Questions*

You are asked by the CFO of YVR to evaluate the newest capital asset, the Airside Operations Building at YVR, and to break it into major components for depreciation purposes. Identify at least five major components and determine an expected life for each of those components.

Components of the Airside Operations Building could include:

1. Building exterior walls	40 years
2. Roofing	25 years
3. Pavement	15 years
4. Landscaping	10 years
5. Electrical Components	15 years
6. Flooring	15 years
7. Plumbing	15 years
8. Furniture and Fixtures	15 years
9. Fire Equipment	20 years
10. Snow Removal Equipment	20 years

***The Chapter 9 Critical Thinking Challenge questions are asked at the beginning of this chapter. Students are reminded at the conclusion of the chapter to refer to the Critical Thinking Challenge questions at the beginning of the chapter. The solutions to the Critical Thinking Challenge questions are available here in the Solutions Manual and accessible to students at Connect.**

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Knowledge Check-Up Questions

1. a)	**2. d)**	**3. d)**	**4. d)**	**5. c)**
6. c)	**7. b)**	**8. d)**	**9. c)**	**10. c)**

Concept Review Questions

1. **A property, plant and equipment asset is long-lived in that it has a service life of longer than one accounting period; it is used in the production or sale of products or services. It is different from other assets such as receivables or inventory in that the property, plant and equipment is used within the operations of business to generate profit, whereas inventory is purchased or manufactured for resale. Receivables represent the amounts due from customers based on past transactions.**

2. **Land held for future expansion is classified as a long-term investment. It is not a property, plant and equipment asset because it is not being used in the production or sale of other assets or services.**

3. **The cost of a property, plant and equipment asset includes all normal, reasonable, and necessary costs of getting the asset in place and ready to use. For example, cost includes such items as the invoice price paid, freight costs, non refundable sales taxes (PST, HST) and all costs incurred related to installing and testing an asset before it is put into use.**

4. **Land is an asset with an unlimited life and, therefore, is not subject to depreciation. Land improvements refer to items such as fencing, parking lots surfaces, landscape lighting and have limited lives and are depreciated over their useful lives.**

5. **No. The Accumulated Depreciation, Machinery account is a contra asset account with a credit balance that does not represent cash or any other funds. Funds available for buying machinery would be shown on the balance sheet as liquid assets with debit balances, such as the account Cash and Cash Equivalents. The balance of the Accumulated Depreciation, Machinery account shows the portion of the machinery's original cost that has been charged to depreciation expense, and gives some indication of how soon the asset will need to be replaced.**

6. **Repairs are made to keep a plant and equipment asset in normal, good operating condition, and should be charged to expense of the current period. Betterments are made to extend the service potential or the life of a plant and equipment asset beyond the original estimated life and are charged to the plant and equipment asset account. After incurring a betterment, a depreciation policy also needs to be established.**

7. **Because the $75 cost of the plant and equipment asset is not likely to be material to the users of the financial statements, the materiality principle justifies charging it to expense.**

8. **Spin Master had Depreciation and amortization of 44,908 and 30,490 (thousands) in 2017 & 2016 as seen on the Consolidated statements of Cash flows. The explanation of the difference is found in Note 11 of the Financial Statements.**

9. **A company might sell or exchange an asset when it reaches the end of its useful life, or if it becomes inadequate or obsolete, or because the company has changed its business plans. An asset may also be damaged or destroyed by fire or some other accident.**

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10. An intangible asset has no physical existence. Its value comes from the unique legal and contractual rights held by its owner.

11. Types of intangible assets are patents, copyrights, leaseholds, drilling rights, and trademarks.

12. WestJet reported $59,517,000 as Intangible assets at December 31, 2017.

13. A business can only record goodwill when the price paid for a company being purchased exceeds the fair market value of this company's net assets (assets minus liabilities) if purchased separately.

14. WestJet did not report any Goodwill at December 31, 2017.

15. When an asset is constructed, such as the development of a new runway, all costs for construction-related materials and labour costs can be capitalized. Also, any electricity and utilities consumed relating to the project, plus a reasonable amount for depreciation on any equipment used during construction. Other permitted costs include design fees, building materials and any interest charges on debt outstanding during the period of construction incurred to finance the project.

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QUICK STUDY

Quick Study 9-1 (5 minutes)

$18,000 + $180,000 + $3,000 + $600 = $201,600

Quick Study 9-2 (10 minutes)

Invoice cost	$11,000
Freight costs	280
Steel mounting	815
Assembly	4,055
Less: discount ($11,000 × 2%)	(220)
Total acquisition costs	$15,925

Note: The $50 gloves are an expense and therefore not capitalized.

Quick Study 9-3 (10 minutes)

1. (a) Repairs & Maintenance Expense
   (b) Betterment
   (c) Repairs & Maintenance Expense
   (d) Betterment

2.

(a)			
Mar. 15	Repairs Expense	120	
	Accounts Payable		120
	To record repairs.		
(b)			
Mar. 15	Refrigeration Equipment	40,000	
	Accounts Payable		40,000
	To record a betterment.		
(c)			
Mar. 15	Repairs Expense	200	
	Accounts Payable		200
	To record repairs.		
(d)			
Mar. 15	Office Building	175,000	
	Accounts Payable		175,000
	To record a betterment.		

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Quick Study 9-4 (10 minutes)

PPE Item	*(a)* Appraised Values	*(b)* Ratio of Individual Appraised Value to Total Appraised Value *(a) ÷ Total Appraised Value*	*(c)* Cost Allocation *(b) x Total Actual Cost*
Land	$ 320,000	320,000 ÷ 500,000 = .64 or 64%	$ 345,600[1]
Building	180,000	180,000 ÷ 500,000 = .36 or 36%	194,400[2]
Totals	$ 500,000		$ 540,000

1. 64% x 540,000 = 345,600
2. 36% x 540,000 = 194,400

2020			
Apr. 14	Land	345,600	
	Building	194,400	
	Cash		85,000
	Notes Payable		455,000
	To record purchase of land and building.		

Quick Study 9-5 (10 minutes)

TechCom
Partial Balance Sheet
October 31, 2020

Assets			
Current assets:			
Cash		$ 9,000	
Accounts receivable	$16,400		
Less: Allowance for doubtful accounts	800	15,600	
Total current assets			$ 24,600
Property, plant and equipment:			
Land		$48,000	
Vehicles	$62,000		
Less: Accumulated depreciation	13,800	48,200	
Equipment	$25,000		
Less: Accumulated depreciation	3,800	21,200	
Total property, plant and equipment			117,400
Intangible assets:			
Patent	$20,100		
Less: Accumulated amortization, patent	3,100		17,000
Total assets			$159,000

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Quick Study 9-6 (10 minutes)

($55,900 – $1,900)/4 = $13,500/year

Quick Study 9-7 (10 minutes)

Rate per copy = ($45,000 – $5,000)/4,000,000 copies = $0.01/copy

Year	Calculation		Annual Depreciation
2020	$.01 × 650,000	=	$6,500
2021	$.01 × 798,000	=	7,980
2022	$.01 × 424,000	=	4,240
2023	$.01 × 935,000	=	9,350
2024	$.01 × 1,193,000	=	11,930
			$40,000

Quick Study 9-8 (10 minutes)

Annual rate of depreciation = 2/5 = .40 or 40% per year

Year	Calculation	Annual Depreciation
2020	40% × $86,000 =	$34,400
2021	40% × ($86,000 – $34,400) =	20,640
2022	40% × ($86,000 – $34,400 – $20,640) =	12,384
2023	40% × ($86,000 – $34,400 – $20,640 – $12,384) =	2,576*
2024		0
		$70,000

***The calculation shows $7,430 of depreciation but that amount would cause accumulated depreciation to exceed the maximum allowed of cost less residual ($86,000 – $16,000 = $70,000). Therefore, the depreciation for 2020 must be adjusted to $2,576.**

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Quick Study 9-9 (10 minutes)

Computer panel:
$4,000/8 years = $500 depreciation

Dry-cleaning drum:
$70,000 - $5,000 = $65,000/400,000 garments = $0.1625/garment;
$0.1625/garment × 62,000 garments = $10,075 depreciation

Stainless steel housing:
$85,000 - $10,000 = $75,000/20 years = $3,750 depreciation

Miscellaneous parts:
$26,000/2 years = $13,000 depreciation
Total depreciation on the dry-cleaning equipment for 2020= $500 + $10,075 + $3,750 + $13,000 = $27,325

Quick Study 9-10 (10 minutes)

	2020	2021
a.	$5,000	$6,000
b.	$3,000	$6,000

Calculations:

a. $\frac{60{,}000 - 0}{10 \text{ years}}$ = 6,000/year x 10/12 = 5,000

b. 6,000/year x 6/12 = 3,000

Quick Study 9-11 (10 minutes)

	2020	2021
a.	$10,000	$10,000
b.	$6,000	$10,800

Calculations:

a. 2/10 = .2 or 20%; 20% x 60,000 = 12,000 x 10/12 = 10,000 for 2020
20% x (60,000 – 10,000) = 10,000 for 2021

b. 20% x 60,000 = 12,000 x 6/12 = 6,000 for 2020
20% x (60,000 – 6,000) = 10,800 for 2021

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Quick Study 9-12 (10 minutes)

	2020	2021
a.	10,000	14,000
b.	10,000	14,000

Calculations:
75,000 – 15,000 = 60,000/120,000 = $0.50 depreciation expense per unit produced
$0.50 x 20,000 = $10,000 for 2020; $0.50 x 28,000 = $14,000 for 2021

NOTE: The units-of-production method is a usage-based method as opposed to a time-based method (such as straight-line and double-declining-balance) and therefore partial periods do not affect the calculations.

Quick Study 9-13 (10 minutes)

[($35,720 – $11,820[1]) – $1,570]/ 7[2] years remaining = $3,190

1.($35,720 – $4,200)/8 = $3,940/year × 3 years = $11,820
2.10 – 3 = 7

Quick Study 9-14 (10 minutes)

2020			
Jan. 3	**Barbecue – Rotisserie……**	**1,000**	
	Cash……..		**1,000**
	To record the purchase of electronic rotisserie.		
Dec. 31	**Depreciation Expense, Barbecue……**	**1,560**	
	Accumulated Depreciation, Barbecue……		**1,560**
	To record revised depreciation on the barbecue caused by the addition of a rotisserie; $7,000 - $200 = $6,800 ÷ 5 years = $1,360 PLUS $1,000 ÷ 5 years = $200; Total depreciation = $1,360 + $200 = $1,560.		

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Quick Study 9-15 (10 minutes)

Impairment losses occurred on the computer and the furniture in the amounts of $1,500 and $21,000, respectively.

Calculations:

Asset	Cost	Accumulated Depreciation	Book Value	Recoverable Amount	Impairment Loss
Building	$1,200,000	$465,000	$735,000	$735,000	N/A
Computer	3,500	1,800	1,700	200	$ 1,500
Furniture	79,000	53,000	26,000	5,000	21,000
Land	630,000	0	630,000	790,000	N/A
Machine	284,000	117,000	167,000	172,000	N/A

Quick Study 9-16 (10 minutes)

a.

2020			
Oct. 1	Accumulated Depreciation, Equipment	39,000	
	Cash	17,000	
	Equipment		56,000
	To record sale of equipment.		

b.

Oct. 1	Accumulated Depreciation, Machinery	96,000	
	Cash	27,000	
	Machinery		109,000
	Gain on Disposal		14,000
	To record sale of equipment.		

c.

Oct. 1	Accumulated Depreciation, Truck	33,000	
	Cash	11,000	
	Loss on Disposal	4,000	
	Delivery Truck		48,000
	To record sale of equipment.		

d.

Oct. 1	Accumulated Depreciation, Furniture	21,000	
	Loss on Disposal	5,000	
	Furniture		26,000
	To record disposal of equipment.		

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Quick Study 9-17 (10 minutes)

2020			
Dec 31	**Accumulated Depreciation, Automobile**	**13,500**	
	Computer*	**5,800**	
	Automobile		**15,000**
	Cash		**2,750**
	Gain on Disposal		**1,550**
	To record exchange.		

***Computer = FV of assets received= $5,800 as given**

Quick Study 9-18 (15 minutes)

2020			
Mar. 1	**Accumulated Depreciation, Machine (old)**	**36,000**	
	Machine (new)[2]	**117,000**	
	Cash[1]		**63,000**
	Machine (old)		**90,000**
	To record exchange of machines.		

1. Cash paid = $123,000 - $60,000 = $63,000
2. Machine (new) = $63,000 cash paid + $54,000 book value of old = $117,000

Quick Study 9-19 (10 minutes)

2020			
Jan. 4	**Franchise**	**95,000**	
	Cash		**95,000**
	To record purchase of franchise.		
Dec. 31	**Amortization Expense, Franchise**	**9,500**	
	Accumulated Amortization, Franchise		**9,500**
	To record amortization of franchise;		
	$95,000/10 years = $9,500 per year		

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Quick Study 9-20 (10 minutes)

2020			
Oct. 1	**Mineral Rights**	**35,000,000**	
	Water Rights	**4,000,000**	
	Cash		**9,000,000**
	Long-Term Note Payable		**30,000,000**
	To record the purchase of intangibles.		
Dec. 31	**Amortization Expense, Mineral Rights**	**875,000**	
	Accumulated Amortization, Mineral Rights		**875,000**
	To record amortization of mineral rights;		
	$35,000,000 ÷ 10 years = $3,500,000/year;		
	$3,500,000/year × 3/12 = $875,000.		
31	**Amortization Expense, Water Rights**	**100,000**	
	Accumulated Amortization, Water Rights		**100,000**
	To record amortization of water rights;		
	$4,000,000 ÷ 10 years = $400,000/year;		
	$400,000/year × 3/12 = $100,000.		

***Quick Study 9-21 (20 minutes)**

Motor (old)	**$45,000 - $5,000 = $40,000 ÷ 10 yrs × 8/12 =**	**$ 2,667**
Motor (new)	**$60,000 - $10,000 = $50,000 ÷ 8 yrs × 4/12 =**	**2,083**
Metal housing	**$68,000 - $15,000 = $53,000 ÷ 25 yrs =**	**2,120**
Misc. parts	**$15,000 ÷ 5 yrs =**	**3,000**
Total depreciation expense to be recorded on the machine for 2020 =		**$ 9,870**

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EXERCISES

Exercise 9-1 (10 minutes)

Invoice cost	$28,000
Freight costs	450
Steel mounting	985
Assembly	660
Raw materials for testing	310
Less: discount ($28,000 × 1%)	(280)
Total acquisition costs	$30,125

Note: The $380 repairs are an expense and therefore not capitalized.
Note: The special insurance is an expense and therefore not capitalized.

Exercise 9-2 (15 minutes)

Cost of land:

Purchase price for land	$1,200,000
Purchase price for old building	480,000
Demolition costs for old building	75,000
Levelling the lot	105,000
Total cost of land	$1,860,000

Cost of new building:

Construction costs	$2,880,000
Less: Cost of land improvements*	215,000
Cost of new building	$2,665,000

****The land improvements are a distinct PPE asset that depreciates at a different rate than the building. Therefore, it should be debited to an account separate from the building.***

Journal entry:

2020			
Mar. 10	Land	1,860,000	
	Land Improvements	215,000	
	Building	2,665,000	
	Cash		4,740,000
	To record costs of plant assets.		

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Exercise 9-3 (15 minutes)

Allocation of total cost:

PPE Asset	*(a)* Appraised Values	*(b)* Ratio of Individual Appraised Value to Total Appraised Value *(a) ÷ Total Appraised Value*	*(c)* Cost Allocation *(b) x Total Actual Cost*
Land	$249,480	249,480 ÷ 594,000 = .42 or 42%	$ 244,346[2]
Land Imprv.	83,160	83,160 ÷ 594,000 = .14 or 14%	81,448[3]
Building	261,360	261,360 ÷ 594,000 = .44 or 44%	255,981[4]
Totals	$594,000		$ 581,775[1]

1. 552,375 + 29,400 = 581,775
2. 42% x 581,775 = 244,346
3. 14% x 581,775 = 81,448
4. 44% x 581,775 = 255,981

Journal entry:

2020			
Apr. 12	Land	244,346	
	Land Improvements	81,448	
	Building	255,981	
	Cash		581,775
	To record costs of lump-sum purchase.		

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Exercise 9-4 (20 minutes)

2020			
Jan. 1	**Land**	**1,296,000**	
	Building	**1,512,000**	
	Equipment	**1,123,200**	
	Tools	**388,800**	
	Cash		**1,104,000**
	Notes Payable		**3,216,000**
	To record lump-sum purchase.		

Calculations:

PPE Asset	*(a)* Appraised Values	*(b)* Ratio of Individual Appraised Value to Total Appraised Value *(a) ÷ Total Appraised Value*	*(c)* Cost Allocation *(b) x Total Actual Cost*
Land	**$ 1,152,000**	**1,152,000 ÷ 3,840,000 = .30 or 30%**	**$ 1,296,000[1]**
Building	**1,344,000**	**1,344,000 ÷ 3,840,000 = .35 or 35%**	**1,512,000[2]**
Equipment	**998,400**	**998,400 ÷ 3,840,000 = .26 or 26%**	**1,123,200[3]**
Tools	**345,600**	**345,600 ÷ 3,840,000 = .09 or 9%**	**388,800[4]**
Totals	**$ 3,840,000**		**$ 4,320,000**

1. **30% x 4,320,000 = 1,296,000**
2. **35% x 4,320,000 = 1,512,000**
3. **26% x 4,320,000 = 1,123,200**
4. **9% x 4,320,000 = 388,800**

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Exercise 9-5 (10 minutes)

2020

Jan. 1	**Truck**	**87,000**	
	Cash		**87,000**

Calculation:
52,500 + 21,000 + 7,500 + 6,000 = 87,000

Jan. 4	**Prepaid Insurance**	**5,100**	
	Gas Expense	**225**	
	Cash		**5,325**

2020

Dec 31	**Depreciation Expense, Truck**	**15,600**	
	Accumulated Depreciation, Truck		**15,600**
	To record depreciation.		

Calculation:
[(52,500 + 21,000 + 7,500 + 6,000) – 9,000] / 5 years = 15,600

Note: Insurance expense entries could also be made, to move from prepaid insurance, although not required in question.

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Exercise 9-6 (15 minutes)

Year	a. Straight-Line	b. Double-Declining-Balance	c. Units-of-Production
2018	$32,550	$75,100	$26,880
2019	$32,550	$37,550	$28,910
2020	$32,550	$17,550	$36,890
2021	$32,550		$37,520
Total	$130,200	$130,200	$130,200

Explanation:

a.
($150,200 – $20,000)/4 = $32,550/year

b.
Double-declining-balance (Rate = 2/4 = 0.50 or 50%):
50% × $150,200 = $75,100
50% × ($150,200 – $75,100) = $37,550
Maximum depreciation is limited to $130,200 which is cost less residual ($150,200 – $20,000) therefore depreciation for 2020 is $17,550 calculated as $130,200 – $112,650 accumulated depreciation recorded to date.

c.
Units-of-production: (Rate = [($150,200 – $20,000)/186,000] = $0.70/unit)
$26,880 ($0.70 × 38,400)
$28,910 ($0.70 × 41,300)
$36,890 ($0.70 × 52,700)
Maximum depreciation is limited to $130,200 which is cost less residual ($150,200 – $20,000) therefore depreciation for 2021 is $37,520 calculated as $130,200 – $92,680 accumulated depreciation recorded to date.

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Exercise 9-7 (15 minutes)

a. ($305,200 – $52,400)/5 = $50,560

b.

Rate = 2/5 = .40 or 40%
40% × $305,200 = $122,080

c.
Rate = ($305,200 – $52,400)/320,000 km = $0.79/km
$0.79/km × 30,000 km = $23,700

Analysis component:
The units-of-production method will produce the highest profit in 2020 because it is the lowest depreciation expense for 2020.

Exercise 9-8 (30 minutes)

	Straight-Line[1]		Double-Declining-Balance[2]		Units-of-Production[3]	
Year	Depreciation Expense	Book Value at December 31	Depreciation Expense	Book Value at December 31	Depreciation Expense	Book Value at December 31
2020	21,250	104,000	50,100	75,150	16,875	108,375
2021	21,250	82,750	30,060	45,090	22,250	86,125
2022	21,250	61,500	18,036	27,054	30,000	56,125
2023	21,250	40,250	8,054	19,000	37,125	19,000
2024	21,250	19,000	0	19,000	0	19,000

Calculations:

1. **125,250 – 19,000 = 106,250/5 = 21,250**
2. **2/5 = .4 or 40%; .4 x 125,250 = 50,100; .4 x (125,250 – 50,100) = 30,060;**
   .4 x (125,250 – 50,100 – 30,060) = 18,036;
   .4 x (125,250 – 50,100 – 30,060 – 18,036) = 10,822; maximum = 8,054 calculated as cost less residual = 125,250 – 19,000 = 106,250 less total deprec. taken of 98,196 = 8,054.
3. **125,250 – 19,000 = 106,250/8,500 = $12.50/hour;**
   2020– 12.50 x 1,350 = 16,875;
   2021– 12.50 x 1,780 = 22,250;
   2022– 12.50 x 2,400 = 30,000;
   2023– 12.50 x 2,980 = 37,250; maximum = 37,125; calculated as cost less residual = 125,250 – 19,000 = 106,250 less total deprec. taken of 69,125 = 37,125.

Analysis component:
a. 2020– Units-of-production; 2023– Straight-line
b. 2020– Double-declining-balance; 2023– Units-of-production

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Exercise 9-9 (30 minutes)

PPE Asset	*(a)* Appraised Values	*(b)* Ratio of Individual Appraised Value to Total Appraised Value *(a) ÷ Total Appraised Value*	*(c)* Cost Allocation *(b) x Total Actual Cost*
Land	$ 700,000	700,000 ÷ 2,100,000 = .33 or 33.33%	$ 840,000[1]
Building	1,120,000	1,120,000 ÷2,100,000 = .533 or 53.33%	1,344,000[2]
Equipment	210,000	210,000 ÷ 2,100,000 = .10 or 10%	252,000[3]
Tools	70,000	70,000 ÷ 2,100,000 = .033 or 3.33%	84,000[4]
Totals	$ 2,100,000		$ 2,520,000

1. *33.33% x 2,520,000 = 840,000*
2. *53.33% x 2,520,000 = 1,344,000*
3. *10.00% x 2,520,000 = 252,000*
4. *3.33% x 2,520,000 = 84,000*

PPE Asset	Cost	2020 Depreciation	2021 Depreciation
Land	$ 840,000	N/A[5]	N/A[5]
Building	1,344,000	1,344,000 × 2/10 = 268,800	(1,344,000 – 268,800) × 2/10 = 215,040
Equipment	252,000	252,000 × 2/5 = 100,800	(252,000 – 100,800) × 2/5 = 60,480
Tools	84,000	84,000 × 2/3 = 56,000	(84,000 – 56,000) × 2/3 = 18,667

5. Land is not depreciated as it has an unlimited life and is not consumed when used.

Analysis component:

We do not depreciate the cost of land as it has an unlimited life and is not consumed when used.

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Exercise 9-10 (20 minutes)

Cost Information						Depreciation		
Description	Date of Purchase	Depreciation Method	Cost	Residual	Life	Balance of Accum. Deprec. Dec. 31, 2019	Depreciation Expense for 2020	Balance of Accum. Deprec. Dec. 31, 2020
Building	2 May 2014	S/L	$650,000	$250,000	10 yr.	$226,667	$40,000[1]	$266,667[2]
Modular Furniture	2 May 2014	S/L	72,000	0	6 yr.	68,000	4,000[3]	72,000[4]
Truck	25 Jan 2017	DDB	80,000	10,000	8 yr.	45,313	8,672[5]	53,985[6]

1. (650,000 – 250,000)/10 = 40,000/year
2. 226,667 + 40,000 = 266,667
3. (72,000 – 0)/6 = 12,000 per year; however, the maximum accumulated depreciation = 72,000; 72,000 less total depreciation taken of 68,000(8,000 in 2014 [(72,000 – 0)/6 = $12,000 per year X 8/12] plus 12,000 in years 2015 – 2019) = 4,000
4. 68,000 + 4,000 = 72,000
5. Rate = 2/8 = .25 or 25%
   25% × (80,000 – 45,313) = 8,672
6. 45,313 + 8,672 = 53,985

Analysis component:

Depreciation is the process of allocating an asset's cost to expense over its useful life. It should be done using a rational and systematic manner. Dynamic uses the straight-line method and the double-declining balance method for its assets, which are both acceptable under GAAP. Dynamic has likely chosen different methods for depreciating its assets to better reflect the usage pattern of each asset, which is acceptable under GAAP.

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Exercise 9-11 (15 minutes)

DYNAMIC EXPLORATION
Partial Balance Sheet
December 31, 2019

Assets			
Current assets			$338,000
Property, plant and equipment:			
Furniture	$72,000		
Less: Accumulated depreciation	68,000	$4,000	
Building	$650,000		
Less: Accumulated depreciation	226,667	423,333	
Truck	$ 80,000		
Less: Accumulated depreciation	45,313	34,687	
Total property, plant and equipment			462,020
Total assets			$800,020

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Exercise 9-12 (15 minutes)

a. Straight-line depreciation:

	Year 1	Year 2	Year 3	Year 4	Year 5	5-Year Totals
Profit before depreciation	$180,000	$180,000	$180,000	$180,000	$180,000	$900,000
Depreciation expense[1]....	73,980	73,980	73,980	73,980	73,980	369,900
Profit	$106,020	$106,020	$106,020	$106,020	$106,020	$530,100

b. Double-declining-balance depreciation:

	Year 1	Year 2	Year 3	Year 4	Year 5	5-Year Totals
Profit before depreciation	$180,000	$180,000	$180,000	$180,000	$180,000	$900,000
Depreciation expense[2]...	193,560	116,136	60,204	0	0	369,900
Profit (loss)	$(13,560)	$63,864	$119,796	$180,000	$180,000	$530,100

a. ($483,900 – $114,000)/5 = $73,980
b. Rate = 2/5 = .40 or 40%
Depreciation expenses:
Year 1: $483,900 × 40% = $193,560
Year 2: ($483,900 – $193,560) × 40% = $116,136
Year 3: $60,204 max. depreciation expense (calculated as $483,900 – $114,000 – $193,560 – $116,136 = $60,204)

Analysis component:

Kenartha Oil will choose straight-line depreciation to depreciate the equipment if its goal is to show the highest value possible for the equipment on the Year 1 balance sheet. Straight-line will result in lower depreciation than double declining balance in Year 1. The lower the depreciation, the greater the net book value of the asset (cost less accumulated depreciation appearing in the balance sheet).

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Exercise 9-13 (15 minutes)

	Depreciation	
Year	**Straight-Line[1]**	**Units-of-Production[3]**
2018	**7,800**	**23,220**
2019	**23,400**	**42,660**
2020	**23,400**	**34,560**

1. Straight-Line:
$168,000 – $27,600 = $140,400/6 = $23,400 × 4/12 = $7,800
2. Units-of-Production:
$168,000 – $27,600 = $140,400/260,000 = $0.540/unit;
$0.540 × 43,000 = $23,220;
$0.540 × 79,000 = $42,660;
$0.540 × 64,000 = $34,560.
Analysis component:
If depreciation is not recorded, expenses are understated and net income is overstated on the income statement and on the balance sheet, assets and equity would be overstated.

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Exercise 9-14 (25 minutes)

	Depreciation	
Year	**Straight-Line[1]**	**Double-Declining-Balance[2]**
2019	**11,000**	**22,000**
2020	**22,000**	**35,200**
2021	**22,000**	**21,120**

Calculations:

1. **110,000/5 = 22,000 x 6/12 =11,000**
2. **2/5 = .4 or 40%; .4 x 110,000 x 6/12 = 22,000;**
   .4 x (110,000 – 22,000) = 35,200; .4 x (110,000 – 22,000 – 35,200) = 21,120

Analysis component:

If the furniture had been debited to an expense account in 2019 when purchased instead of being recorded as a PPE asset, expenses would have been overstated and net income would have been understated on the income statement in 2019 while assets and equity would have been understated on the balance sheet for the same year.

Exercise 9-15 (10 minutes)

	(a)	(b)
Year	**Straight-Line**	**Double-Declining-Balance**
2020	**(125,000 – 12,500)/5 = 22,500 x 9/12 = 16,875**	**Rate = 2/5 = .40 or 40%** **125,000 × 40% × 9/12 = 37,500**
2021	**(125,000 – 12,500)/5 = 22,500**	**(125,000 – 37,500) × 40% =35,000**

Exercise 9-16 (10 minutes)

1. **(43,500 – 5,000)/4 = 9,625/year × 2 years = 19,250 accumulated depreciation**
   Book value = 43,500 – 19,250 = <u>24,250</u>

2. **[(43,500 – 19,250) – 3,850]/3 = <u>6,800</u>**

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Exercise 9-17 (15 minutes)

2023			
Dec. 31	**Depreciation Expense, Machine.....**	**7,624**	
	Accumulated Depreciation, Machine.....		**7,624**
	To record depreciation.		

Calculations:

Revised depreciation = (71,200 – 30,800*) – 8,000 = 7,624/year
7 – 2 9/12 = 4.25 yrs

***2020 depreciation = 8,400 (71,200 – 15,200)/5 = 11,200 × 9/12**
2021 depreciation = 11,200
2022 depreciation = 11,200
Accumulated depreciation 30,800

Exercise 9-18 (20 minutes)

Part 1

2020			
Jan. 5	**Warehouse – Door……**	**25,500**	
	Accounts Payable……		**25,500**
	To record addition of door on East wall of warehouse.		

Part 2

2020			
Dec. 31	**Depreciation Expense, Warehouse ……**	**14,700**	
	Accumulated Depreciation, Warehouse….		**14,700**
	To record revised depreciation on warehouse;		
	$292,500 – $90,000 = $202,500; $202,500 ÷ 15 yrs = $13,500		
	PLUS $25,500 - $7,500 = $18,000; $18,000 ÷ 15 yrs = $1,200;		
	Total depreciation on the warehouse = $13,500 + $1,200 = $14,700.		

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Exercise 9-19 (30 minutes)

Part 1

2020			
Dec. 31	Impairment Loss	13,500	
	Equipment		12,000
	Office Building		1,500
	To record impairment loss on equipment and office building.		

Part 2

2021			
Dec. 31	Depreciation Expense, Equipment	1,800	
	Accumulated Depreciation, Equipment		1,800
	To record revised depreciation on equipment.		
31	Depreciation Expense, Furniture	491	
	Accumulated Depreciation, Furniture		491
	To record depreciation on furniture.		
31	Depreciation Expense, Office Building	3,838	
	Accumulated Depreciation, Office Building		3,838
	To record depreciation on office building		
31	Depreciation Expense, Warehouse	2,250	
	Accumulated Depreciation, Warehouse		2,250
	To record depreciation on warehouse.		

Calculations:

Asset	Cost	Accum. Deprec.	Book Value	Recoverable Amount	Impairment Loss	2021 Dep. Exp.
Equipment	$40,000	$20,000	$20,000	$ 8,000	$12,000	1,800[1]
Furniture	12,000	9,509	2,491	2,950	N/A	491[2]
Land	85,000	N/A	85,000	101,800	N/A	N/A
Office Building	77,000	23,000	54,000	52,500	1,500	3,838[3]
Warehouse	55,000	12,938	42,062	45,100	N/A	2,250[4]

1. [40,000 – 5,000)/7,000] = $5.00/unit; 20,000 accum. dep. ÷ $5.00/unit = 4,000 units; 7,000 units in original useful life less 4,000 units depreciated to date equals 3,000 remaining units; 40,000 – 12,000 = 28,000 revised cost; 28,000 – 20,000 accum. dep. = 8,000 revised book value; 8,000 – 5,000 residual value = 3,000; 3,000 ÷ 3,000 remaining units = $1.00/unit revised depreciation rate; 1.00/unit × 1,800 units = 1,800
2. 12,000 – 9,509 = 2,491; 2,491 × 2/8 = 623 which exceeds maximum allowable; maximum allowable = 2,491 remaining book value – 2,000 residual = 491
3. 77,000 – 1,500 = 75,500 revised cost of office building; 75,500 – 23,000 = 52,500 remaining book value; (52,500 – 17,000) ÷ 9.25 yrs remaining useful life = 3,838
4. 55,000 – 10,000 = 45,000; 45,000 ÷ 20 yrs = 2,250

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Exercise 9-20 (20 minutes)

a.

2020				
Mar. 1		**Accumulated Depreciation, Truck**	**21,850**	
		Cash	**20,150**	
		Truck		**42,000**
		To record the sale of the truck for $20,150.		

b.

Mar. 1		**Accumulated Depreciation, Truck**	**21,850**	
		Cash	**21,600**	
		Truck		**42,000**
		Gain on Disposal		**1,450**
		To record the sale of the truck for $21,600.		

c.

Mar. 1		**Accumulated Depreciation, Truck**	**21,850**	
		Cash	**19,200**	
		Loss on Disposal	**950**	
		Truck		**42,000**
		To record the sale of the truck for $19,200.		

d.

Mar. 1		**Accumulated Depreciation, Truck**	**21,850**	
		Loss on Disposal	**20,150**	
		Truck		**42,000**
		To record the sale of the truck for $0; it was scrapped.		

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Exercise 9-21 (15 minutes)

To record partial year's depreciation in 2021:

2021			
July 1	**Depreciation Expense**	**21,200**	
	Accumulated Depreciation, Machine		**21,200**
	To record partial year depreciation in year of disposal; (296,800/7) × 6/12 = 21,200.		

(a)

July 1	**Accumulated Depreciation, Machine**	**190,800***	
	Cash	**112,000**	
	Machine		**296,800**
	Gain on Disposal		**6,000**
	To record sale of machine for 112,000.		

(b)

1	**Accumulated Depreciation, Machine**	**190,800***	
	Cash	**96,000**	
	Loss on Disposal	**10,000**	
	Machine		**296,800**
	To record receipt of $96,000 from insurance settlement.		

***(296,800/7) × 4.5 years = <u>190,800</u>**

Exercise 9-22 (10 minutes)

a. $202,000 − $111,000 = $91,000 book value
b.

**Book value of the assets given up = ($91,000 + $170,000) = **	**$261,000**
**Less: Fair value of assets given up ($68,000 + $170,000) = **	**$238,000**
Loss on exchange	**$23,000**

c. & d. Tractor (new) = $68,000 + $170,000 = $238,000
d.

2020			
Oct. 6	**Tractor (new)***	**238,000**	
	Accumulated Depreciation, Tractor (old)	**111,000**	
	Loss on Exchange	**23,000**	
	Cash		**170,000**
	Tractor (old)		**202,000**
	To record exchange of old tractor for a new one.		

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Exercise 9-23 (20 minutes)

a.

2020			
Nov. 3	**Accumulated Depreciation, Computer (old)**	**65,000**	
	Computer (new)[1]	**175,000**	
	Computer (old)		**150,000**
	Cash		**90,000**
	To record exchange of computers.		

1. Computer (new) = Cash paid + Book Value of asset given up
= $90,000 + $85,000 = $175,000

b.

2020			
Nov. 3	**Accumulated Depreciation, Computer (old)**	**65,000**	
	Computer (new)[1]	**174,000**	
	Loss on Disposal[2]	**1,000**	
	Computer (old)		**150,000**
	Cash		**90,000**
	To record exchange of computers.		

1. Computer (new) = Fair Value of Assets Received
= $174,000
2. Loss on Disposal = Proceeds – Book Value of assets given up
= $174,000 – [($150,000 – $65,000) + $90,000] = $1,000

Analysis component:
The dollar value that will be used to depreciate the new computer is $174,000 because the Cost Principle requires that all transactions are to be recorded at their original cost. $174,000 was determined to be the cost.

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Exercise 9-24 (25 minutes)

(a)

Jan. 2	**Accumulated Depreciation, Machine**	**50,450**	
	Cash	**44,500**	
	Loss on Disposal	**1,050**	
	Machine		**96,000**
	To record sale of machine;		
	44,500 – (96,000 – 50,450) = 1,050 loss.		

(b)

Jan. 2	**Accumulated Depreciation, Machine**	**50,450**	
	Tools	**134,550**	
	Cash		**89,000**
	Machine		**96,000**
	To record exchange of machine;		
	Value of assets given up = $89,000 cash + $45,550 book value of the old machine = $134,550.		

(c)

Jan. 2	**Accumulated Depreciation, Machine**	**50,450**	
	Van	**116,000**	
	Loss on Disposal	**9,550**	
	Cash		**80,000**
	Machine		**96,000**
	To record exchange of machine;		
	116,000 – (80,000 + 45,550) = 9,550 loss.		

(d)

Jan. 2	**Accumulated Depreciation, Machine**	**50,450**	
	Land	**87,000**	
	Machine		**96,000**
	Cash		**37,000**
	Gain on Disposal		**4,450**
	To record exchange;		
	87,000 – (37,000 + 45,550) = 4,450 gain.		

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Exercise 9-25 (10 minutes)

2020				
Jan.	**1**	**Copyrights**	**177,480**	
		Cash		**177,480**
		To record purchase of copyright.		
Dec.	**31**	**Amortization Expense, Copyrights**	**14,790**	
		Accumulated Amortization, Copyrights		**14,790**
		To record amortization of copyright;		
		177,480/12 = 14,790		

Exercise 9-26 (15 minutes)

Part 1

2020				
Sept.	**5**	**Timber Rights**	**432,000**	
		Cash		**96,000**
		Long-Term Notes Payable		**336,000**
		To record purchase of timber rights.		
	27	**Patent**	**148,000**	
		Accounts Payable		**148,000**
		To record purchase of patent.		

Part 2

2020				
Dec.	**31**	**Amortization Expense, Timber Rights**	**48,000**	
		Accumulated Amort., Timber Rights		**48,000**
		To record amortization of timber rights;		
		$432,000 ÷ 3 yrs = $144,000/year × 4/12 = $48,000.		
	31	**Amortization Expense, Patent**	**3,700**	
		Accumulated Amortization, Patent		**3,700**
		To record amortization of patent;		
		$148,000 ÷ 10 yrs = $14,800/year × 3/12 = $3,700.		
2021				
Dec.	**31**	**Amortization Expense, Timber Rights**	**144,000**	
		Accumulated Amortization, Timber Rights		**144,000**
		To record amortization of timber rights;		
		$432,000 ÷ 3 yrs = $144,000/year.		
	31	**Amortization Expense, Patent**	**14,800**	
		Accumulated Amortization, Patent		**14,800**
		To record amortization of patent;		
		$148,000 ÷ 10 yrs = $14,800/year.		

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Exercise 9-27 (25 minutes)

Huang Resources
Balance Sheet
October 31, 2020

Assets			
Current assets:			
Cash		$ 9,600	
Accounts receivable	$ 27,200		
Less: Allowance for doubtful accounts	1,920	25,280	
Total current assets			$ 34,880
Property, plant and equipment:			
Land		$ 89,600	
Building	$ 147,200		
Less: Accumulated depreciation	81,600	65,600	
Equipment	$184,000		
Less: Accumulated depreciation	110,400	73,600	
Total property, plant and equipment			228,800
Intangible assets:			
Mineral rights	$ 57,600		
Less: Accumulated amortization	30,400	$ 27,200	
Trademark	$ 33,600		
Less: Accumulated amortization	22,400	11,200	
Total intangible assets			38,400
Total assets			$302,080
Liabilities			
Current liabilities:			
Accounts payable	$18,400		
Current portion of long-term note	34,000		
Total current liabilities		$ 52,400	
Non-current liabilities:			
Note payable, less current portion		38,000	
Total liabilities			$ 90,400
Equity			
Sally Huang, capital			211,680[1]
Total liabilities and equity			$302,080

Calculations:

1. **221,280 adjusted capital balance + 1,433,600 revenues – 1,443,200 expenses = 211,680 post-closing capital balance**

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Exercise 9-28 (35 minutes)

Montalvo Bionics
Balance Sheet
April 30, 2020

Assets			
Current assets:			
Cash		$ 10,100	
Accounts receivable	$17,300		
Less: Allowance for doubtful accounts	1,010	16,290	
Prepaid rent		1,355[1]	
Total current assets			$ 27,745
Property, plant and equipment:			
Furniture	$22,700		
Less: Accumulated depreciation	14,730[2]	$ 7,970	
Machinery	$50,800		
Less: Accumulated depreciation	22,700[3]	28,100	
Total property, plant and equipment			36,070
Intangible assets:			
Patent		$24,900	
Less: Accumulated amortization		830[4]	24,070
Total assets			$87,885
Liabilities			
Current liabilities:			
Accounts payable	$5,080		
Unearned revenues	5,870		
Current portion of long-term note	6,500		
Total current liabilities		$ 17,450	
Non-current liabilities:			
Note payable, less current portion		8,100	
Total liabilities			$25,550
Equity			
Josh Montalvo, capital			62,335[5]
Total liabilities and equity			$87,885

Calculations:

1. $16,260 ×11/12 = $14,905 rent used; $16,260 – $14,905 = $1,355 remaining in Prepaid Rent.
2. $22,700 ÷ 5 = $4,540; $4,540 + $10,190 = $14,730 accum. dep.
3. $50,800 – $20,200 = $30,600; $30,600 × 2/10 = $6,120; maximum depreciation is $50,800 – $28,100 = $22,700 therefore 2020 depreciation expense is $2,500 and accum. dep. is $20,200 + $2,500 = $22,700.
4. $24,900 ÷ 15 = $1,660/year; $1,660 × 6/12 = $830.
5. $32,910 unadjusted capital + $225,400 revenues – $83,900 withdrawals – $89,300 expenses – $4,540 dep. furniture – $2,500 dep. machinery – $830 amort. patent – $14,905 rent expense = $62,335 post-closing capital.

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Exercise 9-29

2018			
April 1	**Food Truck**	**52,000**	
	Oven	**6,000**	
	Prepaid Insurance	**3,600**	
	Cash		**61,600**
	To record the purchase of food truck, oven and insurance.		
Oct 1	**Repairs Expense**	**1,800**	
	Cash		**1,800**
	To record repairs for truck		
Dec 31	**Insurance Expense**	**2,700**	
	Prepaid Insurance		**2,700**
	To record 9 months of insurance expense		
Dec 31	**Depreciation Expense, Truck**	**6,300**	
	Accumulated Depreciation, Truck		**6,300**
	To record depreciation of truck;		
	Calculation: **[(48,000 + 4,000) – 10,000] / 5 years = 8,400 ×** ***9/12 = $6,300.***		
31	**Depreciation Expense, Oven**	**750**	
	Accumulated Depreciation, Oven		**750**
	To record depreciation of oven;		
	($6,000-1000) ÷ 5 yrs = $1,000/year × 9/12 = $750.		
2019			
April 1	**Repair Expense**	**2,100**	
	Prepaid Insurance	**3,600**	
	Cash		**5,700**
	To record purchase of tires and insurance for year		

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Dec 31	**Insurance Expense.....**	**3,600**	
	Prepaid Insurance.....		**3,600**
	To record 1 year of insurance expense.		
Dec 31	**Depreciation Expense, Truck .....**	**8,400**	
	Accumulated Depreciation, Truck.....		**8,400**
	To record depreciation of truck;		
	Calculation: **[(48,000 + 4,000) – 10,000] / 5 years = 8,400**		
31	**Depreciation Expense, Oven .....**	**1,000**	
	Accumulated Depreciation, Oven.....		**1,000**
	To record depreciation of oven; ($6,000-1000) ÷ 5 yrs = $1,000/year		
2020			
Mar 31	**Depreciation Expense, Truck.....**	**2,100**	
	Accumulated Depreciation, Truck.....		**2,100**
	To record partial year depreciation in year of disposal; 8,400 × 3/12 = 2,100.		
Mar 31	**Depreciation Expense, Oven.....**	**250**	
	Accumulated Depreciation, Oven		**250**
	To record partial year depreciation in year of disposal; 1000 × 3/12 = 250.		
Mar 31	**Accumulated Depreciation, Truck .....**	**16,800**	
	Accumulated Depreciation, Oven	**2,000**	
	Cash.....	**21,000**	
	Loss on Disposal	**18,200**	
	Truck		**52,000**
	Oven		**6,000**
	To record loss on sale of truck; 16,800+2,000+21,000-52,000-6,000=18,200		

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***Exercise 9-30 (30 minutes)**

Part 1

2020

Jul. 3	**Truck – Tool Carrier .....**	**9,600**	
	Cash		**9,600**
	To record installation of new component to truck.		

Part 2

Truck:							
Component	**Date of Purchase**	**Cost**	**Est. Resid.**	**Est. Life**	**Accum. Dep. at Dec 31/19**	**Dep. Exp. Dec 31/20**	**Dep. Exp. Dec 31/21**
Truck body	**Jul 7/18**	**$ 28,000**	**-0-**	**10 yr**	**$ 4,200**	**$ 2,800[1]**	**$ 2,800[1]**
Motor	**Jul 7/18**	**8,000**	**-0-**	**10 yr**	**1,200**	**800[2]**	**800[2]**
Tool Carrier	**Jul 3/20**	**9,600**	**-0-**	**8 yr**	**-0-**	**600[3]**	**1,200[3]**
		$ 45,600			**$ 5,400**	**$4,200**	**$4,800**

Calculations:

1. **28,000 ÷ 10 yrs = 2,800/yr**
2. **8,000 ÷ 10 yrs = 800/yr**
3. **9,600 ÷ 8 yrs = 1,200/yr × 6/12 = 600 for partial period in 2020**

Part 3

Book value of truck at December 31, 2020:
$45,600 total cost – ($5,400 + $4,200 = $9,600) = $36,000

Book value of truck at December 31, 2021:
$36,000 - $4,800 = $31,200

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PROBLEMS

Problem 9-1A (25 minutes)

Part 1

	Land	*Building Two*	*Building Three*	*Land Impmnts. One*	*Land Impmnts. Two*
Purchase price*	$2,924,800	$1,051,100		$594,100	
Demolition.....	703,160				
Landscaping	272,020				
New building			$2,476,000		
New improvements...					$254,600
Totals.....	$3,899,980	$1,051,100	$2,476,000	$594,100	$254,600

***Allocation of purchase price:**

	Appraised Value	*Percent of Total*	*Apportioned Cost*
Land	$2,990,720	64%	$2,924,800
Building Two.....	1,074,790	23	1,051,100
Land Improvements One	607,490	13	594,100
Totals	$4,673,000	100%	$4,570,000

Part 2

Mar. 31	Land.....	3,899,980	
	Building Two	1,051,100	
	Building Three.....	2,476,000	
	Land Improvements One.....	594,100	
	Land Improvements Two.....	254,600	
	Cash.....		8,275,780
	To record costs of plant assets.		

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Problem 9-2A (25 minutes)

Derlak Enterprises
Balance Sheet
December 31

	2020		2019	
Assets				
Current assets:				
Cash	$ 12,000		$ 28,800	
Prepaid rent	40,000		48,000	
Office supplies	2,400		2,320	
Total current assets		$ 54,400		$ 79,120
Property, plant and equipment:				
Equipment	$184,000		$100,000	
Less: Accumulated depreciation	72,800	111,200	64,800	35,200
Tools	$143,920		$100,800	
Less: Accumulated depreciation	44,800	99,120	42,400	58,400
Vehicles	$252,800		$252,800	
Less: Accumulated depreciation	108,800	144,000	97,600	155,200
Total property, plant and equipment		354,320		248,800
Intangible assets:				
Franchise	$ 41,600		$ 41,600	
Less: Accumulated amortization	19,200	22,400	11,200	30,400
Patent	$ 16,000		$ 16,000	
Less: Accumulated amortization	4,000	12,000	2,400	13,600
Total intangible assets		34,400		44,000
Total assets		$443,120		$371,920
Liabilities				
Current liabilities:				
Accounts payable	$ 56,800		$ 9,600	
Salaries payable	32,800		26,400	
Total current liabilities		$ 89,600		$ 36,000
Non-current liabilities:				
Notes payable, due in 2023		240,000		129,600
Total liabilities		$329,600		$165,600
Equity				
Lee Derlak, capital		113,520 *		206,320
Total liabilities and equity		$443,120		$371,920

**206,320 – 32,000 – 780,800 + 720,000 = 113,520*

Analysis component:
Derlak's assets are financed mainly by equity in 2019. In 2020, the assets are financed largely by debt. The change from 2019 to 2020 in how assets were mainly financed (from equity to debt) is unfavourable because the greater the debt the greater the risk associated with debt (is/will Derlak be in a position to pay the interest and principal as it comes due).

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Problem 9-3A (25 minutes)

Year	a. Straight-Line	b. Double-Declining-Balance	c. Units-of-Production
2018	$33,250	$84,000	$27,930
2019	$33,250	$42,000	$30,485
2020	$33,250	$7,000	$37,940
2021	$33,250		$36,645
Total	$133,000	$133,000	$133,000

Explanation:
a.
($168,000 – $35,000)/4 = $33,250/year

b.
Double-declining-balance (Rate = 2/4 = 0.50 or 50%):
50% × $168,000 = $84,000
50% × ($168,000 – $84,000) = $42,000
Maximum depreciation is limited to $133,000 which is cost less residual ($168,000 – $35,000) therefore depreciation for 2021 is $7,000 calculated as $133,000 – $126,000 accumulated depreciation recorded to date.

c.
Units-of-production: (Rate = [($168,000 – $35,000)/190,000] = $0.70/unit)
$27,930 ($0.70 × 39,900)
$30,485 ($0.70 × 43,550)
$37,940 ($0.70 × 54,200)
Maximum depreciation is limited to $133,000 which is cost less residual ($168,000 – $35,000) therefore depreciation for 2020 is $36,645 calculated as $133,000 – $96,355 accumulated depreciation recorded to date.

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Problem 9-4A (25 minutes)

1. Purchased January 1, 2020	2020	2021	2022
A. Double-declining-balance method			
Equipment	$415,000	$415,000	$415,000
Less: Accumulated depreciation	83,000	149,400	202,520
Year-end book value	$332,000	$265,600	$212,480
Depreciation expense for the year[1]	$83,000	$66,400	$53,120
B. Straight-line method			
Equipment	$415,000	$415,000	$415,000
Less: Accumulated depreciation	39,000	78,000	117,000
Year-end book value	$376,000	$337,000	$298,000
Depreciation expense for the year	$39,000[2]	$39,000	$39,000

1. Rate = 2/10 = 0.20 or 20%
   2020: 0.20 × 415,000 = 83,000
   2021: 0.20 × (415,000 – 83,000) = 66,400
   2022: 0.20 × (415,000 – 83,000 – 66,400) = 53,120

2. (415,000 – 25,000)/10 = 39,000

2. Purchased July 1, 2020	2020	2021	2022
A. Double-declining-balance method			
Equipment	$415,000	$415,000	$415,000
Less: Accumulated depreciation	41,500	116,200	175,960
Year-end book value	$373,500	$298,800	$239,040
Depreciation expense for the year[3]	$41,500[4]	$74,700	$59,760
B. Straight-line method			
Equipment	$415,000	$415,000	$415,000
Less: Accumulated depreciation	19,500	58,500	97,500
Year-end book value	$395,500	$356,500	$317,500
Depreciation expense for the year	$19,500[4]	$39,000	$39,000

3. Rate = 2/10 = 0.20 or 20%
   2020: 0.20 × 415,000 × 6/12 = 41,500
   2021: 0.20 × (415,000 – 41,500) = 74,700
   2022: 0.20 × (415,000 – 41,500 – 74,700) = 59,760

4. (415,000 – 25,000)/10 = 39,000 × 6/12 = 19,500

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Problem 9-5A (25 minutes)

Year	Depreciation Method[1]:		
	Straight-line	Double-declining balance	Units-of-production[2]
2020	(828,000 – 192,000)/10 = 63,600/year × 10/12 = 53,000	Rate = 2/10 = .20 or 20% 828,000 × 20% × 10/12 = 138,000	Rate = (828,000 – 192,000)/13,250 = 48/hour 48 × 720 = 34,560
2021	63,600	(828,000 – 138,000) × 20% = 138,000	48 × 1,780 = 85,440
2022	63,600	(828,000 – 138,000 – 138,000) × 20% = 110,400	48 × 1,535 = 73,680

1. ***Depreciation is calculated to the nearest month.***
2. ***Assume actual hours of service were: 2020: 720; 2021: 1,780; 2022: 1,535.***

Analysis component:
If you could ignore the matching principle, you might record the purchase of the boats as boat expense which means the entire cost of $828,000 would have been expensed in 2020, the year of purchase. This would have resulted in the net income being understated in 2020 and, because of depreciation expense not being recorded, net income would be overstated in the remaining years of the asset's useful life as well. On the balance sheet, recording the purchase of the boats as boat expense would have caused assets and equity to be understated in each year of the asset's life. It is interesting to note that the error would self-correct by the end of the asset's life if it would have gone undetected.

Problem 9-6A (25 minutes)

Year	Depreciation Method[1]:		
	Straight-line	Double-declining balance	Units-of-production[2]
2020	(828,000 – 192,000)/10 = 63,600/year × 6/12 = 31,800	Rate = 2/10 = .20 or 20% 828,000 × 20% × 6/12 = 82,800	Same as Problem 9-4A; Units-of-production is usage based and not affected by time 34,560
2021	63,600	(828,000 – 82,800) × 20% = 149,040	85,440
2022	63,600	(828,000 – 82,800 – 149,040) × 20% = 119,232	73,680

1. ***Depreciation is calculated using the half-year convention.***
2. ***Assume actual hours of service were: 2020: 720; 2021: 1,780; 2022: 1,535.***

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Problem 9-7A (15 minutes)

1.

2020				
Apr.	**30**	**Depreciation Expense, Building**	**53,000**	
		Accumulated Depreciation, Building		**53,000**
		To record annual depreciation;		
		742,000/14 = 53,000.		
	30	**Depreciation Expense, Equipment**	**77,184**	
		Accumulated Depreciation, Equipment		**77,184**
		To record annual depreciation;		
		Rate = 2/10 = .20 or 20%;		
		385,920 × 20% = 77,184.		

2.

Big Sky Farms
Partial Balance Sheet
April 30, 2021

Property, plant and equipment:		
Land		**$730,000**
Building	**$742,000**	
Less: Accumulated depreciation	**636,000**	**106,000**
Equipment	**670,000**	
Less: Accumulated depreciation	**361,264**	**308,736**
Total property, plant and equipment		**$1,144,736**

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Problem 9-8A (50 minutes)

Part 1

	Market Value	*Percentage of Total*	*Apportioned Cost*
Building	**$652,800**	**48%**	**$604,800**
Land	**462,400**	**34**	**428,400**
Land improvements	**68,000**	**5**	**63,000**
Vehicles	**176,800**	**13**	**163,800**
Total	**$1,360,000**	**100%**	**$1,260,000**

2020			
Mar. 1	**Building**	**604,800**	
	Land	**428,400**	
	Land Improvements	**63,000**	
	Vehicles	**163,800**	
	Cash		**1,260,000**
	To record asset purchases.		

Part 2 **2020 straight-line depreciation on building:**
($604,800 – $41,040)/15 × 10/12 = $31,320

Part 3 **2020 double-declining-balance depreciation on land improvements:**
Rate = 2/5 = .40 or 40%
$63,000 × 40% × 10/12 = $21,000

Analysis component:
If the assets purchased on March 1, 2020 were put into service on May 23, 2020 the depreciation expense calculated in parts 2 and 3 above would be based on 7 months instead of 10 months because straight-line and double-declining-balance depreciation are both based on the time the assets are actually USED during the period.

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Problem 9-9A (30 minutes)

Year	*Straight-Line*[a]	*Units-of-Production*[b]	*Double-Declining-Balance*[c]
2020	$ 38,000	$ 20,544	$ 84,000
2021	114,000	117,504	210,000
2022	114,000	114,816	105,000
2023	114,000	113,472	52,500
2024	76,000	89,664	4,500
Totals	$456,000	$456,000	$456,000

[a]**Straight-line:**

Cost per year = (504,000 – 48,000)/4 years = $114,000 per year × 4/12
= 38,000

[b]**Units-of-production:**

Cost per unit = (504,000 – 48,000)/475,000 units = $0.96 per unit

Year	*Units*	*Unit Cost*	*Depreciation*
2020	21,400	$0.96	$ 20,544
2021	122,400	0.96	117,504
2022	119,600	0.96	114,816
2023	118,200	0.96	113,472
2024	102,000	0.96	89,664*
Total			$456,000

**Take only enough depreciation in Year 2024 to reach the maximum accumulated depreciation of $456,000 (which is cost less residual).*

[c]**Double-declining-balance:**

Rate = 2/4 = .50 or 50%
2020: 50% × 504,000 × 4/12 = 84,000
2021: 50% × (504,000 – 84,000) = 210,000
2022: 50% × (504,000 – 84,000 – 210,000) = 105,000
2023: 50% × (504,000 – 84,000 – 210,000 – 105,000) = 52,500
2024: 456,000 – 451,500* = 4,500

**Take only enough depreciation in Year 2024 to reach the maximum accumulated depreciation of $456,000 (which is cost less residual).*

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Problem 9-10A (30 minutes)

Cost Information						Depreciation		
Description	Date of Purchase	Depreciation Method	Cost	Residual	Life	Balance of Accum. Deprec. Dec. 31, 2020	Deprec. Expense for 2021	Balance of Accum. Deprec. Dec. 31, 2021
Office Equipment	March 27/17	Straight-line	$52,000	$14,000	10 yr.	14,250[1]	3,800[2]	18,050[3]
Machinery	June 4/17	Double-declining balance	$275,000	$46,000	6 yr.	209,362[4]	19,638[5]	229,000[6]
Truck	Nov. 13/20	Units-of-production	$113,000	$26,000	250,000 km.	4,872[7]	23,664[8]	28,536[9]

1. (52,000 – 14,000)/10 = 3,800/year × 3 9/12 = 14,250
2. (52,000 – 14,000)/10 = 3,800/year
3. 14,250 + 3,800 = 18,050
4. Rate = 2/6 = .3333 or 33.33%

2017: 33.33% × 275,000 × 7/12 =	53,472
2018: 33.33% × (275,000 – 53,472) =	73,843
2019: 33.33% × (275,000 – 53,472 – 73,843) =	49,228
2020: 33.33% × (275,000 – 53,472 – 73,843 – 49,228) =	32,819
Accumulated depreciation at Dec. 31, 2020=	$209,362

5. 2021: (275,000 – 46,000) 209,362 = $19,638
6. $209,362 + $19,638 = 229,000
7. Rate = (113,000 – 26,000)/250,000 = $0.348/km; 14,000 × 0.348 = 4,872
8. 68,000 × 0.348 = 23,664
9. 4,872 + 23,664 = 28,536

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Problem 9-11A (20 minutes)

2020				
Mar.	**26**	**Delivery Truck**	**96,200**	
		Cash.....		**96,200**
		To record purchase of new truck; $92,000 plus $4,200 freight costs.		
Dec.	**31**	**Depreciation Expense, Delivery Truck[1]**	**12,930**	
		Accumulated Depreciation, Delivery Truck.....		**12,930**
		To record depreciation from Mar. 26 to Dec. 31, 2020.		
2021				
Dec.	**31**	**Depreciation Expense, Delivery Truck[2]**	**21,160**	
		Accumulated Depreciation, Delivery Truck.....		**21,160**
		To record depreciation.		

1. (96,200 – 10,000)/5 × 9/12 = 12,930

2. $\dfrac{96{,}200 - 12{,}930 - 14{,}500}{4 - 9/12 = 3.25} = 21{,}160$

Problem 9-12A (30 minutes)

2021				
Dec.	**31**	**Depreciation Expense, Machinery[1]**	**95,200**	
		Accumulated Depreciation, Machinery.....		**95,200**
		To record annual depreciation.		
	31	**Depreciation Expense, Office Furniture[2]**	**11,733**	
		Accumulated Depreciation, Office Furniture.....		**11,733**
		To record annual depreciation.		

Calculations:

1. $\dfrac{\text{Cost } 556{,}800 - \text{Accumulated Depreciation } 246{,}400 - \text{Residual } 120{,}000}{2} = 95{,}200$

2. $\dfrac{\text{Cost } 89{,}600 - \text{Accumulated Depreciation } 49{,}600 - \text{Residual } (11{,}200 - 6{,}400)}{5 - 2 = 3} = 11{,}733$

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Problem 9-13A (20 minutes)

Part 1

2020			
Jan. 7	**Machine #5027 – Blade (new) .....**	**10,400**	
	Accumulated Depreciation, Machine #5027 – Blade	**2,688[1]**	
	Loss on Disposal	**5,032**	
	Machine #5027 – Blade (old)		**7,720**
	Cash		**10,400**
	To record installation of replacement blade.		

Calculations:

1. **7,720 – 1,000 = 6,720; 6,720 ÷ 5 yrs = 1,344 deprec. for 2018;**
   1,344+ 1,344 deprec. for 2019= 2,688 accum. deprec. at Dec. 31, 2019.

Part 2

Metal Housing	**44,000 – 8,000 = 36,000; 36,000 ÷ 15 yrs = 2,400 for 2018 *PLUS* 2,400 for 2019= 4,800 accum. deprec. at Dec. 31/2019; Revised deprec. = 44,000 – 4,800 = 39,200 book value; 39,200 – 8,600 residual = 30,600 depreciable cost; 30,600 ÷ 18 years* =**	**$1,700**
	20 years – 2 yrs already depreciated = 18 yr remaining life	
Motor	**2018: 26,000 × 2/10 = 5,200**	
	2019: 26,000 – 5,200 = 20,800 × 2/10 = 4,160	
	2020: 20,800 – 4,160 = 16,640 × 2/10 =	**3,328**
Blade	**10,400 – 1,000 = 9,400; 9,400 ÷ 5 yrs =**	**1,880**
Total depreciation expense to be recorded on Machine #5027 for 2020=		**$6,908**

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Problem 9-14A (40 minutes)

Part 1

2020			
Oct. 31	**Impairment Loss**	**24,200**	
	Equipment.....		**24,200**
	To record impairment loss on equipment.		
31	**Impairment Loss**	**14,300**	
	Furniture		**14,300**
	To record impairment loss on furniture.		

Calculations:

	Book Value	Recoverable Value	Impairment Loss
Land	**$105,600**	**$136,400**	**NA**
Building	**57,200**	**105,600**	**NA**
Equipment	**52,800**	**28,600**	**$24,200**
Furniture	**29,700**	**15,400**	**14,300**

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Problem 9-14A (*concluded*)
Part 2

Safety-First Company
Balance Sheet
October 31, 2020

Assets			
Current assets:			
Cash		$ 11,000	
Accounts receivable	$ 19,800		
Less: Allowance for doubtful accounts	880	18,920	
Merchandise inventory		35,200	
Total current assets			$ 65,120
Property, plant and equipment:			
Land		$105,600	
Building	$136,400		
Less: Accumulated depreciation	79,200	57,200	
Equipment	$66,000[1]		
Less: Accumulated depreciation	37,400	28,600	
Furniture	$36,300[2]		
Less: Accumulated depreciation	20,900	15,400	
Total property, plant and equipment			206,800
Total assets			$271,920
Liabilities			
Current liabilities:			
Accounts payable	$ 11,220		
Unearned revenues	7,920		
Current portion of long-term note	26,400		
Total current liabilities		$ 45,540	
Non-current liabilities:			
Note payable, less current portion		59,400	
Total liabilities			$104,940
Equity			
Tarifa Sharma, capital			166,980[3]
Total liabilities and equity			$271,920

Calculations:

1. 90,200 cost – 24,200 impairment loss = 66,000
2. 50,600 cost – 14,300 impairment loss = 36,300
3. 62,480 adjusted capital balance + 904,200 sales – 761,200 expenses – 24,200 impairment loss, equip. – 14,300 impairment loss, furn. = 166,980 post-closing capital balance

Analysis component:

An impairment loss causes net income to decrease on the income statement. On the balance sheet, an impairment loss causes total assets to decrease because of the decrease in property, plant and equipment. Equity also decreases on the balance sheet as a result of the decreased net income.

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Problem 9-15A (30 minutes)

1.

2021				
Sept.	**27**	**Depreciation Expense, Building**	**4,950**	
		Accumulated Depreciation, Building[1]		**4,950**
		To record building depreciation for 2021.		
	27	**Cash**	**592,000**	
		Accumulated Depreciation, Building[2]	**398,550**	
		Gain on Disposal		**67,350**
		Land		**396,800**
		Building		**526,400**
		To record sale of land and building.		

2.

Nov.	**2**	**Depreciation Expense, Equipment**	**16,133**	
		Accumulated Depreciation, Equipment[3]		**16,133**
		To record equipment depreciation for 2021.		
	2	**Cash**	**56,800**	
		Accumulated Depreciation, Equipment[4]	**90,533**	
		Loss on Disposal	**23,867**	
		Equipment		**171,200**
		To record sale of equipment.		

1. Depreciation from Jan. 1, 2021 to Sept. 27, 2021
[(526,400 – 393,600) – 80,000]/8 = 6,600/year × 9/12 = 4,950

2. Accumulated Depreciation, Building =
4,950 + 393,600 = 398,550

3. Depreciation from Jan. 1, 2021 to Nov. 2, 2021
Rate = 2/10 = .20 or 20%
171,200 – 74,400 = 96,800 × 20% = 19,360 × 10/12 = 16,133

4. Accumulated Depreciation, Equipment =
16,133 + 74,400 = 90,533

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Problem 9-16A (45 minutes)

1.

2020			
Jan. 2	**Machine**	**116,900**	
	Cash		**116,900**
	To record purchase of machine.		
3	**Machine**	**4,788**	
	Cash		**4,788**
	To record capital repairs on machine.		
3	**Machine**	**1,512**	
	Cash		**1,512**
	To record installation of machine.		

2.

2020			
Dec. 31	**Depreciation Expense, Machine**	**17,080**	
	Accumulated Depreciation, Machine		**17,080**
	To record depreciation;		
	(123,200 – 20,720)/6 = 17,080.		
2025			
Sept. 30	**Depreciation Expense, Machine**	**12,810**	
	Accumulated Depreciation, Machine		**12,810**
	To record partial year's depreciation;		
	17,080 × 9/12 = 12,810.		

3(a).

30	**Accumulated Depreciation, Machine[1]**	**98,210**	
	Cash	**21,000**	
	Loss on Disposal[2]	**3,990**	
	Machine		**123,200**
	Sold machine for $21,000.		

3(b).

30	**Accumulated Depreciation, Machine**	**98,210**	
	Cash	**27,300**	
	Machine		**123,200**
	Gain on Disposal[3]		**2,310**
	Sold machine for $27,300.		

3(c).

30	**Accumulated Depreciation, Machine**	**98,210**	
	Cash	**25,760**	
	Machine		**123,200**
	Gain on Disposal[4]		**770**
	Received insurance settlement.		

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Problem 9-16A *(continued)*

	Deprec. for 2020, 2021, 2022, 2023, and 2024.	Accum. Deprec. for 2025.

1. **Accumulated depreciation = (17,080 × 5 years) + 12,810 = 98,210**

2. **Gain (Loss) = Cash Proceeds – Book Value**
   = 21,000 – (123,200 – 98,210) = (3,990)

3. **Gain (Loss) = Cash Proceeds – Book Value**
   = 27,300 – (123,200 – 98,210) = 2,310

4. **Gain (Loss) = Cash Proceeds – Book Value**
   = 25,760 – (123,200 – 98,210) = 770

Problem 9-17A (15 minutes)

2020			
July 5	**Accumulated Depreciation, Truck**	**6,000**	
	Loss on Disposal*	**10,500**	
	Furniture	**45,100**	
	Truck		**36,000**
	Cash		**25,600**
	To record exchange.		
Dec. 31	**Depreciation Expense, Furniture**	**3,236**	
	Accumulated Depreciation, Furniture		**3,236**
	To record depreciation;		
	(45,100 – 6,268)/6 × 6/12 = 3,236.		

*** Gain (Loss) = Proceeds – Book Value of Assets Given Up**
= 45,100 – [25,600 + (36,000 – 6,000)]
= 45,100 – 55,600
= (10,500)

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Problem 9-18A (45 minutes)

a. Depreciation expense on first December 31 of each machine's life

2020			
Dec. 31	**Depreciation Expense, Machine 1550[1]**	**6,075**	
	Accumulated Depreciation, Machine 1550		**6,075**
	To record depreciation.		
2023			
Dec. 31	**Depreciation Expense, Machine 1795[3]**	**22,646**	
	Accumulated Depreciation, Machine 1795		**22,646**
	To record depreciation.		
2024			
Dec. 31	**Depreciation Expense, Machine BT-311[5]**	**77,810**	
	Accum Depreciation, Machine BT-311		**77,810**
	To record depreciation.		

b. Purchase/exchange/disposal of each machine.

2020			
Apr. 1	**Machine 1550**	**52,900**	
	Cash		**52,900**
	To record purchase of Machine 1550.		
2023			
Mar. 29	**Machine 1795 (= assets given up)**	**60,390**	
	Accumulated Depreciation, Machine 1550[2]	**24,300**	
	Machine 1550		**52,900**
	Cash		**31,790**
	To record exchange of Machine 1550.		
2024			
Oct. 2	**Machine BT-311**	**537,000**	
	Accumulated Depreciation, Machine 1795[4]	**36,800**	
	Loss on Disposal	**3,590**	
	Machine 1795		**60,390**
	Cash		**517,000**
	To record exchange of Machine 1795.		
2027			
Aug. 21	**Cash**	**81,200**	
	Accumulated Depreciation, Machine BT-311[6]	**348,890**	
	Loss on Disposal	**106,910**	
	Machine BT-311		**537,000**
	To record sale of Machine BT-311.		

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Problem 9-18A *(continued)*

Calculations:

1. $\frac{52{,}900 - 4{,}300}{6}$ = 8,100/year × 9/12 = 6,075

2. Depreciation 2020: 6,075
   2021: 8,100
   2022: 8,100
   2023: 2,025 (8,100× 3/12)
   Accum. Deprec. 24,300

   Book Value 52,900 – 24,300= 28,600
   Cash Paid 62,000 – 30,210 = 31,790
   Book Value 28,600 plus cash paid 31,790 = 60,390

3. Rate = 2/4 = .50 or 50%
   50% × 60,390 × 9/12 = 22,646 (deprec. for 2023)

4. 50% × (60,390 – 22,646) × 9/12 = 14,154 (deprec. for 2024)
   + 22,646 (deprec. for 2023)
   36,800 (accum. deprec.)

5. (537,000 – 35,000)/200,000 = 2.51/unit
   2024: 31,000 units × 2.51/unit = 77,810

6. Depreciation for Jan. 1/2025 to August 21/2027
   = 108,000 units × 2.51/unit = 271,080
   +77,810 (2024)
   348,890 (accum. deprec.)

Problem 9-19A (10 minutes)

(a)

2020				
Oct.	1	Copyright	288,000	
		Cash		288,000
		To record purchase of copyright.		

(b)

Dec.	31	Amortization Expense	24,000	
		Accumulated Amortization, Copyright		24,000
		To record amortization of copyright;		
		288,000/3 × 3/12 = 24,000.		

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Problem 9-20A (30 minutes)
Part 1

2020			
Dec. 31	**Amortization Expense, Mineral Rights**	**13,000**	
	Accumulated Amortization, Mineral Rights		**13,000**
	To record amortization on the mineral rights; $62,400 ÷ 4 years = $15,600/year × 10/12 = $13,000.		
31	**Depreciation Expense, Equipment**	**51,000**	
	Accumulated Depreciation, Equipment		**51,000**
	To record depreciation on the equipment; $244,800 ÷ 4 years = $61,200/year × 10/12 = $51,000.		
31	**Depreciation Expense, Truck**	**19,875**	
	Accumulated Depreciation, Truck		**19,875**
	To record depreciation on the truck; $95,400 ÷ 4 years = $23,850/year × 10/12 = $19,875.		

Part 2

2023			
Oct. 31	**Accumulated Amortization, Mineral Rights**	**57,200**	
	Loss on Disposal	**5,200**	
	Mineral Rights		**62,400**
	To record disposal of the mineral rights; $13,000 + $15,600 + $15,600 + 13,000 = $57,200 accum. amortization.		
31	**Accumulated Depreciation, Equipment**	**224,400**	
	Loss on Disposal	**20,400**	
	Equipment		**244,800**
	To record disposal of the equipment; $51,000 + $61,200 + $61,200 + $51,000 = $224,400 accum. depreciation.		
31	**Accumulated Depreciation, Truck**	**87,450**	
	Loss on Disposal	**7,950**	
	Truck		**95,400**
	To record disposal of the truck; $19,875+ $23,850 + $23,850 + $19,875 = $87,450 accum. depreciation.		

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***Problem 9-21A (30 minutes)**

Part 1

a.

2020			
Jun. 27	**Depreciation Expense, Boat – Motor**	**2,660**	
	Accumulated Depreciation, Boat – Motor		**2,660**
	To update depreciation in 2020 regarding motor being replaced.		
27	**Boat – Motor (new)**	**63,000**	
	Accumulated Depreciation, Boat – Motor	**43,890[1]**	
	Loss on Disposal	**9,310**	
	Boat – Motor (old)		**53,200**
	Cash		**63,000**
	To record replacement of motor.		

b.

Dec. 31	**Depreciation Expense, Boat**	**3,113[2]**	
	Accumulated Depreciation, Boat		**3,113**
	To record revised depreciation for 2020 on the boat (boat body plus motor).		

Calculations:

1. **53,200 ÷ 10 years = 5,320/year; 5,320 × 9/12 = 3,990 depreciation for 2012; 5,320 × 7 years for 2013 thru 2019= 37,240; 5,320/ year × 6/12 = 2,660 deprec. from Jan. 1/20 to June 27/20; 37,240 + 3,990 + 2,660 = 43,890 accumulated depreciation at June 27, 2020;**

2. **Body:** **Accumulated depreciation at Dec. 31, 2019:**
23,800 – 7,000 = 16,800; 16,800 ÷ 15 years = 1,120/year; 1,120 × 9/12 = 840 depreciation for 2012; 1,120 × 7 years (2013 thru 2019) = 7,840; 7,840 + 840 = 8,680
Revised depreciation at Dec. 31, 2020 (rounded):
23,800 – 8,680 – 7,000 = 8,120 remaining depreciable cost;
8,120 ÷ 12.25[1] years = $ 663*

[1] 20 – 7 9/12 = 12 3/12 or 12.25 years remaining useful life

Motor: **63,000 – 4,200 = 58,800; 58,800 ÷ 12 years = 4,900/yr × 6/12 = 2,450**
$3,113

***rounded to the nearest whole dollar since depreciation is based on estimates.**

Part 2

Total 2020 depreciation = $2,660 + $3,113 = $5,773

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ALTERNATE PROBLEMS

Problem 9-1B (25 minutes)

Part 1

	Land	*Building B*	*Building C*	*Land Imprmnts. B*	*Land Imprmnts. C*
Purchase price*	$307,800	$183,600		$48,600	
Demolition	46,800				
Landscaping	69,000				
New building			$542,400		
New improvements					$40,500
Totals	$423,600	$183,600	$542,400	$48,600	$40,500

***Allocation of purchase price:**

	Appraised Value	*Percent of Total*	*Apportioned Cost*
Land	$317,034	57%	$307,800
Building B	189,108	34	183,600
Land Improvements B.....	50,058	9	48,600
Totals	$556,200	100 %	$540,000

Part 2

June 1	Land.....	423,600	
	Building B.....	183,600	
	Building C.....	542,400	
	Land Improvements B	48,600	
	Land Improvements C	40,500	
	Cash		1,238,700
	To record costs of plant assets.		

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Problem 9-2B (25 minutes)

Xentel Interactive
Balance Sheet
September 30

	2020		2019	
Assets				
Current assets:				
Cash	$ 900		$ 2,700	
Accounts receivable	1,800		4,320	
Prepaid insurance	-0-		1,530	
Total current assets		$ 2,700		$ 8,550
Property, plant and equipment:				
Land		68,400		68,400
Machinery	$295,200		$115,200	
Less: Accumulated depreciation	90,000	205,200	82,800	32,400
Building	$225,000		$225,000	
Less: Accumulated depreciation	54,000	171,000	50,400	174,600
Total property, plant and equipment		444,600		275,400
Intangible assets:				
Copyright	$ 7,200		$ 7,200	
Less: Accumulated amortization	1,080	6,120	540	6,660
Total assets		$453,420		$290,610
Liabilities				
Current liabilities:				
Accounts payable	$ 4,320		$ 3,150	
Unearned fees	82,800		5,580	
Total current liabilities		$ 87,120		$ 8,730
Non-current liabilities:				
Notes payable, due in 2025		230,220		55,800
Total liabilities		$317,340		$ 64,530
Equity				
Mason Xentel, capital		136,080*		226,080
Total liabilities and equity		$453,420		$290,610

226,080 – 72,000 + 540,000 – 558,000 = 136,080

Analysis component:
Xentel's assets were mainly financed by equity in 2019. In 2020, Xentel's assets were mainly financed by debt. The increase in the debt financing has weakened the balance sheet as opposed to strengthening it.

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Problem 9-3B (25 minutes)

Year	(a) Straight-line	(b) Double-declining-balance (Rate = 2/4 = .50 or 50%)	(c) Units-of-production (Rate = [(169,200 – 24,000)/181,500] = .80/unit)
2018	36,300[1]	50% × 169,200 = 84,600	30,640 (.80 × 38,300)
2019	36,300	50% × (169,200 – 84,600) = 42,300	32,920 (.80 × 41,150)
2020	36,300	$18,300[2]	42,080 (.80 × 52,600)
2021	36,300	0	39,560[3]

1. (169,200 – 24,000)/4 = 36,300/year
2. Maximum depreciation is limited to $145,200 which is cost less residual ($169,200 – $24,000) therefore depreciation for 2020 is $18,300 calculated as $145,200 – $126,900 accumulated depreciation recorded to date.
3. Maximum depreciation is limited to $145,200 which is cost less residual ($169,200 – $24,000) therefore depreciation for 2021 is $39,560 calculated as $145,200 – $105,640 accumulated depreciation recorded to date.

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Problem 9-4B (30 minutes)

Part 1. Purchase made on January 1, 2020	2020	2021	2022
A. Double-declining balance method			
Machinery	$588,000	$588,000	$588,000
Less: Accumulated depreciation	58,800	164,640	249,312
Year-end book value	$529,200	$423,360	$338,688
Depreciation expense for the year[1]	$58,800	$105,840	$84,672
B. Straight-line method			
Machinery	$588,000	$588,000	$588,000
Less: Accumulated depreciation	26,600	79,800	133,000
Year-end book value	$561,400	$508,200	$455,000
Depreciation expense for the year[2]	$26,600	$53,200	$53,200

1. Rate = 2/10 = .20 or 20%
   2020: 20% × 588,000 × 6/12 = 58,800 note – using half year rule
   2021: 20% × (588,000 – 58,800) = 105,840
   2022: 20% × (588,000 – 58,800 – 105,840) = 84,672

2. (588,000 – 56,000)/10 = 53,200 × 6/12 = 26,600

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Problem 9-4B (continued)

Part 2. Purchase made on April 1, 2020	2020	2021	2022
A. Double-declining balance method			
Machinery	$588,000	$588,000	$588,000
Less: Accumulated depreciation	58,800	164,640	249,312
Year-end book value	$529,200	$423,360	$338,688
Depreciation expense for the year[1]	$58,800	$105,840	$84,672
B. Straight-line method			
Machinery	$588,000	$588,000	$588,000
Less: Accumulated depreciation	26,600	79,800	133,000
Year-end book value	$561,400	$508,200	$455,000
Depreciation expense for the year[2]	$26,600	$53,200	$53,200

3. Rate = 2/10 = .20 or 20%
   2020: 20% × 588,000 × 6/12 = 58,800 (note – using half year rule)
   2021: 20% × (588,000 – 58,800) = 105,840
   2022: 20% × (588,000 – 58,800 – 105,840) = 84,672

4. (588,000 – 56,000)/10 = 53,200 × 6/12 = 26,600

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Problem 9-5B (30 minutes)

Year	Depreciation Method:		
	Straight-line	Double-declining balance	Units-of-production
2020	(145,000 – 25,000)/5 = 24,000/year × 2/12 = 4,000	Rate = 2/5 = .40 or 40% 145,000 × 40% × 2/12 = 9,667	Rate = (145,000 – 25,000)/100,000 = 1.20/km 1.20 × 5,800 = 6,960
2021	24,000	(145,000 – 9,667) × 40% = 54,133	1.20 × 19,400 = 23,280
2022	24,000	(145,000 – 9,667 – 54,133) × 40% = 32,480	1.20 × 22,850 = 27,420
2023	24,000	(145,000 – 9,667 – 54,133 – 32,480) × 40% = 19,488	1.20 × 25,700 = 30,840
2024	24,000	4,232*	1.20 × 19,980 = 23,976
2025	20,000	0	120,000 – 112,476 = 7,524**
Totals	120,000	120,000	120,000

*Maximum allowed = $4,232 [$120,000 – ($9,667 + $54,133 + $32,480 + $19,488)]

**Maximum allowed = $7,524 [$120,000 – ($6,960 + $23,280 + $27,420 + $30,840 + $23,976)]

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Problem 9-6B (30 minutes)

Year	Depreciation Method:		
	Straight-line	Double-declining balance	Units-of-production
2020	(145,000 – 25,000)/5 = 24,000/year × 6/12 = 12,000	Rate = 2/5 = .40 or 40% 145,000 × 40% × 6/12 = 29,000	Same as Problem 9-4B; Units-of-production is usage based and not affected by time 6,960
2021	24,000	(145,000 – 29,000) × 40% = 46,400	1.20 × 19,400 = 23,280
2022	24,000	(145,000 – 29,000 – 46,400) × 40% = 27,840	1.20 × 22,850 = 27,420
2023	24,000	(145,000 – 29,000 – 46,400 – 27,840) × 40% = 16,704	1.20 × 25,700 = 30,840
2024	24,000	56*	1.20 × 19,980 = 23,976
2025	12,000	0	120,000 – 112,476 = 7,524**
Totals	120,000	120,000	120,000

* Maximum allowed = $56 [$120,000 – ($29,000 + $46,400 + $27,840 + $16,704)]

** Maximum allowed = $7,524 [$120,000 – ($6,960 + $23,280 + $27,420 + $30,840 + $23,976)]

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Problem 9-7B (15 minutes)

Part 1.

2021				
Dec.	**31**	**Depreciation Expense, Machinery**	**55,000**	
		Accumulated Depreciation, Machinery		**55,000**
		To record annual depreciation;		
		(500,000 – 60,000)/8 = 55,000		
	31	**Depreciation Expense, Equipment**.....	**126,667**	
		Accumulated Depreciation, Equipment		**126,667**
		To record annual depreciation;		
		Rate = 2/4 = .50 or 50%;		
		50% × (1,280,000 – 1,026,667) = 126,667		

Part 2.

WESTFAIR FOODS
Partial Balance Sheet
December 31, 2021

Property, plant and equipment:		
Machinery	**$500,000**	
Less: Accumulated depreciation.....	**385,000**	**$115,000**
Equipment	**1,280,000**	
Less: Accumulated depreciation.....	**1,153,334**	**126,666**
Total property, plant and equipment.....		**$241,666**

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Problem 9-8B (30 minutes)

Part 1

	Market Value	*Percentage of Total*	*Apportioned Cost*
Building	**$ 663,300**	**55%**	**$574,200**
Land	**397,980**	**33**	**344,520**
Land improvements	**120,600**	**10**	**104,400**
Truck	**24,120**	**2**	**20,880**
Total	**$1,206,000**	**100%**	**$1,044,000**

2020			
Sept. 30	**Building**	**574,200**	
	Land	**344,520**	
	Land Improvements	**104,400**	
	Truck	**20,880**	
	Cash		**1,044,000**
	To record asset purchases.		

Part 2 **2020 straight-line depreciation on building:**

($574,200 – 45,000)/15 × 3/12 = $8,820

Part 3 **2020 double-declining-balance depreciation on land improvements:**

Rate = 2/8 = .25 or 25%
$104,400 × 25% × 3/12 = $6,525

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Problem 9-9B (45 minutes)

Year	*Straight-Line*[a]	*Units-of-Production*[b]	*Double-Declining-Balance*[c]
2020	$ 31,304	$32,928	$ 72,800
2021	46,956	51,744	80,080
2022	46,956	47,040	48,048
2023	46,956	44,688	28,829
2024	46,956	37,240	5,023*
2025	15,652	21,140	0
Totals	$234,780	$234,780	$234,780

[a]Straight- line:

Cost per year = (273,000 – 38,220)/5 years = $46,956 per year × 8/12 = $31,304 for 2020

= $46,956/year × 4/12 = $15,652 for 2022

[b]Units-of-production:

Cost per unit = (273,000 – 38,220)/168,000 units = $1.40 per unit (rounded)

Year	*Units*	*Unit Cost*	*Depreciation*
2020	23,520	$1.40	$32,928
2021	36,960	1.40	51,744
2022	33,600	1.40	47,040
2023	31,920	1.40	44,688
2024	26,600	1.40	37,240
2025	30,940	1.40	21,140*
Total			$234,780

*Take only enough depreciation in Year 2025 to reach the maximum accumulated depreciation of $234,780.

[c]Double-declining-balance:

Rate = 2/5 = .40 or 40%
2020: 40% × 273,000 × 8/12 = 72,800
2021: 40% × (273,000 – 72,800) = 80,080
2022: 40% × (273,000 – 72,800 – 80,080) = 48,048
2023: 40% × (273,000 – 72,800 – 80,080 – 48,048) = 28,829
2024: 234,780 – 229,757* = 5,023

*Take only enough depreciation in Year 2024 to reach the maximum accumulated depreciation of $234,780.

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Problem 9-10B (40 minutes)

Cost Information						Depreciation		
Description	Date of Purchase	Depreciation Method	Cost[1]	Residual	Life	Balance of Accum. Deprec. Apr. 30, 2020	Depreciation Expense for 2021	Balance of Accum. Deprec. Apr. 30, 2021
Equipment	Oct. 3/17	Straight-line	$ 62,400	$ 16,800	20 yr.	$ 5,890[1]	$ 2,280[2]	$ 8,170[3]
Machinery	Oct. 28/17	Units-of-production	540,000	180,000	100,000 units	73,332[4]	38,124[5]	111,456[6]
Tools	Nov. 3/17	Double-declining balance	64,000	15,000	5 yr.	45,568[7]	3,432[8]	49,000[9]

1. (62,400 – 16,800)/20 = 2,280/year × 2 7/12 = <u>5,890</u>
2. (62,400 – 16,800)/20 = <u>2,280/year</u>
3. 5,890 + 2,280 = <u>8,170</u>
4. Rate = (540,000 – 180,000)/100,000 = 3.60/unit;
   2018: 940 × 3.60 = 3,384
   2019: 10,150 × 3.60 = 36,540
   2020: 9,280 × 3.60 = <u>33,408</u>
   <u>73,332</u>
5. 10,590 × 3.60 = <u>38,124</u>
6. 73,332 + 38,124 = <u>111,456</u>
7. Rate = 2/5 = .40 or 40%
   2018: 40% × 64,000 × 6/12 = 12,800
   2019: 40% × (64,000 – 12,800) = 20,480
   2020: 40% × (64,000 – 12,800 – 20,480) = <u>12,288</u>
   Accumulated depreciation at Apr. 30, 2020= <u>$45,568</u>
8. 2021: (64,000 – 15,000) – 45,568 = <u>3,432</u>
9. 45,568 + 3,432 = <u>49,000</u>

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Problem 9-11B (20 minutes)

2020				
June	**26**	**Truck**	**71,820**	
		Cash		**71,820**
		To record purchase of new truck; $68,400 + $3,420 freight costs.		
	27	**Truck**	**3,780**	
		Cash		**3,780**
		To record installation of special racks.		
Dec.	**31**	**Depreciation Expense, Truck[1]**	**7,200**	
		Accumulated Depreciation, Truck		**7,200**
		To record depreciation to nearest whole month.		
2021				
Jan.	**5**	**No entry.**		
Mar.	**15**	**Repair and Maintenance Expense**	**660**	
		Cash		**660**
		To record repairs.		
Dec.	**31**	**Depreciation Expense, Truck[2]**	**10,600**	
		Accumulated Depreciation, Truck		**10,600**
		To record revised depreciation		

1. **[(71,820 + 3,780) – 18,000]/4 × 6/12 = <u>7,200</u>**

2. **[(71,820 + 3,780) – 7,200 – 10,100]/(6 – .5 = 5.5) = <u>10,600</u>**

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Problem 9-12B (40 minutes)

2021				
Dec.	**31**	**Depreciation Expense, Building[1]**	**1,620**	
		Accumulated Depreciation, Building		**1,620**
		To record annual depreciation.		
	31	**Depreciation Expense, Equipment[2]**	**7,320**	
		Accumulated Depreciation, Equipment		**7,320**
		To record annual depreciation.		

1. $$\frac{\text{Cost} - \text{Accumulated Depreciation} - \text{Residual}}{20} = \underline{1{,}620}$$

$$\frac{274{,}800 - 134{,}400 - 108{,}000}{20} = \underline{1{,}620}$$

2. $$\frac{\text{Cost} - \text{Accumulated Depreciation} - \text{Residual}}{10} = \underline{7{,}320}$$

$$\frac{117{,}600 - 38{,}400 - 6{,}000}{10} = \underline{7{,}320}$$

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Problem 9-13B (40 minutes)

2020			
Jan. 3	**Warehouse – Furnace (new)**	**39,000**	
	Accumulated Depreciation, Warehouse – Furnace	**18,153[1]**	
	Loss on Disposal	**8,847**	
	Warehouse – Furnace (old).....		**27,000**
	Accounts Payable		**39,000**
	To record installation of new warehouse furnace.		

***Calculations*:**

1. **2015 Deprec.: 27,000 × 2/10 = 5,400;**
   2016 Deprec.: (27,000 – 5,400) × 2/10 = 4,320;
   2017 Deprec.: (27,000 – 9,720) × 2/10 = 3,456;
   2018 Deprec.: (27,000 – 13,176) × 2/10 = 2,765;
   2019 Deprec.: (27,000 – 15,941) × 2/10 = 2,212;
   Accum. Deprec. Dec. 31, 2019 = 5,400 + 4,320 + 3,456 + 2,765 + 2,212 = 18,153.

Part 2

Windows	**51,750 ÷ 15 =**	**$ 3,450**
Doors	**105,000 ÷ 20 = 5,250/yr;** **5,250/yr × 5 yrs = 26,250 Accum. Dep.;** **105,000 – 26,250 = 78,750 book value;** **78,750 – 23,100 = 55,650 revised depreciable value;** **55,650 ÷ (12 yrs – 5 yrs = 7 yrs) =**	**7,950**
Roofing	**43,500 ÷ 10 =**	**4,350**
Siding	**54,000 ÷ 25 =**	**2,160**
Framing/Walls	**222,000 – 60,000 = 162,000; 162,000 ÷ 30 =**	**5,400**
Furnace	**39,000 × 2/16 =**	**4,875**
Misc.	**Maximum allowable depreciation reached[1]**	**-0-**
Total depreciation expense to be recorded on the warehouse for 2020=		**$28,185**

1. **2015: 61,500 × 2/5 = 24,600;**
   2016: (61,500 – 24,600) × 2/5 = 14,760;
   2017: (61,500 – 39,360) × 2/5 = 8,856;
   2018: (61,500 – 48,216) × 2/5 = 5,314;
   2019: (61,500 – 53,530) × 2/5 = 3,188 which exceeds max. allowable accumulated depreciation of 54,000 therefore the maximum that can be recorded in 2019 is 54,000 – 53,530 = 470 with no depreciation recorded in any subsequent years.

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Problem 9-14B (40 minutes)

Part 1

2020			
Mar. 31	**Impairment Loss**	**26,000**	
	Computer Equipment		**26,000**
	To record impairment loss on computer equipment.		
31	**Impairment Loss**	**23,750**	
	Machinery		**23,750**
	To record impairment loss on machinery.		

Calculations:

	Book Value	Recoverable Value	Impairment Loss
Computer equipment	**$ 32,250**	**$6,250**	**$26,000**
Land	**145,000**	**172,500**	**NA**
Machinery	**88,750**	**65,000**	**23,750**
Warehouse	**173,500**	**243,750**	**NA**

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Problem 9-14B (*concluded*)

Part 2

La Mancha Enterprises
Balance Sheet
March 31, 2020

Assets			
Current assets:			
Cash		$ 35,000	
Accounts receivable	$ 57,500		
Less: Allowance for doubtful accounts	6,000	51,500	
Office supplies		4,875	
Total current assets			$ 91,375
Property, plant and equipment:			
Land		$145,000	
Warehouse	$ 460,000		
Less: Accumulated depreciation	286,500	173,500	
Machinery	$217,500[1]		
Less: Accumulated depreciation	152,500	65,000	
Computer equipment	$46,500[2]		
Less: Accumulated depreciation	40,250	6,250	
Total property, plant and equipment			389,750
Total assets			$481,125
Liabilities			
Current liabilities:			
Accounts payable	$ 14,750		
Salaries payable	33,750		
Current portion of long-term mortgage	59,550		
Total current liabilities		$108,050	
Non-current liabilities:			
Mortgage payable, less current portion		34,200	
Total liabilities			$142,250
Equity			
Joy La Mancha, capital			338,875[3]
Total liabilities and equity			$481,125

Calculations:

1. 241,250 cost – 23,750 impairment loss = 217,500
2. 72,500 cost – 26,000 impairment loss = 46,500
3. 407,875 adjusted capital balance + 1,227,500 revenues – 1,246,750 expenses – 26,000 impairment loss, computer equip. – 23,750 impairment loss, machinery. = 338,875 post-closing capital balance

Analysis component:

The recording of an impairment loss causes expenses to increase which in turn causes net income to decrease. Decreases in income cause equity on the balance sheet to decrease.

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Problem 9-15B (45 minutes)

Part 1

2020				
Mar.	**2**	**Depreciation Expense, Van**	**1,575**	
		Accumulated Depreciation, Van[1]		**1,575**
		To record depreciation on van for 2020.		
	2	**Cash**	**17,920**	
		Accumulated Depreciation, Van[1]	**42,175**	
		Loss on Disposal	**4,305**	
		Van		**64,400**
		To record sale of van.		
		Part 2		
Aug.	**27**	**Depreciation Expense, Machinery**	**12,642**	
		Accumulated Depreciation, Machinery[2]		**12,642**
		To record depreciation on machinery for 2020.		
	27	**Cash**	**95,718**	
		Accumulated Depreciation, Machinery[2]	**33,082**	
		Machinery		**128,800**
		To record sale of machinery.		
		Part 3		
June 29		**Depreciation Expense, Equipment**	**3,500**	
		Accumulated Depreciation, Equipment[3]		**3,500**
		To record depreciation on equipment for 2020.		
	29	**Cash**	**27,720**	
		Accumulated Depreciation, Equipment[3]	**48,300**	
		Gain on Disposal		**420**
		Equipment		**75,600**
		To record sale of equipment.		

Calculations:

1. **Depreciation from Feb. 1/20 to Mar. 2/20:**

$$\frac{64{,}400 - 40{,}600 - 9{,}800}{40{,}000} = \$0.35/\text{km} \times 4{,}500 \text{ km} = 1{,}575$$

$$+\ 40{,}600$$

$$42{,}175$$

(calculations continued on next page)

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Problem 9-15B (*concluded*)

2. Depreciation from Feb. 1/20 to Aug. 27/20:

128,800 – 20,440 = 108,360 Book Value
Rate = 2/10 = .20 or 20%

108,360 × 20% × 7/12 =	**12,642**
	+ 20,440
	33,082

3. Depreciation from Feb. 1/20 to June 29/20:

(75,600 – 44,800 – 5,600) / 3 × 5/12 =	**3,500**
	+ 44,800
	48,300

Problem 9-16B (60 minutes)

Part 1

2020				
Jan.	**1**	**Machine**	**156,000**	
		Cash		**156,000**
		To record purchase of machine.		
	2	**Machine**	**4,068**	
		Cash		**4,068**
		To record capital repairs on machine.		
	2	**Machine**	**5,760**	
		Cash		**5,760**
		To record installation of machine.		

Part 2

Dec.	**31**	**Depreciation Expense, Machine**	**20,604**	
		Accumulated Depreciation, Machine		**20,604**
		To record depreciation;		
		(165,828 – 21,600)/7 = 20,604		
2025				
Apr.	**1**	**Depreciation Expense, Machine**	**5,151**	
		Accumulated Depreciation, Machine		**5,151**
		To record partial year's depreciation;		
		20,604 × 3/12 = 5,151.		

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Problem 9-16B (*concluded*)

Part 3(a)

Apr. 30	Accumulated Depreciation, Machine[1]	108,171	
	Cash	36,000	
	Loss on Disposal[2]	21,657	
	Machine		165,828
	Sold machine for $36,000.		

Part 3(b)

30	Accumulated Depreciation, Machine	108,171	
	Cash	60,000	
	Machine		165,828
	Gain on Disposal[3]		2,343
	Sold machine for $60,000.		

Part 3(c)

30	Accumulated Depreciation, Machine	108,171	
	Cash	24,000	
	Loss on Disposal[4]	33,657	
	Machine		165,828
	Received insurance settlement.		

Calculations:

Depreciation

1. Accumulated depreciation = $\underbrace{(20{,}604 \times 5 \text{ years})}_{\text{Deprec. for 2020, 2021, 2022, 2023, 2024}} + \underbrace{5{,}151}_{\text{Deprec. for 2025}}$ = 108,171

2. Gain (Loss) = Cash Proceeds – Book Value
   = 36,000 – (165,828 – 108,171) = (21,657)

3. Gain (Loss) = Cash Proceeds – Book Value
   = 60,000 – (165,828 – 108,171) = 2,343

4. Gain (Loss) = Cash Proceeds – Book Value
   = 24,000 – (165,828 – 108,171) = (33,657)

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Problem 9-17B (20 minutes)

2020			
Aug. 31	**Accumulated Depreciation, Furniture**	**25,800**	
	Computer Equipment	**72,600**	
	Furniture		**42,000**
	Cash		**56,400**
	To record exchange.		
Sept. 4	**Computer Equipment**	**11,760**	
	Cash		**11,760**
	Addition of upgrade, betterment.		
Dec. 31	**Depreciation Expense, Computer Equipment**	**7,240**	
	Accumulated Depreciation, Computer Equipment		**7,240**
	To record depreciation;		
	[(72,600 + 11,760) – 19,200] /3 × 4/12.		

*** Assets Given up = Cash Paid+ Book Value of Assets Given Up**
= 56,400+[42,000–25,800]
= 56,400+16,200= 72,600

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Problem 9-18B (45 minutes)

1. Depreciation expense on first December 31 of each machine's life

2020			
Dec. 31	**Depreciation Expense, Machine 6690[1]**	**10,800**	
	Accumulated Depreciation, Machine 6690		**10,800**
	To record depreciation.		
2022			
Dec. 31	**Depreciation Expense, Machine 6691[3]**	**8,325**	
	Accumulated Depreciation, Machine 6691		**8,325**
	To record depreciation.		
2025			
Dec. 31	**Depreciation Expense, Machine 6711[5]**	**7,155**	
	Accumulated Depreciation, Machine 6711		**7,155**
	To record depreciation.		

2. Purchase/exchange/disposal of each machine

2020			
May 1	**Machine 6690**	**72,900**	
	Cash		**72,900**
	To record purchase of Machine 6690.		
2022			
Aug. 5	**Machine 6691 (= to assets given up)**	**49,950**	
	Accumulated Depreciation, Machine 6690[2]	**36,450**	
	Machine 6690		**72,900**
	Cash		**13,500**
	To record exchange of Machine 6690.		
2025			
Feb. 1	**Cash**	**13,500**	
	Accumulated Depreciation, Machine 6691[4]	**35,465**	
	Loss on Disposal	**985**	
	Machine 6691		**49,950**
	To record sale of Machine 6691.		
1	**Machine 6711**	**79,650**	
	Cash		**79,650**
	To record purchase of Machine 6711.		
2026			
Oct. 3	**Cash**	**54,000**	
	Accumulated Depreciation, Machine 6711[6]	**17,888**	
	Loss on Disposal	**7,762**	
	Machine 6711		**79,650**
	To record sale of Machine 6711.		

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Problem 9-18B *(continued)*

Calculations:

1. $\frac{72{,}900 - 8{,}100}{4}$ = 16,200/year × 8/12 = 10,800

2. Depreciation

	2020:	10,800	
	2021:	16,200	
	2022:	9,450	(16,200 × 7/12)
Accum. Deprec.		36,450	

3. Rate = 2/5 = .40 or 40%
   40% × 49,950 × 5/12 = 8,325

4.

2022:	8,325
2023: 40% × (49,950 – 8,325) =	16,650
2024: 40% × (49,950– 8,325 – 16,650) =	9,990
2025: 40% × (49,950– 8,325 – 16,650 – 9,990) × 1/12 =	500
	35,465

5. (79,650 – 8,100)/75,000 = $0.954/unit

   2025: 7,500 units × 0.954/unit = 7,155

6. Depreciation for Jan. 1/2026 to Oct. 3/2026:

= 11,250 units × 0.954/unit =	10,733
	7,155
Accum. Deprec.	17,888

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Problem 9-19B (20 minutes)

Part 1

a.

2020			
Feb. 3	**Patent**	**220,800**	
	Cash		**220,800**
	To record purchase of patent.		

b.

Dec. 31	**Amortization Expense, Patent**	**40,480**	
	Accumulated Amortization, Patent		**40,480**
	To record amortization on patent;		
	220,800 ÷ 5 = 44,160/year;		
	44,160 x 11/12 = 40,480.		

Part 2

Secure Software Group
Partial Balance Sheet
December 31, 2020

Assets			
Current assets:			
Cash		**$103,200**	
Accounts receivable (net)		**277,200**	
Merchandise inventory		**135,600**	
Total current assets			**$ 516,000**
Property, plant and equipment:			
Land		**$110,400**	
Building	**$595,200**		
Less: Accumulated depreciation, building	**189,000**	**406,200**	
Equipment	**$477,600**		
Less: Accumulated depreciation, equip.	**259,200**	**218,400**	
Total property, plant and equipment			**735,000**
Intangible assets:			
Patent		**$220,800**	
Less: Accumulated amortization, patent		**40,480**	**180,320**
Total assets			**$1,431,320**

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Problem 9-20B (30 minutes)

Part 1

2020			
Dec. 31	**Amortization Expense, Patent**	**9,625**	
	Accumulated Amortization, Patent		**9,625**
	To record amortization on the patent;		
	$210,000 ÷ 20 years = $10,500/yr × 11/12 = $9,625.		
31	**Depreciation Expense, Equipment**	**16,170**	
	Accumulated Depreciation, Equipment		**16,170**
	To record depreciation on the equipment;		
	$320,600 - $56,000 = $264,600;		
	$264,600 ÷ 15 years = $17,640/yr × 11/12 = $16,170.		
31	**Depreciation Expense, Computer**	**14,630**	
	Accumulated Depreciation, Computer		**14,630**
	To record depreciation on the computer;		
	$79,800 ÷ 5 years = $15,960/yr × 11/12 = $14,630.		

Part 2

2024			
Jan. 27	**Accumulated Amortization, Patent**	**42,000**	
	Loss on Disposal	**168,000**	
	Patent		**210,000**
	To record disposal of the patent;		
	4 yrs × $10,500/yr = $42,000 accum. amort.		
27	**Accumulated Depreciation, Equipment**	**70,560**	
	Cash	**252,000**	
	Gain on Disposal		**1,960**
	Equipment		**320,600**
	To record disposal of the equipment;		
	4 yrs × $17,640/yr = $70,560 accum. deprec.		
27	**Accumulated Depreciation, Computer**	**63,840**	
	Loss on Disposal	**15,960**	
	Computer		**79,800**
	To record disposal of the computer;		
	4 yrs × $15,960/yr = $63,840 accum. deprec.		

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***Problem 9-21B (40 minutes)**

1.a.	**2020**			
	Oct. 3	**Depreciation Expense, Equipment – Fan .....**	**4,320**	
		Accum. Deprec., Equipment – Fan.....		**4,320**
		To update depreciation on replaced fan from Jan 1/20 to Oct 3/20.		
	3	**Cash .....**	**8,400**	
		Accum. Deprec., Equipment – Fan.....	**29,280[1]**	
		Equipment – Fan (old).....		**32,400**
		Gain on Disposal		**5,280**
		To record sale of replaced fan on the equipment.		
	3	**Equipment – Fan (new) .....**	**36,000**	
		Cash		**36,000**
		To record purchase of replacement fan on equipment.		
1.b.	**Dec. 31**	**Depreciation Expense, Equipment - Fan .....**	**22,370[2]**	
		Accum. Deprec., Equipment - Fan.....		**22,370**
		To record depreciation for 2020 on the equipment (sum of all components).		

Calculations:

1. 32,400 – 3,600 = 28,800; 28,800 ÷ 5 yrs = 5,760/yr;
5,760 × 4/12 = 1,920 deprec. for 2015;
5,760/yr × 4 yrs (2016 to 2019 inclusive) = 23,040;
5,760/yr × 9/12 (max depreciation to depreciate 5 years) = 4,320 deprec. from Jan. 1/20 to Oct. 3/20;
1,920 + 23,040 + 4,320 = 29,280 accum. deprec. at Oct. 3/20.

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***Problem 9-21B (*continued*)**

2.	**Metal Frame**	**144,000 – 36,000 = 108,000; 108,000 ÷ 20 yrs = 5,400/yr; 5,400/yr × 4/12 = 1,800 deprec. for 2015 ; 5,400/yr × 4 yrs (2016 to 2019 inclusive) = 21,600; 1,800 + 21,600 = 23,400 accum. deprec. at Dec. 31/19; Revised deprec. = 144,000 – 23,400 accum. deprec. = 120,600 remaining book value; 120,600 – (36,000 – 12,000 = 24,000 residual value) = 96,600 remaining depreciable cost; 96,600 ÷ 20 yrs =**	**$4,830**
	Engine	**2015: 96,000 × 2/10 × 4/12 = 6,400 2016: 96,000 – 6,400 = 89,600 × 2/10 = 17,920 2017: 89,600 – 17,920 = 71,680 × 2/10 = 14,336 2018: 71,680 – 14,336 = 57,344 × 2/10 = 11,469 2019: 57,344 – 11,469 = 45,875 × 2/10 = 9,175 2020: 45,875 – 9,175 = 36,700 × 2/10 =**	**7,340**
	New Fan	**36,000 – 4,800 = 31,200; 31,200 ÷ 5 yrs = 6,240 × 3/12 =**	**1,560**
	Conveyor System	**126,000 – 39,600 = 86,400; 86,400 ÷ 10 yrs =**	**8,640**
	Misc. Parts	**2015: 27,600 × 2/5 × 4/12 = 3,680 2016: 27,600 – 3,680 = 23,920 × 2/5 = 9,568 2017: 23,920 – 9,568 = 14,352 × 2/5 = 5,741 2018: 14,352 – 5,741 = 8,611 × 2/5 = 3,444 2019: 8,611 – 3,444 = 5,167 × 2/5 = 2,067 which exceeds max.; maximum that can be taken in 2019 is 5,167 – 4,800 = 367; therefore, no depreciation is taken in 2020**	**-0-**
			$22,370

Part 2
Total 2020 depreciation = $4,320 + $22,370 = $26,690

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ANALYTICAL AND REVIEW PROBLEMS

A&R Problem 9-1

The following points should be set out in the report:

1. **Assets on which depreciation was charged were purchased for use in the business and not for resale. Therefore, the fact that they may be sold for more than cost is not relevant since, in keeping with the cost principle, PPE are maintained in the accounting records at cost.**
2. **Because these assets are subject to both physical and economic (obsolescence) deterioration, they have a limited useful life span, however long it may be, and their cost, less any residual value, must be allocated over their useful life.**
3. **Maintenance expenditures maintain these assets in a properly functioning order. They, however, do not eliminate the fact of physical and economic deterioration.**
4. **Not charging periodic depreciation is in violation of the matching principle and results in an understatement of expenses and overstatement of net income.**
5. **Depreciation is a process of allocation not of valuation.**

ETHICS CHALLENGE

1. **When managers acquire new assets a variety of decisions relative to depreciation must be made. The asset must be assigned a useful life and residual value, and a method of depreciation must be chosen.**

2. **It is true that managers can choose a useful life and residual value based on an estimate. However, the estimated life should be the manager's realistic expectation of how long the asset will actually be used in the operations of the business. The estimated residual value should not be arbitrary; it should reflect expectations of the recoverable value of the asset at the end of its useful life to the business, even if it is zero. The depreciation method should reflect a systematic allocation of the asset's cost based on how the asset is actually consumed by the business.**

3. **By selecting a useful life that is significantly greater than what is realistic in combination with an unreasonably high residual value, the profit margin will be overstated since depreciation expense will be greatly understated.**

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FOCUS ON FINANCIAL STATEMENTS

FFS 9-1

a.

Cost Information						Depreciation/Amortization		
Description	Date of Purchase	Deprec. Method	Original Cost	Residual	Life	Accum. Balance Dec. 31, 2019	Expense for 2020	Accum. Balance
Land	July 3/17		$280,000			n/a	n/a	n/a
Building	July 3/17	S/L	454,000	$40,000	15 yr.	$ 69,000[1]	$46,000[2]	$115,000
Machinery	Mar 20/17	Units	150,000	30,000	250,000	72,960[3]	31,200[4]	104,160
Truck	Mar 01/17	S/L	298,800	30,000	7 yr.	108,800[5]	38,400[6]	147,200
Furniture	Feb 18/17	DDB	24,000	3,000	5 yr.	18,240[7]	576[8]	-0-[10]
Patent	Nov 7/18	S/L	103,800	-0-	5 yr.	24,220[9]	20,760[9]	44,980
Office Equip.	Apr 10/20	DDB	65,143[11]	10,000	4 yr.	-0-	24,429[12]	24,429
Furniture	Apr 10/20	DDB	48,857[11]	4,000	5 yr.	-0-	14,657[13]	14,657

Calculations:

1. (454,000 – 40,000)/15 = 27,600/year x 6/12 = 13,800 for 2017
   27,600 for 2018
   27,600 for 2019
   69,000 Accum. deprec. at Dec. 31/19

2. (454,000 – 40,000 – 69,000)/(10 – 2.5 = 7.5) = 46,000 for 2020

3. (150,000 – 30,000)/250,000 = $0.48/unit x 45,000 = 21,600 for 2017
   x 55,000 = 26,400 for 2018
   x 52,000 = 24,960 for 2019
   72,960 Accum. deprec. at Dec. 31/19

4. $0.48/unit x 65,000 = 31,200 for 2020

5. (298,800 – 30,000)/7 = 38,400/year x 10/12 = 32,000 for 2017
   38,400 for 2018
   38,400 for 2019
   108,800 Accum. deprec. Dec. 31/19

6. (298,800 – 30,000)/7 = 38,400/year depreciation for 2020

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FFS 9-1 (*continued*)

7. 24,000 x 2/5 x 10/12 = 8,000 for 2017
(24,000 – 8,000) x 2/5 = 6,400 for 2018
24,000 – (8,000 + 6,400)] x 2/5 = 3,840 for 2019
18,240 Accum. deprec. Dec. 31/19

8. [24,000 – (8,000 + 6,400 + 3,840)] x 2/5 x 3/12 = 576 for 2020

9. (103,800 – 0)/5 = 20,760/year x 2/12 = 3,460 for 2018
20,760 for 2019
24,220 Total dep. taken to Dec. 31/19

10. This has a -0- balance at December 31, 2020 because the asset was disposed of (donated to charity).

11.

	Appraised Values	Ratio	Cost Allocation
Office Equipment	96,000	96/168 x 114,000	= 65,143
Furniture	72,000	72/168 x 114,000	= 48,857
Totals	168,000		114,000

12. 65,143 x 2/4 x 9/12 = 24,429 for 2020

13. 48,857 x 2/5 x 9/12 = 14,657 for 2020

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FFS 9-1 (*continued*)

b.

Times TeleCom
Income Statement
For Year Ended December 31, 2020

Revenues:		
Revenue earned		**$950,000**
Expenses:		
Salaries expense	**$294,000**	
Depreciation expense	**155,262**	
Amortization expense	**20,760**	
Insurance expense	**30,000**	
Loss on disposal of furniture	**5,184**	
Total expenses		**505,206**
Profit		**$444,794**

Times TeleCom
Statement of Changes in Equity
For Year Ended December 31, 2020

Susan Times, capital, January 1, 2020	**$421,180**
Add: Profit	**444,794**
Total	**865,974**
Less: Withdrawals by owner	**204,000**
Susan Times, capital, December 31, 2020	**$661,974**

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FFS 9-1 (*continued*)

1.

Times TeleCom
Balance Sheet
December 31, 2020

Assets			
Current assets:			
Cash		$ 30,000	
Accounts receivable		72,000	
Prepaid insurance		15,600	
Total current assets			$ 117,600
Property, plant and equipment:			
Land		$280,000	
Building	$454,000		
Less: Accumulated depreciation	115,000	339,000	
Machinery	$150,000		
Less: Accumulated depreciation	104,160	45,840	
Truck	$298,800		
Less: Accumulated depreciation	147,200	151,600	
Office equipment	$ 65,143		
Less: Accumulated depreciation	24,429	40,714	
Furniture	$ 48,857		
Less: Accumulated depreciation	14,657	34,200	
Total property, plant and equipment			891,354
Intangible assets:			
Patent	$103,800		
Less: Accumulated Amortization	44,980		58,820
Total assets			$1,067,774
Liabilities			
Current liabilities:			
Accounts payable	$ 68,000		
Unearned revenue	53,800		
Total current liabilities		$ 121,800	
Non-current liabilities:			
Notes payable, due 2023		284,000	
Total liabilities			$ 405,800
Equity			
Susan Times, capital			661,974
Total liabilities and equity			$1,067,774

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FFS 9-2

Part 1

NOTE: Both SpinMaster and WestJet use the term 'amortization and depreciation' in the statements referenced in this question. To be consistent with the textbook, the answers use the term 'depreciation'.

a.
The $32,978 (thousand) represents the book value of the PPE. The December 31, 2017, book value is the $153,051 (thousand) total cost of the PPE assets less the $120,073 (thousand) total accumulated depreciation of the PPE. (*Note to instructor: Point out to students that this additional information — cost and accumulated depreciation — is found in Spin Masters Note 11 of the financial statements.*)

b. The full disclosure principle requires financial statements to report all relevant information about the operations and financial position of the entity. In conformance with the full disclosure principle, information in addition to the $32,978 (thousand) book value is reported in Note 2(l) (depreciation methods) and Note 11 (cost, accumulated depreciation, and book value).

c. The depreciation expense for the year ended December 31, 2017, was $44,908 (thousand). Although depreciation expense typically appears on the income statement, Spin Master does not detail it there but these amounts do appear on the statement of cash flows and in Notes 7, 11 and 12.

Part 2

a. WestJet's property and equipment at December 31, 2017 is 70.27% of total assets calculated as ($4,567,504/$6,499,840) x 100.

b. Indigo's property, plant and equipment at March 31, 2018 represent 12.99% of total assets calculated as ($82,314,000/$633,574,000) x 100.

c. WestJet and Indigo operate in different industries: WestJet is an airline while Indigo operates bookstores. As such, WestJet has relatively little inventory in comparison to Indigo. WestJet's inventory at December 31 2017 is $43,045 thousand or .66% of total assets (calculated as $43,045/$6,499,840 x 100). Indigo's inventory at March 31, 2018 is $264,586 thousand or 41.76% of total assets (calculated as $264,586,000/$633,574,000 x 100). Indigo's inventory represents close to half of its total assets while WestJet's property and equipment represent over half of its assets. Indigo needs a large stock of inventory in order to operate. WestJet primarily needs property and equipment (planes) to operate its business. Therefore, it seems logical that the mix of assets would be different for each company.

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2. CRITICAL THINKING MINI-CASE

CT 9-1

Note to instructor: Student responses will vary and therefore the answer here is only suggested and not inclusive of all possibilities; it is presented in point form for brevity.

Problem:

- **Taking the perspective of both the external and internal auditors, there is a problem with how a number of truck expenditures were recorded to the capital asset account.**

Goal:*

- **To identify which transactions were recorded incorrectly, correct them, and restate net income on the income statement and restate assets and equity on the balance sheet.**
- **Another goal, from the perspective of the auditor, would be to bring these issues to the attention of the board of directors for their action because there may be ethical concerns regarding the behaviour of the business manager (bonus is tied to income so he/she may be manipulating the recording of transactions to maximize income).**

Principles:

- **The matching principle has been violated; it requires costs to be allocated or matched to the period in which it helped generate revenues.**
- **The prudence principle was also violated; it states that assets and income should never be overstated.**
- **Another GAAP requires consideration: materiality. If the misstatements are not material in nature (not significant in dollar amount so that the decisions of shareholders would not have been affected), the conclusions are affected. Therefore, we must look at the numbers to determine whether materiality has been violated or not.**

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CT 9-1 (*continued*)

Facts:
as stated in the mini case

—The insurance was incorrectly debited to the Truck account; it should have been debited to a current asset account: Prepaid Insurance. The result of this error is an overstatement of net income in 2018 of $7,800 (36,000/24 months = 1,500/month insurance used x 10 months = 15,000 for 2018 vs. 36,000/5 yrs useful life = 7,200; 15,000 – 7,200 = 7,800). 2018 net income is not known but if it is assumed that it approximates 2019 net income as reported ($78,000), then the $7,800 overstatement of net income in 2018 is material in nature since it approximates 10%.

—The net income in 2019 would also have been materially overstated; by $10,800 (1,500 insurance expense per month x 12 months used = 18,000 – depreciation of 7,200 = 10,800). Net income in 2020 would have been understated by $4,200 (7,200 depreciation– 3,000 insurance used = 4,200).

—It is unclear from the information provided how the insurance renewal was treated: as an addition to Truck asset account, or as Prepaid Insurance; this would have affected the impact of the misstatement in 2020.

—It is unclear from the information provided whether revised depreciation was calculated when the motors were debited to the truck account (which is correct assuming that the motors enhanced the trucks which is likely). We will assume that this was treated correctly (A betterment with resulting calculation of revised depreciation) given no information to the contrary. The $32,000 and $2,500 costs regarding the tires and brakes were capitalized in error; they should have been expensed when incurred in 2020. Therefore, net income in 2020 is overstated by a potential $34,500 (32,000 + 2,500) — I say potential because it is unclear whether revised depreciation was calculated on the truck; this additional depreciation would affect the amount of any misstatement in 2019 and 2020.

—There is also the issue of when the bonus was recorded; these were recorded in the incorrect accounting periods (recorded when paid as opposed to the period which triggered the cost — violation of matching and realization principles). In addition, because the bonuses were based on overstated net income amounts, the bonuses would have been overstated for 2018 and 2019 and potentially in 2020.

—It appears that the 2019 net income was overstated by almost 50%.

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Conclusions/Consequences:

- **To do 'nothing' would mean that shareholders/owners are making decisions based on inaccurate information.**
- **If the manager did, in fact, engage in unethical actions, a longer-term implication from the perspective of the manager is that he/she may lose their job and future employability prospects in addition to damaging the credibility of the company and its share values assuming it is publicly held.**
- **The board of directors need to be made aware of the errors made in recording repairs and maintenance expenses and betterments so that they can deal appropriately with the manager responsible and negative repercussions with shareholders/owners.**

***The goal is highly dependent on perspective.**

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