CHAPTER 9

LONG-LIVED ASSETS

CHAPTER STUDY OBJECTIVES

1. ***Calculate the cost of property, plant, and equipment.*** The cost of property, plant, and equipment includes all costs that are necessary to acquire the asset and make it ready for its intended use. All costs that benefit future periods (that is, capital expenditures) are included in the cost of the asset. When applicable, cost also includes asset retirement costs. When multiple assets are purchased in one transaction, or when an asset has significant components, the cost is allocated to each individual asset or component using their relative fair values.

2. ***Apply depreciation methods to property, plant, and equipment.*** After acquisition, assets are accounted for using the cost model or the revaluation model. Depreciation is recorded and assets are carried at cost less accumulated depreciation. Depreciation is the allocation of the cost of a long-lived asset to expense over its useful life (its service life) in a rational and systematic way. Depreciation is not a process of valuation and it does not result in an accumulation of cash. There are three commonly used depreciation methods:

Method	Effect on Annual Depreciation	Calculation
Straight-line	Constant amount	(Cost − residual value) ÷ estimated useful life (in years)
Diminishing-balance	Diminishing amount	Carrying amount at beginning of year × diminishing-balance rate
Units-of-production	Varying amount	(Cost − residual value) ÷ total estimated units-of-production × actual activity during the year

Each method results in the same amount of depreciation over the asset's useful life. Depreciation expense for income tax purposes is called capital cost allowance (CCA).

3. ***Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.*** A revision to depreciation will be required if there are (a) capital expenditures during the asset's useful life; (b) impairments in the asset's fair value; (c) changes in the asset's fair value when using the revaluation model; and/or (d) changes in the appropriate depreciation method, estimated useful life, or residual value. An impairment loss must be recorded if the recoverable amount is less than the carrying amount.

Revisions of periodic depreciation are made in present and future periods, not retroactively. The new annual depreciation is determined by using the depreciable amount (carrying amount less the revised residual value), and the remaining useful life, at the time of the revision.

4. ***Demonstrate how to account for property, plant, and equipment disposals.*** The accounting for the disposal of a piece of property, plant, or equipment through retirement or sale is as follows:
(a) Update any unrecorded depreciation for partial periods since depreciation was last recorded.
(b) Calculate the carrying amount (cost – accumulated depreciation).
(c) Calculate any gain (proceeds > carrying amount) or loss (proceeds < carrying amount) on disposal.
(d) Remove the asset and accumulated depreciation accounts at the date of disposal. Record the proceeds received and the gain or loss, if any.
An exchange of assets is recorded as the purchase of a new asset and the sale of an old asset. The new asset is recorded at the fair value of the asset given up plus any cash paid (or less any cash received). The fair value of the asset given up is compared with its carrying amount to calculate the gain or loss. If the fair value of the new asset or the asset given up cannot be determined, the new long-lived asset is recorded at the carrying amount of the old asset that was given up, plus any cash paid (or less any cash received).

5. ***Record natural resource transactions and calculate depletion.*** The units-of-production method of depreciation is generally used for natural resources. The depreciable amount per unit is calculated by dividing the total depreciable amount by the number of units estimated to be in the resource. The depreciable amount per unit is multiplied by the number of units that have been extracted to determine the annual depreciation. The depreciation and any other costs to extract the resource are recorded as inventory until the resource is sold. At that time, the costs are transferred to cost of resource sold on the income statement. Revisions to depreciation will be required for capital expenditures during the asset's useful life, for impairments, and for changes in the total estimated units of the resource.

6. ***Identify the basic accounting issues for intangible assets and goodwill.*** The accounting for tangible and intangible assets is much the same. Intangible assets are reported at cost, which includes all expenditures necessary to prepare the asset for its intended use. An intangible asset with a finite life is amortized over the shorter of its useful life and legal life, usually on a straight-line basis. The extent of the annual impairment tests depends on whether IFRS or ASPE is followed and whether the intangible asset had a finite or indefinite life. Intangible assets with indefinite lives and goodwill are not amortized and are tested at least annually for impairment. Impairment losses on goodwill are never reversed under both IFRS and ASPE.

7. ***Illustrate the reporting and analysis of long-lived assets.*** It is common for property, plant, and equipment, and natural resources to be combined in financial statements under the heading "property, plant, and equipment." Intangible assets with finite and indefinite lives are sometimes combined under the heading "intangible assets" or are listed separately. Goodwill must be presented separately. Either on the balance sheet or in the notes, the cost of the major classes of long-lived assets is presented. Accumulated depreciation (if the asset is depreciable)

and carrying amount must be disclosed either in the balance sheet or in the notes. The depreciation and amortization methods and rates, as well as the annual depreciation expense, must also be indicated. The company's impairment policy and any impairment losses should be described and reported. Under IFRS, companies must include a reconciliation of the carrying amount at the beginning and end of the period for each class of long-lived assets and state whether the cost or revaluation model is used.
The asset turnover ratio (net sales ÷ average total assets) is one measure that is used by companies to show how efficiently they are using their assets to generate sales revenue. A second ratio, return on assets (profit ÷ average total assets), calculates how profitable the company is in terms of using its assets to generate profit.

EXERCISES

Exercise 1

Ed Harris Company was organized on January 1. During the first year of operations, the following expenditures and receipts were recorded in random order in the account, Land:

		Debits
1.	Cost of real estate purchased as a plant site (land and building)	$ 320,000
2.	Legal fees paid at the time of the purchase of the real estate	6,500
3.	Cost of demolishing building to make land suitable for construction of a new building	12,000
4.	Architect's fees on building plans	14,000
5.	Excavation costs for new building	24,000
6.	Cost of filling and grading the land	5,000
7.	Insurance and taxes during construction of building	6,000
8.	Cost of repairs to building under construction caused by a small fire	14,000
9.	Interest paid during the year, of which $ 52,000 pertains to the construction period	64,000
10.	Full payment to building contractor	760,000
11.	Cost of parking lots and driveways	36,000
12.	Property taxes paid for the current year on the land	4,000
	Total Debits	$ 1,265,500

		Credits
13.	Insurance proceeds for fire damage	$ 10,000
14.	Proceeds from residual of demolished building	3,500
	Total Credits	$ 13,500

Instructions

Analyze the above transactions using the columns below. Insert the number of each transaction in the item space and insert the amounts in the appropriate columns.

Item	Land	Land Improvements	Building	Other	Account Title

Solution 1 (15 min.)

Item	Land	Land Improvements	Building	Other	Account Title
1.	$ 320,000				
2.	6,500				
3.	12,000				
4.			$ 14,000		

5.			24,000		
6.	5,000				
7.			6,000		
8.				$ 14,000	Fire Loss
9.			52,000	12,000	Interest Expense
10.			760,000		
11.		$ 36,000			Land Improvements
12.				4,000	Property Tax Expense
13.				(10,000)	Fire Loss
14.	(3,500)				
Totals	$ 340,000	$ 36,000	$ 856,000	$ 20,000	

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 2

Rainbow Logistics purchased land with the intention of building an office. Rainbow also engaged other contractors for fencing, paving, lighting, landscaping, and to remove a dilapidated building to make room for new office building. The following information relates to these transactions:

- Purchased land for $ 350,000.
- Paid $ 4,000 for seller's back property taxes.
- Paid $ 22,000 to have the dilapidated building removed.
- Paid a builder $ 400,000 to design and build the office building.
- Paid an excavation company $ 20,000 to grade and clear the land to make it suitable for building purposes.
- Paid a landscaping company $ 10,000 for trees and shrubs.
- Paid a contractor $ 16,000 for outside lighting around the parking area and sidewalks.
- Paid $ 26,000 to have the parking lot paved.
- Paid a fence builder $ 15,000 to construct a security fence around the property.

Instructions

Determine the cost of the land, the building, and the land improvements.

Solution 2 (10 min.)

Land = $ 350,000 + $ 22,000 + $ 4,000 + $ 20,000 = $ 396,000
Building = $ 400,000
Land improvements = $ 10,000 + $ 16,000 + $ 15,000 + $ 26,000 = $ 67,000

Bloomcode: Analysis
Difficulty: Easy
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 3

Identify the following expenditures as capital expenditures or operating expenditures:

1. Replacement of worn out gears on factory machinery
2. Construction of a new wing on an office building
3. Painting the exterior of a building
4. Oil change on a company truck
5. Replacing a network server's hard drive, this increases data storage capacity by ten times. No extension of useful life expected
6. Overhaul of a truck motor. One year extension in useful life is expected
7. Purchased a wastebasket, with an expected useful life of five years, at a cost of $ 10
8. Painting and lettering of a used truck upon acquisition of the truck

Solution 3 (5 min.)

1. operating
2. capital
3. operating
4. operating
5. capital
6. capital
7. operating
8. capital

Bloomcode: Comprehension
Difficulty: Easy
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 4

Below are selected entries for Joanna Co.:

1. The $ 60 cost of repairing a printer was charged to Equipment.
2. The $ 5,000 cost of a major engine overhaul was debited to Repairs Expense. The overhaul is expected to increase the operating efficiency of the truck.
3. The $ 6,000 closing costs associated with the acquisition of land were debited to Legal Fees Expense.
4. A $ 600 charge for transportation costs on new equipment purchased was debited to Delivery Expense.
5. Freight cost incurred bringing a new piece of equipment to the plant site was charged to Equpment.

Instructions

For each entry below make a correcting entry if necessary. If the entry given is correct, then state "No entry required."

Solution 4 (10 min.)

1.	Repairs Expense.....	60	
	Equipment.....		60
2.	Vehicles.....	5,000	
	Repairs Expense.....		5,000
3.	Land.....	6,000	
	Legal Fees Expense.....		6,000
4.	Equipment.....	600	
	Delivery Expense.....		600

5. No entry required.

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 5

Below are transactions for Oriel Company:

1. Purchased land for $ 900,000.
2. Paid $ 20,000 to demolish building located on land.
3. Paid $ 3,000 for building permit.
4. Paid $ 2,000 for architect fees.
5. Paid $ 3,000 for excavation costs.
6. Paid interest of $ 22,000 during construction of new building.
7. Paid $ 960,000 to complete the building.
8. Paid $ 30,000 to pave the parking lot.
9. Paid $ 4,000 for underground sprinkler.
10. Ordered new equipment, paid $ 30,000.
11. Paid $ 1,500 to install and test new equipment.
12. Paid $ 250 to insure equipment for one year.
13. Paid $ 2,500 to paint office walls in the new building.
14. Paid $ 2,000 to repair equipment.
15. Purchased a truck for $ 25,000.
16. Paid $ 250 for truck license.
17. Paid $ 60 for oil change on new truck.
18. Paid $ 15,000 for fences around the new building.
19. Purchased two cash registers for $ 1,100 each.
20. Paid $ 2,200 for annual yard maintenance.

Instructions

a) Determine if each item should be capitalized (C) or expensed (E).
b) Determine the balance in the land account and the building account.

Solution 5

a)

1. C
2. C
3. C
4. C
5. C
6. C
7. C

8. C

9. C

10. C

11. C

12. E

13. E

14. E

15. C

16. E

17. E

18. C

19. C

20. E

b) Land Account = $ 900,000 + $ 20,000 = $ 920,000.

Building Account = $ 3,000 + $ 2,000 + $ 3,000 + $ 22,000 + $ 960,000 = $ 990,000.

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 6

Extra Company purchased land for $ 115,000 with the intentions of constructing a new operating facility. The land purchase included a dilapidated building that was removed at a cost of $ 16,000. The only salvage value from this old building was some materials which were sold for proceeds of $ 4,000. Extra had paid surveying costs of $ 1,800 and legal fees related to land transfer of $ 6,700. The new building was quickly constructed at a total cost of $ 422,000. Architectural drawings and permits on the construction of this new facility totaled $ 18,000 and $ 10,650 respectively. Insurance premiums of $ 9,200 are paid annually. The production manager is currently on-site facilitating the production start-up. This manager has an annual salary of $ 85,000.

Instructions

a) Calculate the acquisition cost of the land. Identify each element of cost clearly.
b) Calculate the acquisition cost of the new building. Identify each element of cost clearly.

Solution 6 (10 min.)

a)	Purchase price	$ 115,000
	Demolition costs	16,000
	Proceeds from salvaged material	(4,000)
	Surveying costs	1,800
	Legal and Land transfer costs	6,700
	Acquisition cost of land	$ 135,500
b)	Construction costs	$ 422,000
	Architectural drawings	18,000
	Building permits	10,650
	Acquisition cost of building	$ 450,650

Bloomcode: Application
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 7

On August 1, 2021, Mark Leamington Engineering paid $ 1,000,000 in a lump-sum purchase of land, building, and equipment. The payment consisted of $ 200,000 cash and a note payable for the balance. An appraisal revealed the following fair values at the time of the purchase:

Land	$ 500,000
Building	450,000
Equipment	250,000

Instructions

Prepare the necessary journal entry to record this lump-sum purchase (round all percentage calculations to two decimal places).

Solution 7 (10 min.)

Asset	Fair Value	Total Fair Value	% of Fair Value	Cost	Allocated Cost

Land	$ 500,000	$ 1,200,000	41.67%	$ 1,000,000	$ 416,700
Building	450,000	$ 1,200,000	37.50%	$ 1,000,000	375,000
Equipment	250,000	$ 1,200,000	20.83%	$ 1,000,000	208,300
Total	$ 1,200,000				$ 1,000,000

Aug 1, 2021	Land	416,700	
	Building	375,000	
	Equipment	208,300	
	Cash		200,000
	Notes Payable		800,000

Bloomcode: Application
Difficulty: Easy
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 8

Shen Athletics purchased factory equipment with an invoice price of $ 92,000. Other costs incurred were freight costs, $ 2,500; installation of wiring and foundation, $ 2,200; material and labour costs in testing equipment, $ 700; oil lubricants and supplies to be used with equipment, $ 500; one-year fire insurance policy covering equipment, $ 1,400. The equipment is estimated to have an $ 8,000 residual value at the end of its 5-year useful service life.

Instructions

a) Calculate the acquisition cost of the equipment. Identify each element of cost clearly.
b) If the double diminishing-balance method of depreciation was used, the constant percentage applied to a diminishing carrying amount would be _____.

Solution 8 (10 min.)

a)

Invoice cost	$ 92,000
Freight costs	2,500
Installation of wiring and foundation	2,200
Material and labour costs in testing	700
Acquisition cost	$ 97,400

b) If the diminishing-balance method of depreciation was used, the constant percentage applied to a diminishing carrying amount would be 40% (100% ÷ 5 years = 20% ×□2).

Bloomcode: Application
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment

Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 9

Dufferin Company uses the straight-line method of depreciation. The company's fiscal year end is December 31. The following transactions and events occurred during the first three years.

2020 Jul 1 Purchased a new computer system from the Computer Centre for $ 37,000 cash and shipping costs of $ 250.
Nov 3 Incurred ordinary repairs on computer of $ 3,280.
Dec 31 Recorded 2020 depreciation on the basis of an estimated five-year life and residual value of $ 1,250.

2021 Dec 31 Recorded 2021 depreciation.

2022 Jan 1 Paid $ 9,800 for a major upgrade of the computer. This expenditure is expected to increase the operating efficiency and capacity of the computer.

Instructions

Prepare the necessary entries. (Show calculations.)

Solution 9 (15 min.)

2020	Jul	1	Equipment.....	37,250	
			Cash.....		37,250
	Nov	3	Repairs Expense.....	3,280	
			Cash.....		3,280
	Dec	31	Depreciation Expense.....	3,600	
			Accumulated Depreciation - Equipment.....		3,600
			[($ 37,250 – $ 1,250) ÷ 5 × 1 ÷ 2]		
2021	Dec	31	Depreciation Expense.....	7,200	
			Accumulated Depreciation- Equipment.....		7,200
			[($ 37,250 – $ 1,250) ÷ 5]		
2022	Jan	1	Equipment.....	9,800	
			Cash.....		9,800

Bloomcode: Application
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation

CPA: Financial Reporting
AACSB: Analytic

Exercise 10

On March 31, 2021 Holland Industries purchased assets for $ 2,500,000 cash. Before completing the purchase, Holland had an appraisal completed to determine the relative value of each of the assets included in the purchase price.

The appraisal indicated that the fair value of the land, if purchased separately, would be $ 375,000, the building's value is $ 1,900,000, the manufacturing equipment $ 192,500, and the office and computer equipment $ 55,000. In addition to the land, building and equipment, the purchase price includes inventory with a net realizable value of $ 27,500.

The anticipated life of the building is 25 years, the manufacturing equipment 10 years, and the office and computer equipment 5 years, with no residual value for any of them. Holland has a December 31 year end.

Instructions

a) Record the purchase on March 31, 2021.
b) Record the depreciation expense for 2021 using the straight-line method assuming the company chooses to prorate depreciation based on the number of months the asset has been in use.

Solution 10 (20 min.)

a) Allocation of cost based on fair values:

	Fair value	Percentage	Allocation of cost
Land	$ 375,000	14.7%	$ 367,500
Building	1,900,000	74.5%	1,862,500
Manufacturing equipment	192,500	7.5%	187,500
Office equipment	55,000	2.2%	55,000
Inventory	27,500	1.1%	27,500
	$ 2,550,000	100.0%	$ 2,500,000

Entry to record purchase

Land	367,500	
Building	1,862,500	
Equipment	187,500	
Equipment (office)	55,000	
Merchandise Inventory	27,500	
Cash		2,500,000

b)

Depreciation Expense	78,188	
Accumulated depreciation—Building		55,875

($ 1,862,500 ÷ 25) x 9 ÷ 12

Accumulated Depreciation—Equipment..... (187,500 ÷ 10) x 9 ÷ 12)	14,063
Accumulated Depreciation—Equipment (office)..... (55,000 ÷ 5) x 9 ÷ 12)	8,250

Bloomcode: Application
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 11

On May 5, 2021 Vermilion River Adventures purchased a property for $ 400,000 cash. The property included the following long-lived assets:

	Appraised Value
Land.....	$ 120,000
Building.....	200,000
Equipment.....	100,000
Paved area.....	20,000
Outdoor Lighting.....	10,000
	$ 450,000

Instructions

a) Give the journal entry to allocate the purchase price between the above assets. Round all amounts to the nearest dollar, if necessary.
b) Prepare a compound journal entry to record depreciation of the long-lived assets on December 31, 2021, assuming the following additional details:

	Useful Life in Years	Residual Value
Building	30	$ 20,000
Equipment	5	10,000
Paved area	4	-0-
Outdoor Lighting	10	-0-

Prorate depreciation based on the number of months the asset has been in use.

Solution 11 (20 min.)

a)

	% of Appraised Value		Allocation of Purchase Price
Land	$ 120,000 ÷ $ 450,000 × $ 400,000	=	$ 106,667
Building	$ 200,000 ÷ $ 450,000 × $ 400,000	=	177,778
Equipment	$ 100,000 ÷ $ 450,000 × $ 400,000	=	88,889
Paved area	$ 20,000 ÷ $ 450,000 × $ 400,000	=	17,778
Outdoor Lighting	$ 10,000 ÷ $ 450,000 × $ 400,000	=	8,888

			$ 400,000	
	May 5	Land	106,667	
		Building	177,778	
		Equipment	88,889	
		Leasehold Improvement	17,778	
		Leasehold Improvement (lighting)	8,888	
		Cash		400,000
b)	Depreciation Expense		17,581	
	Accumulated Depreciation—Building			3,506
	[($ 177,778 – $ 20,000) ÷ 30] × 8 ÷ 12			
	Accumulated Depreciation—Equipment			10,519
	[($ 88,889 – $ 10,000) ÷ 5] × 8 ÷ 12			
	Accumulated Depreciation—Leasehold Improvements			2,963
	[($ 17,778 – $ 0) ÷ 4] × 8 ÷ 12			
	Accumulated Depreciation—Leasehold Improvements (Lighting)			593
	[($ 8,888 – $ 0) ÷ 10] × 8 ÷ 12			

Bloomcode: Application
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 12

Independent Energy depreciates all assets using the straight-line method. The company's fiscal year end is December 31. The following selected transactions and events occurred during the first three years:

2020	Jan	1	Purchased equipment from the Equipment World for $ 214,500 on account. Independent Energy also incurred freight and installation costs of $ 1,500 and $ 4,000 respectively.
	Sep	30	Paid for annual insurance of $ 4,200 and routine maintenance of $ 1,700 for the machine. The insurance policy expires on September 30, 2021.
	Dec	31	Recorded 2020 depreciation on the basis of an estimated 10-year useful life and residual value of $ 20,000.
2021	Dec	31	Recorded 2021 depreciation and impairment loss (if any). Independent Energy conducted an impairment assessment as indicators suggested that an impairment may be possible. It was determined that the recoverable amount of the equipment is currently $ 160,000. The estimated residual value remained unchanged.
2022	Dec	31	Independent Energy sold the equipment to Engaged Auto Company for proceeds of $ 140,000.

Instructions

Prepare the necessary entries. (Show calculations.)

Solution 12 (30 min.)

2020	Jan	1	Equipment	220,000	
			Accounts Payable		220,000
			($ 214,500 + $ 1,500 +$ 4,000)		
	Nov	3	Repairs Expense	1,700	
			Prepaid Insurance	4,200	
			Cash		5,900
	Dec	31	Depreciation Expense	20,000	
			Accumulated Depreciation - Equipment		20,000
			[($ 220,000 – $ 20,000) ÷ 10]		
2021	Dec	31	Depreciation Expense	20,000	
			Accumulated Depreciation - Equipment		20,000
			[($ 220,000 – $ 20,000) ÷ 10]		
	Dec	31	Impairment Loss	20,000	
			Accumulated Depreciation - Equipment		20,000
			Carrying amount = $ 220,000 – $ 20,000 – $ 20,000 = $ 180,000		
			Impairment loss = $ 180,000 – $ 160,000 = $ 20,000		
2022	Dec	31	Depreciation Expense	17,500	
			Accumulated Depreciation - Equipment		17,500
			[($ 160,000 – $ 20,000) ÷ (10 - 2 years)]		
	Dec	31	Cash	140,000	
			Accumulated Depreciation - Equipment	77,500	
			Loss on Disposal	2,500	
			Equipment		220,000
			Accumulated depreciation = $ 20,000 + $ 20,000 + $ 20,000 + $ 17,500 = $ 77,500		
			Carrying amount = $ 220,000 - $ 77,500 = $ 142,500		
			Gain (Loss) on disposal = $ 140,000 – $ 142,500 = $ (2,500)		

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Calculate the cost of property, plant, and equipment.
Section Reference: Property, Plant, and Equipment
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
Section Reference: Revising Periodic Depreciation
Learning Objective: Demonstrate how to account for property, plant, and equipment disposals.

CPA: Financial Reporting
AACSB: Analytic

Exercise 13

Das Gym purchased new equipment for $ 175,000. It is estimated that the equipment will have a $ 15,000 residual value at the end of its 5-year useful service life. The double diminishing-balance method of depreciation will be used.

Instructions

Prepare a depreciation schedule which shows the annual depreciation expense on the equipment for its 5-year life.

Solution 13 (10 min.)

Double diminishing-balance rate = 100% ÷ 5 = 20% × 2 = 40%.

	Carrying amount Beginning		Depreciation		Annual Depreciation	End of Year Accumulated	End of Year Carrying amount
Year	of Year	×	Rate	=	Expense	Depreciation	End of Year
1	$ 175,000	×	40%		$ 70,000	$ 70,000	$ 105,000
2	105,000	×	40%		42,000	112,000	63,000
3	63,000	×	40%		25,200	137,200	37,800
4	37,800	×	40%		15,120	152,320	22,680
5	22,680	×	40%		7,680*	160,000	15,000

*Adjusted to $ 7,680 because ending carrying amount should not be less than the expected residual value of $ 15,000.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 14

Randy Automotive purchased equipment on October 1, 2021, at a total cost of $ 150,000. The machine has an estimated useful life of 8 years or 100,000 hours, and an estimated residual value of $ 10,000. During 2021 and 2022, the machinery was used 4,400 and 12,800 hours, respectively.

Instructions

Compute depreciation expense at December 31, 2021 and December 31, 2022, under the

following depreciation methods:

	2021	2022
Straight-line depreciation	_____	_____
Units-of-production depreciation	_____	_____
Double diminishing-balance depreciation	_____	_____

Solution 14 (15 min.)

	2021	2022
(1) Straight-line depreciation	$ 4,375	$ 17,500
(2) Units-of-production depreciation	$ 6,160	$ 17,920
(3) Double diminishing-balance depreciation	$ 9,375	$ 35,156

(1) Straight-line depreciation
December 31, 2021 = ($ 150,000 - $ 10,000) / 8 = $ 17,500 x 3/12 = $ 4,375
December 31, 2022 = ($ 150,000 - $ 10,000) / 8 = $ 17,500

(2) Units-of-production depreciation
December 31, 2021 = ($ 150,000 - $ 10,000) / 100,000 = $ 1.40 x 4,400 = $ 6,160
December 31, 2022 = ($ 150,000 - $ 10,000) / 100,000 = $ 1.40 x 12,800 = $ 17,920

(3) Double diminishing-balance depreciation
Double diminishing rate = 200% / 8 years = 25%
December 31, 2021 = $ 150,000 x 25% x 3/12 = $ 9,375
December 31, 2022 = ($ 150,000 - $ 9,375) x 25% = $ 35,156

Bloomcode: Application
Difficulty: Easy
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 15

Equipment acquired on October 1, 2021 at a cost of $ 540,000 has an estimated useful life of 10 years. The residual value is estimated to be $ 55,000 at the end of the equipment's useful life. The company has a December 31 year end.

Instructions

Calculate the depreciation expense for December 31, 2021 and 2022 using:

a) the straight-line method.
b) the double diminishing-balance method.

Solution 15 (10 min.)

a) Straight-line method

2021 $\frac{\$\ 540{,}000 - \$\ 55{,}000}{10\text{ years}} = \$\ 48{,}500 \times 3 \div 12 = \underline{\$\ 12{,}125}$

2022 $\underline{\$\ 48{,}500}$

b) Double diminishing-balance method
Depreciation rate = 200% ÷ 10 years = 20%

2021 $\$\ 540{,}000 \times 20\% \times 3 \div 12 = \underline{\$\ 27{,}000}$

2022 $\$\ 513{,}000 \times 20\% = \underline{\$\ 102{,}600}$

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 16

On October 1, 2021 Stan Auto Rentals purchases a new automobile for $ 30,000 to add to its fleet of rental cars. The automobiles are rented out on a short-term basis with rental fees calculated based on distance driven by the customer. Welch's policy is to sell and replace a car after the earlier of 3 years, or 75,000 kilometres. The average selling price of the used cars is $ 8,000. This particular car was driven 8,000 km in 2021, 39,000 km in 2022 and 21,000 km in 2023.

Instructions

a) Calculate 2021 and 2022 depreciation expense under each of the following methods:
(i) Straight-line
(ii) Diminishing-balance using a 40% rate
(iii) Units-of-production
b) Which method will best match the estimated pattern in which the asset's economic benefits are expected to be consumed? Explain.

Solution 16 (10 min.)

a)

2021	2022
(i) ($ 30,000 – $ 8,000) ÷ 3 x 3 ÷ 12 = $ 1,833	($ 30,000 – $ 8,000) ÷ 3 = $ 7,333
(ii) ($ 30,000 x 40%) x 3 ÷ 12 = $ 3,000	($ 30,000 – $ 3,000) x 40% = $ 10,800
(iii) ($ 30,000 – $ 8,000) ÷ 75,000km x 8,000km = $ 2,347	($ 30,000 – $ 8,000) ÷ 75,000km x 39,000km = $ 11,440

b) Because revenue is based on units-of-production (kilometres driven), the method that will best match the estimated pattern in which the asset's economic benefits are expected to be consumed is units-of-production.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 17

Sangria Boat Lifts purchased equipment on January 1, 2021 for $ 96,000. It is estimated that the equipment will have a $ 5,000 residual value at the end of its 8-year useful life. It is also estimated that the equipment will produce 100,000 units over its 8-year life.

Instructions

Answer the following independent questions.

a) Calculate the amount of depreciation expense for the year ended December 31, 2021, using the straight-line method of depreciation.
b) If 16,000 units of product are produced in 2021 and 36,000 units are produced in 2022, what is the carrying amount of the equipment at December 31, 2022 using the units-of-production depreciation method?
c) If the company uses the double diminishing-balance method of depreciation, what will be the balance of the Accumulated Depreciation—Equipment account at December 31, 2023?

Solution 17 (15 min.)

a) Straight-line method: $\frac{\$\ 96{,}000 - \$\ 5{,}000}{8} = \$\ 11{,}375$ per year

b) Units-of-production method: $\frac{\$\ 96{,}000 - \$\ 5{,}000}{100{,}000 \text{ units}} = \$\ 0.91$ per unit

2021	16,000 units × $ 0.91 =	$ 14,560
2022	36,000 units × $ 0.91 =	32,760
Accumulated depreciation	=	$ 47,320

Cost of asset.....	$ 96,000
Less: Accumulated depreciation..	47,320
Carrying amount.....	$ 48,680

c) Double diminishing-balance method: (200% / 8)

Carrying amount	Diminishing-	Depreciation	Accumulated

	Beginning of Year	×	Balance Rate	=	Expense	Depreciation
2021	$ 96,000		25%		$ 24,000	$ 24,000
2022	72,000		25%		18,000	42,000
2023	54,000		25%		13,500	55,500

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 18

The Picnic Basket, a popular pizza restaurant, has a thriving delivery business. The Picnic Basket has a fleet of three delivery automobiles. Information related to the fleet is as follows:

Car	Cost	Residual Value	Estimated Life in Kilometres	Accumulated Depreciation Beg. of the Year	Kilometres Operated During Year
1	$ 18,000	$ 3,000	50,000	$ 2,100	20,000
2	15,000	2,400	60,000	1,890	22,000
3	20,000	2,500	70,000	2,000	19,000

Instructions

Using the units-of-production method:

a) Determine the depreciation rates per kilometre for each car.
b) Determine the depreciation expense for each car for the current year.
c) Make one compound journal entry to record the annual depreciation expense for the fleet.

Solution 18 (10 min.)

a) Car 1 $\frac{\$ 18,000 - \$ 3,000}{50,000 \text{ km.}} = \$ 0.30 \text{ per km.}$

Car 2 $\frac{\$ 15,000 - \$ 2,400}{60,000 \text{ km.}} = \$ 0.21 \text{ per km.}$

Car 3 $\frac{\$ 20,000 - \$ 2,500}{70,000 \text{ km.}} = \$ 0.25 \text{ per km.}$

b) Car 1 20,000 km. × $ 0.30 = $ 6,000
Car 2 22,000 km. × $ 0.21 = $ 4,620

Car 3 19,000 km. × $ 0.25 = $ 4,750

c)	Depreciation Expense.....	15,370	
	Accumulated Depreciation—Vehicles (Car 1).....		6,000
	Accumulated Depreciation— Vehicles (Car 2).....		4,620
	Accumulated Depreciation— Vehicles (Car 3).....		4,750

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 19

The Northwood Clinic purchased a new surgical laser for $ 75,000. The estimated residual value is $ 7,500. The laser has a useful life of four years and the clinic expects to use it 10,000 hours. It was used 1,600 hours in year 1; 2,100 hours in year 2; 3,400 hours in year 3; 2,900 hours in year 4.

Instructions

a) Calculate the annual depreciation for each of the four years under each of the following methods:
   i) straight-line
   ii) units-of-production
b) If you were the administrator of the clinic, which method would you deem as most appropriate? Justify your answer.
c) Which method would result in the lowest reported profit in the first year? Which method would result in the lowest total reported profit over the four-year period?
d) Which method would result in the lowest cash flow in Year 1? Over the life of the asset?

Solution 19 (10 min.)

a) i) Straight-line method: $\frac{\$\ 75{,}000 - \$\ 7{,}500}{4\text{ years}} = \$\ 16{,}875$ per year

ii) Units-of-production method: $\frac{\$\ 75{,}000 - \$\ 7{,}500}{10{,}000\text{ hours}} = \$\ 6.75$/hour

Year	1	1,600 × $ 6.75 = $ 10,800
	2	2,100 × $ 6.75 = $ 14,175
	3	3,400 × $ 6.75 = $ 22,950
	4	2,900 × $ 6.75 = $ 19,575

	Straight-line	Units-of-Production
Year 1	$ 16,875	$ 10,800
Year 2	16,875	14,175
Year 3	16,875	22,950
Year 4	16,875	19,575
Total	$ 67,500	$ 67,500

b) The units-of-production method can be justified based on the variable usage the laser will receive during its useful life.

c) The straight-line method provides the highest depreciation expense for the first year, and therefore the lowest first year profit. Over the four-year period, both methods result in the same total depreciation expense ($ 67,500) and, therefore, the same total profit.

d) All three methods will result in the same cash flow in Year 1 and over the life of the asset. Recording depreciation expense does not affect cash flow. There is no Cash account involved in the entry to record depreciation (Dr. Depreciation Expense; Cr. Accumulated Depreciation). It is only an allocation of the capital cost to expense over an asset's useful life.

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 20

Gordon's Garage purchased a specialized machine on April 1, 2021 for a total cost of $ 254,000 from Scissor Manufactory. This machine is expected to become outdated and be replaced in 16 years at which time it will have a residual value of $ 25,000.

Instructions

a) What amount would be reported as depreciation expense for this machine on Gordon's income statement for December 31, 2021 and December 31, 2022 under the following depreciation methods? (rounded to two decimals)
   i) Straight-line method
   ii) Double diminishing-balance method
b) What is the machine's carrying amount at January 1, 2023 under both depreciation methods discussed in part a)?

Solution 20 (15 min.)

a)
i) Straight-line method

Annual Depreciation = $ 254,000 – $ 25,000 / 16 years = $ 14,312.50

2021: $ 14,312.50 x 9/12 months = $ 10,734.38
2022: $ 14,312.50

ii) Double diminishing-balance method

Double Diminishing Rate = 200% / 16 = 12.5%

Year	Carrying amount Beginning Year	×	Depreciation Rate	=	Annual Depreciation	Accumulated Depreciation	Carrying amount
2021	$ 254,000.00		12.5% x 9/12		$ 23,812.50	$ 23,812.50	$ 230,187.50
2022	230,187.50		12.5%		28,773.44	52,585.94	201,414.06

b) Carrying amount, January 1, 2023:
Straight-line = $ 254,000.00 – $ 10,734.38 – $ 14,312.50 = $ 228,953.12
Double diminishing-balance = $ 201,414.06

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 21

Prairie Airlines purchased a 747 aircraft on January 1, 2020, at a cost of $ 30,000,000. The estimated useful life of the aircraft is 20 years, with an estimated residual value of $ 4,000,000. On January 1, 2022 the airline revises the total estimated useful life to 15 years with a revised residual value of $ 3,000,000.

Instructions

a) Calculate the depreciation and carrying amount at December 31, 2021 using the straight-line method and the double diminishing-balance method.
b) Assuming the straight-line method is used, calculate the depreciation expense for the year ended December 31, 2022.

Solution 21 (20 min.)

a) Straight-line method

Year	Depreciable Cost	×	Depreciation Rate	=	Annual Depreciation	Accumulated Depreciation	Carrying amount
2020	$ 26,000,000		5%		$ 1,300,000	$ 1,300,000	$ 28,700,000
2021	26,000,000		5%		1,300,000	2,600,000	27,400,000

Double diminishing-balance method

Year	Carrying amount Beginning Year	×	Depreciation Rate	=	Annual Depreciation	Accumulated Depreciation	Carrying amount
2020	$ 30,000,000		10%		$ 3,000,000	$ 3,000,000	$ 27,000,000
2021	27,000,000		10%		2,700,000	5,700,000	24,300,000

b) Carrying amount, January 1, 2022..... $ 27,400,000
Less: Revised residual value..... 3,000,000
Depreciable cost..... $ 24,400,000

Remaining useful life (15 years – 2 years)..... 13 yrs.

Revised annual depreciation..... $ 1,876,923

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
Section Reference: Revising Periodic Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 22

Winningham Company sold the following two machines in 2021:

	Machine A	Machine B
Cost	$ 92,000	$ 43,000
Purchase date	July 1, 2017	Jan. 1, 2017
Useful life	8 years	8 years
Residual value	$ 4,000	$ 3,000
Depreciation method	Straight-line	Double diminishing-balance
Date sold	July 1, 2021	Aug. 1, 2021
Sales price	$ 37,000	$ 12,000

Instructions

Journalize all entries required to update depreciation and record the sales of the two assets in 2021. The company has recorded depreciation on the machine to December 31, 2020.

Solution 22 (20 min.)

Jul	1	Depreciation Expense.....	5,500	
		Accumulated Depreciation—Equipment.....		5,500
		($ 92,000 – $ 4,000) ÷ 8 × 6 ÷ 12 = $ 5,500		
		Cash.....	37,000	

	Accumulated Depreciation—Equipment A*.....	44,000	
	Loss on Disposal.....	11,000	
	Equipment A.....		92,000

*2017	($ 92,000 – $ 4,000) ÷ 8 × 6 ÷ 12	$ 5,500
2018	($ 92,000 – $ 4,000) ÷ 8	11,000
2019		11,000
2020		11,000
2021	($ 92,000 – $ 4,000) ÷ 8 × 6 ÷ 12	5,500
Total accumulated depreciation at date of disposal		$ 44,000

Aug 1	Depreciation Expense.....	2,645	
	Accumulated Depreciation—Equipment B.....		2,645
	($ 43,000 – $ 24,860) × 25% × 7 ÷ 12 = $ 2,645		
	Cash.....	12,000	
	Accumulated Depreciation—Equipment B**.....	27,505	
	Loss on Disposal ($ 43,000 – $ 39,505).....	3,495	
	Equipment.....		43,000

**2017	$ 43,000 × 25%	$ 10,750
2019	($ 43,000 – $ 10,750) × 25%	8,063
2020	($ 43,000 – $ 18,813) × 25%	6,047
2021	($ 43,000 – $ 24,860) × 25% × 7 ÷ 12	2,645
Total accumulated depreciation at date of disposal		$ 27,505

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
Learning Objective: Demonstrate how to account for property, plant, and equipment disposals.
CPA: Financial Reporting
AACSB: Analytic

Exercise 23

Paper Products Inc. sold two machines in 2021. The following information pertains to the two machines:

Machine	Cost	Purchase Date	Useful Life	Residual Value	Depreciation Method	Date Sold	Sales Price
#1	$ 86,000	7/1/17	5 yrs.	$ 6,000	Straight-line	7/1/21	$ 20,000
#2	$ 50,000	7/1/20	5 yrs.	$ 5,000	Double diminishing-balance	12/31/21	$ 32,000

Instructions

a) Calculate the accumulated depreciation on each machine at the date of disposal.

b) Prepare the journal entries in 2021 to record 2021 depreciation and the sale of each machine.

Solution 23 (20 min.)

a) Machine #1

Year	Depreciable Cost	×	Depreciation Rate	=	Annual Depreciation	Accumulated Depreciation
2017	$ 80,000		20%		$ 8,000*	$ 8,000
2018	□		□		16,000	24,000
2019	□		□		16,000	40,000
2020	□		□		16,000	56,000
2021	□		□		8,000*	64,000

*One-half a year.

Machine #2

Year	Carrying amount Beginning of Year	×	DDB Rate	Annual Depreciation	Accumulated Depreciation
2020	$ 50,000		40%	$ 10,000*	$ 10,000
2021	40,000		40%	16,000	26,000

*One-half a year.

b)

	Machine 1		Machine 2	
Depreciation Expense.....	8,000		16,000	
Accumulated Depreciation.....		8,000		16,000
Cash.....	20,000		32,000	
Loss on Disposal of Equipment.....	2,000*		-0-	
Accumulated Depreciation.....	64,000		26,000	
Equipment.....		86,000		50,000
Gain on Disposal of Equipment.....		-0-		8,000**

*NBV: $ 86,000 – $ 64,000 = $ 22,000; Proceeds – NBV: $ 20,000 – $ 22,000 = -$ 2,000 [a loss]

**NBV: $ 50,000 – $ 26,000 = $ 24,000; Proceeds – NBV: $ 32,000 – $ 24,000 = $ 8,000 [a gain]

Bloomcode: Application
Difficulty: Medium
Learning Objective: Apply depreciation methods to property, plant, and equipment.
Section Reference: Depreciation
Learning Objective: Demonstrate how to account for property, plant, and equipment disposals.
CPA: Financial Reporting
AACSB: Analytic

Exercise 24

Mendelsohn Company purchased equipment on January 1, 2021 at a cost of $ 48,000. The equipment is expected to have an estimated residual value of $ 3,000 at the end of its 5-year

life. The company's new accountant has used the double diminishing-balance method to depreciate the equipment at December 31, 2021. However, the company has a policy of using the straight-line method to depreciate equipment. Profit for the year ended December 31, 2021 was $ 55,000 as the result of depreciating the equipment incorrectly.

Instructions

Using the method of depreciation which the company normally follows, prepare the correcting entry and determine the corrected profit. (Show calculations.)

Solution 24 (10 min.)

Depreciation recorded: ($ 48,000 – 0) × 40% =……	$ 19,200	
Correct depreciation: ($ 48,000 – $ 3,000) ÷ 5 yrs. =	9,000	
Overstatement of depreciation in 2021 =.....	$ 10,200	

Accumulated Depreciation-Equipment.....	10,200	
Depreciation Expense.....		10,200

Correct profit:

Profit as reported.....	$ 55,000
Add: Overstatement of depreciation expense. .	10,200
Correct profit.....	$ 65,200

Bloomcode: Application
Difficulty: Medium
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
Section Reference: Revising Periodic Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 25

Equipment was acquired on January 1, 2019, at a cost of $ 90,000. The equipment was originally estimated to have a residual value of $ 5,000 and an estimated life of 10 years. Depreciation has been recorded through December 31, 2020, using the straight-line method. On January 1, 2021 the estimated residual value was revised to $ 6,000 and the useful life was revised to a total of 8 years.

Instructions

Determine the depreciation expense for 2021.

Solution 25 (5 min.)

Calculate the carrying amount at the time of the revision:

$ 90,000 – $ 5,000

$$\frac{}{10 \text{ years}} = \$\ 8{,}500 \text{ annual depreciation expense}$$

2 years have been depreciated: $ 8,500 × 2 = $ 17,000

Carrying amount at the time of the revision: $ 90,000 – $ 17,000 = $ 73,000

Calculate the revised annual depreciation:

$$\frac{\$\ 73{,}000 - \$\ 6{,}000}{6 \text{ years remaining}} = \$\ 11{,}167 \text{ revised annual depreciation}$$

The depreciation expense for 2021 is $ 11,167.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
Section Reference: Revising Periodic Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 26

On January 1, 2020, Katsumi Company purchased and installed a telephone system at a cost of $ 20,000. The equipment was expected to last five years with a residual value of $ 3,000. On January 1, 2021 more telephone equipment was purchased to compliment the current system for $ 8,000. The new equipment is expected to have a useful life of four years. Through an error, the new equipment was debited to Telephone Expense. Katsumi Company uses the straight-line method of depreciation.

Instructions

Prepare a schedule showing the effects of the error on Telephone Expense, Depreciation Expense, and profit for each year and in total beginning in 2021 through the useful life of the new equipment.

Year	Telephone Expense Overstated (Understated)	Depreciation Expense Overstated (Understated)	Profit Overstated (Understated)
2021			
2022			
2023			
2024			

Solution 26 (25 min.)

Year	Telephone Expense Overstated (Understated)	Depreciation Expense Overstated (Understated)	Profit Overstated (Understated)
2021	$ 8,000	$ (2,000)	$ (6,000)
2022		(2,000)	2,000
2023		(2,000)	2,000
2024		(2,000)	2,000
Total	$ 8,000	$ (8,000)	$ -0-

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
Section Reference: Revising Periodic Depreciation
CPA: Financial Reporting
AACSB: Analytic

Exercise 27

Harrison Rentals purchased an apartment building in 2013. At the time, the building was expected to have a useful life of 25 years with a residual value of $ 100,000, during which time it was projected to generate annual rentals of $ 30,000). The building's original cost was $ 500,000.

At January 1, 2021 the accumulated depreciation balance on this building was $ 128,000, and 2021 depreciation has been calculated as $ 16,000. Harrison has a December 31 year end.

During January 2021 Harrison had the following events and transactions related to the building. All transactions are for cash.

1. Painted all the walls in the common areas at a cost of $ 8,000.
2. Replaced the electrical wiring in three suites due to safety concerns at a cost of $ 4,500.
3. Replaced all of the linoleum flooring in the suites with hardwood, installed in-suite laundry facilities in each unit, and made other improvements at total cost of $ 120,000. As a result, the annual rental revenue has been doubled.
4. Completed structural repairs to the building at a cost of $ 100,000. As a result of this work the building life is expected to be 10 years longer than the original estimate. The residual value estimate has been revised to $ 134,000.

Instructions

a) Calculate the carrying amount of the building on December 31, 2021. Provide explanations

for any increases to building cost.

b) Record the 2022 depreciation expense using the straight-line basis, assuming that the increased rental rates go into effect January 1, 2022.

Solution 27 (15 min.)

a)

Building cost, balance January 1, 2021		$ 500,000	
Add: Item 3 (new flooring and laundries are added to the cost because the increase the building's revenue generating capacity)		120,000	
Item 4 (structural repairs are added to the cost because this extends the useful life of the building)		100,000	$ 720,000
Less: Accumulated depreciation ($ 128,000 + 16,000)			144,000
Carrying amount, December 31, 2021			$ 576,000

b)

Revised depreciable cost ($ 576,000 – $ 134,000)	$ 442,000
Remaining life (from Jan 1, 2022) = (25 – 9 + 10)	26
2022 depreciation expense = $ 442,000 ÷ 26	$ 17,000

Depreciation Expense	17,000	
Accumulated Depreciation—Building		17,000

Bloomcode: Application
Difficulty: Medium
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
CPA: Financial Reporting
AACSB: Analytic

Exercise 28

At January 1, 2021 Penner Auto Repairs owned the following assets:

Asset	Building	Automotive	Computers	Furniture
Date purchased	Jan 1, 2014	Jan 1, 2020	Jan 1, 2020	Jan 1, 2014
Original cost	$ 500,000	$ 45,000	$ 10,000	$ 20,000
Accumulated depreciation				
Depreciation method	Straight-line	Diminishing-balance	Straight-line	Straight-line
Useful life/ Depreciation rate	40 years	45%	3 years	15 years
Estimated residual value	$ 200,000	not applicable	$ 1,000	$ 4,000
Estimated remaining life (as of January 1, 2021)	33 years	not applicable	2 years	8 years

Prior to recording depreciation expense for 2021, Penner undertook a review of the assets' remaining life and value and determined that the following changes are warranted based on

currently available information:

Building:	No changes
Automotive:	No changes
Computers:	Obsolete
Furniture:	Remaining life will be 10 years with $ 5,000 residual value.

Instructions

Calculate 2021 depreciation on each of these assets, taking the new information into account.

Solution 28 (20 min.)

Building	
Cost	$ 500,000
Residual value	200,000
Depreciable value	300,000
Estimated life	40 years
2021 depreciation expense ($ 300,000 ÷ 40)	$ 7,500
Automobile	
Cost	$ 45,000
2023 depreciation ($ 45,000 x 45%)	20,250
Carrying amount Jan 1, 2021	24,750
Depreciation rate	45%
2021 depreciation expense ($ 24,750 x 45%)	$ 11,138
Computers	
Cost	$ 10,000
Accumulated depreciation Jan 1, 2021 ($ 10,000 – $ 1,000) ÷ 3 x 1	3,000
Carrying amount Jan 1, 2021	7,000
Revised residual value	-0-
Revised depreciable cost	7,000
Remaining life	0 years
2021 depreciation expense ($ 7,000 ÷ 1 year)	$ 7,000
Furniture	
Cost	$ 20,000
Accumulated depreciation Jan 1/21 ($ 20,000 – $ 4,000) ÷ 15 x 7	7,467
Carrying amount Jan 1/21	12,533
Revised residual value	5,000
Revised depreciable cost	7,533
Remaining life	10 years
2021 depreciation expense	$ 753

Bloomcode: Application
Difficulty: Medium
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
CPA: Financial Reporting
AACSB: Analytic

Exercise 29

Redwood Company performs an assessment annually for possible impairment losses and has gathered the following information pertaining to selected assets at December 31, 2021:

Asset	Building	Equipment	Computers	Furniture
Original cost	$ 400,000	$ 245,000	$ 100,000	$ 20,000
Accumulated depreciation	220,000	16,000	20,000	13,000
Recoverable amount	550,000	225,000	$ 70,000	$ 8,000
Impairment loss (if any)	?	?	?	?

Instructions

Determine if the assets identified by Redwood are impaired and prepare any necessary adjusting entries to record the impairments.

Solution 29 (10 min.)

Asset	Building	Equipment	Computers	Furniture
Original cost	$ 400,000	$ 245,000	$ 100,000	$ 20,000
Accumulated depreciation	220,000	16,000	20,000	13,000
Recoverable amount	550,000	225,000	$ 70,000	$ 8,000
Impairment loss (if any)	0	4,000	10,000	0

2021	Dec 31	Impairment Loss.....	14,000	
		Accumulated Depreciation—Equipment.....		4,000
		Accumulated Depreciation—Equipment (Computers)		10,000

Carrying amount = $ 220,000 – $ 20,000 – $ 20,000 = $ 180,000
Impairment loss = $ 180,000 – $ 160,000 = $ 20,000

Bloomcode: Application
Difficulty: Medium
Learning Objective: Explain the factors that cause changes in periodic depreciation and calculate revised depreciation for property, plant, and equipment.
CPA: Financial Reporting
AACSB: Analytic

Exercise 30

The following assets were sold by DNC Company during the 2021 fiscal year. The company's year end is December 31.

Asset	Vehicle	Computer	Furniture
Original cost	$ 60,000	$ 8,000	$ 18,000
Accumulated depreciation (January 1, 2021)	$ 35,000	$ 7,000	$ 7,000
Depreciation method	Diminishing-balance	Straight-line	Straight-line
Depreciation rate / years remaining	25%	2 years	8 years
Estimated residual value	not applicable	not applicable	not applicable
Selling price	$ 22,500	$ 708	$ 14,000
Date of sale in 2021	April 1	August 1	October 31

Instructions

Compute the gain or loss on disposal for each asset sold and prepare any necessary journal entries to record the disposals for DNC. (Round your answers to the nearest dollar)

Solution 30 (15 min.)

Apr	1	Depreciation Expense.....	1,563	
		Accumulated Depreciation—Vehicles.....		1,563
		($ 60,000 – $ 35,000) × 25% × 3/12 = $ 1,563		
		Cash.....	22,500	
		Accumulated Depreciation—Vehicle ($ 35,000 + $ 1,563)..	36,563	
		Loss on Disposal.....	937	
		Vehicles.....		60,000
Aug	1	Depreciation Expense.....	292	
		Accumulated Depreciation—Equipment.....		292
		[($ 8,000 – $ 7,000) / 2 x 7/12] = $ 292		
		Cash.....	708	
		Accumulated Depreciation— Equipment ($ 7,000 + $ 292)	7,292	
		Equipment.....		8,000
Oct	31	Depreciation Expense.....	1,146	
		Accumulated Depreciation—Furniture.....		1,146
		($ 18,000 – $ 7,000) / 8 × 10/12 = $ 1,563		
		Cash.....	14,000	
		Accumulated Depreciation—Furniture ($ 7,000 + $ 1,146).	8,146	
		Gain on Disposal.....		4,146
		Furniture.....		18,000

Bloomcode: Application
Difficulty: Medium

Learning Objective: Demonstrate how to account for property, plant, and equipment disposals.
Section Reference: Disposal of Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 31

1. Lui Company purchased equipment in 2007 for $ 80,000 and estimated an $ 8,000 residual value at the end of the equipment's 10-year useful life. At December 31, 2016, there was $ 50,400 in the Accumulated Depreciation account for this equipment using the straight-line method of depreciation. On March 31, 2021 the equipment was sold for $ 21,000. Prepare the appropriate journal entries to record the sale of the equipment for Lui Company, 2021.
2. Gagne Company sold a delivery truck for $ 11,000. The delivery truck originally cost $ 25,000 in 2017 and $ 6,000 was spent on a major overhaul in 2016 (charged to Delivery Truck account). Accumulated Depreciation on the delivery truck to the date of disposal was $ 20,000. Prepare the appropriate journal entry to record the disposition of the delivery truck.
3. Crenshaw Company sold office equipment that had a carrying amount of $ 4,500 for $ 6,000. The office equipment originally cost $ 15,000 and it is estimated that it would cost $ 19,000 to replace the office equipment. Prepare the appropriate journal entry to record the disposition of the office equipment.

Solution 31 (15 min.)

1.	Depreciation Expense	1,800	
	Accumulated Depreciation—Equipment		1,800
	To record depreciation expense for the first 3 months of 2021. ($ 72,000 ÷ 10 × 3 ÷ 12) = $ 1,800		
	Cash	21,000	
	Loss on Disposal	6,800	
	Accumulated Depreciation—Equipment ($ 50,400 + $ 1,800)	52,200	
	Equipment		80,000
	To record sale of equipment at a loss		
2.	Cash	11,000	
	Accumulated Depreciation—Vehicles	20,000	
	Vehicles ($ 25,000 + $ 6,000)		31,000
	To record disposition on delivery truck at carrying amount		
3.	Cash	6,000	
	Accumulated Depreciation—Equipment	10,500	
	Equipment		15,000
	Gain on Disposal		1,500
	To record disposal of office equipment at a gain		

Bloomcode: Application
Difficulty: Medium
Learning Objective: Demonstrate how to account for property, plant, and equipment disposals.

Section Reference: Disposal of Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 32

Zedel Delivery Services has a December 31, 2021 year end. On January 1, 2021 Zedel has a delivery van with a cost of $ 35,000 and accumulated depreciation of $ 12,000. The van was expected to have a residual value of $ 5,000 and a useful life of 5 years. Zedel uses straight-line depreciation. Zedel plans to replace its delivery van on April 1, 2021 and is considering two alternatives.

1. Zedel has been offered $ 14,000 for the old van. If Zedel accepts this offer, Zedel would then purchase a replacement for $ 50,000 cash.
2. Trade the old van for a new one. The dealer will allow a $ 22,000 trade-in allowance on the old van, and Zedel will have to pay additional cash of $ 28,000.

Instructions

a) Record the updated depreciation on the old van to April 1, 2021.
b) Record the disposal of the van under each of the two alternatives.
c) Which alternative do you recommend and why?

Solution 32 (15 min.)

a) Depreciation Jan 1 – Apr 1, 2021:
($ 35,000 – $ 5,000) ÷ 5 x 3 ÷ 12 = $ 1,500

Apr	1	Depreciation Expense	1,500	
		Accumulated Depreciation—Van		1,500

b)

Option 1:

	Cash	14,000	
	Accumulated Depreciation—Vehicles ($ 12,000 + 1,500)	13,500	
	Loss on Disposal of Vehicles	7,500	
	Vehicles (old)		35,000
	Vehicles (new)	50,000	
	Cash		50,000

Option 2:

	Vehicles (new) ($ 22,000 + $ 28,000)	50,000	
	Accumulated Depreciation—Vehicles	13,500	
	Gain on Disposal of Vehicles		500
	Vehicles (old)		35,000
	Cash		28,000

c) Cash required for alternative #1 ($ 50,000 – $ 14,000) = $ 36,000.

Cash required for alternative #2 = $ 28,000.

Because the second option requires less cash to acquire the same van, it is the recommended option.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Demonstrate how to account for property, plant, and equipment disposals.
Section Reference: Disposal of Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 33

Presented below are selected transactions for Donald Company for 2021:

Jan 1 Received $ 3,000 scrap value on retirement of equipment that was purchased on January 1, 2010. The equipment cost $ 80,000 on that date, and had an estimated useful life of 10 years with no residual value.

Apr 30 Sold equipment for $ 50,000 that was purchased on January 1, 2018. The equipment cost $ 90,000, and had an estimated useful life of 5 years with no residual value.

Dec 31 Disposed of a business automobile that was purchased on September 1, 2016. The car cost $ 20,000 and was depreciated on an 8-year useful life with a residual value of $ 800.

Instructions

Journalize all entries required as a result of the above transactions. Donald Company uses the straight-line method of depreciation and has recorded depreciation to December 31, 2020.

Solution 33 (15 min.)

Jan 1	Cash		3,000	
	Accumulated Depreciation—Equipment		80,000	
	Equipment			80,000
	Gain on Disposal			3,000
Apr 30	Depreciation Expense		6,000	
	Accumulated Depreciation—Equipment			6,000
	$ 90,000 ÷ 5 = $ 18,000 × 4 ÷ 12 = $ 6,000			
	Cash		50,000	
	Accumulated Depreciation—Equipment		60,000	
	($ 18,000 × 3) + ($ 18,000 × 4 ÷ 12)			
	Equipment			90,000
	Gain on Disposal ($ 50,000 – $ 30,000)			20,000
Dec 31	Depreciation Expense		2,400	
	Accumulated Depreciation—Vehicles			2,400
	($ 20,000 – $ 800) ÷ 8 = $ 2,400			

Accumulated Depreciation—Vehicles..... ($ 2,400 × 5) + ($ 2,400 x 1 ÷ 3)	12,800	
Loss on Disposal.....	7,200	
Vehicles.....		20,000

Bloomcode: Application
Difficulty: Medium
Learning Objective: Demonstrate how to account for property, plant, and equipment disposals.
Section Reference: Disposal of Property, Plant, and Equipment
CPA: Financial Reporting
AACSB: Analytic

Exercise 34

On January 1, 2021 Jelly Stone Industries invests $ 2,000,000 in land that includes a stand of timber and the rights to cut the timber. The property is expected to yield 50,000 cubic metres of timber. After the amount of lumber permitted by law has been cut, Jelly Stone expects to be able to sell the land for $ 400,000 less $ 150,000 that must be spent on reforestation. Jelly Stone invests a further $ 300,000 in equipment which is expected to last for the same number of units as the property yields, with no residual value.

Instructions

a) Using the units-of-production method, calculate depletion/depreciation for 2021 on both the timber investment and for the equipment, assuming that 12,000 cubic metres are sawn in the year.
b) Explain why the units-of-production method is considered the most appropriate method for depletion of natural resources.

Solution 34 (10 min.)

a) Depletion of timber:
($ 2,000,000 – [$ 400,000 – $ 150,000]) ÷ 50,000 = $ 35 per cubic metre; $ 35 x 12,000 = $ 420,000

Depreciation of equipment:
$ 300,000 ÷ 50,000 = $ 6 per cubic metre; $ 6 x 12,000 = $ 72,000

b) The units-of-production method is considered appropriate because the cost of the asset is matched exactly with the asset being physically used up. This will also result in a good matching of expenses with revenues, which are also determined on a “per unit” basis.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Record natural resource transactions and calculate depletion.
Section Reference: Natural Resources
CPA: Financial Reporting
AACSB: Analytic

Exercise 35

Johansan Mining Company purchased a mine for $ 80 million which is estimated to have 250,000 tonnes of ore and a residual value of $ 10 million. In the first year 50,000 tonnes of ore are extracted and sold. In the second year 150,000 tonnes of ore are extracted but only 125,000 tonnes are sold.

Instructions

a) Prepare the journal entry to record depletion expense for the first year and the second year.
b) What amount and in what account are the tonnes of ore not sold reported?

Solution 35 (10 min.)

a) Calculation of the depletion expense/tonne of ore:
($ 80,000,000 – $ 10,000,000) ÷ 250,000 tonnes = $ 280 per tonne

First Year: 50,000 tonnes × $ 280 = $ 14,000,000

Inventory (Depletion Expense).....	14,000,000	
Accumulated Depletion.....		14,000,000

b) Second Year: 150,000 tonnes × $ 280 = $ 42,000,000

Inventory (Depletion Expense).....	42,000,000	
Accumulated Depletion - Resource.....		42,000,000

Note: Depletion is recorded for the full amount extracted.

The ore that is extracted and not sold remains in an Inventory account in the current assets section of the balance sheet. In this case $ 7,000,000 (25,000 × $ 280) should be reported as inventory. The amount related to the ore that is extracted and sold [$ 35,000,000 = 125,000 x $ 280] will be transferred to the cost of goods sold account along with all the other costs of extracting the ore.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Record natural resource transactions and calculate depletion.
Section Reference: Natural Resources
CPA: Financial Reporting
AACSB: Analytic

Exercise 36

McGuinness Mining Company purchased land containing an estimated 15 million tonnes of ore at a cost of $ 5,400,000. The land without the ore is estimated to be worth $ 600,000. The company expects to operate the mine for 10 years. Buildings costing $ 800,000 are erected on the site and are are depreciated over the life of the mine. Equipment costing $ 1,000,000 is depreciated over the life of the mine.. The buildings and the equipment possess no residual value after the mine is closed. During the first year of operations, the mining company mined and sold 2 million tonnes of ore.

Instructions

a) Calculate the depletion cost per tonne of the mine.
b) Calculate the depletion expense for the first year on the mine.

Solution 36 (20 min.)

a) Depletion cost per tonne:
($ 5,400,000 – $ 600,000) ÷ 15 million tonnes of ore = $ 0.32 per tonne

b) 2,000,000 tonnes × $ 0.32 = $ 640,000

Bloomcode: Application
Difficulty: Easy
Learning Objective: Record natural resource transactions and calculate depletion.
Section Reference: Natural Resources
CPA: Financial Reporting
AACSB: Analytic

Exercise 37

Kewais Company invested $ 6 million for the rights to explore and extract natural resources from land in Ukraine. The company estimated that a total of 1.5 million tonnes of ore would be extracted from the property. The company extracted 50,000 tonnes of ore Year 1, 110,000 tonnes of ore Year 2, and 205,000 tonnes of ore Year 3.

Instructions

Prepare the necessary journal entries to record depletion expense in Year 1, Year 2 and Year 3.

Solution 37 (5 min.)

Depletion rate = $ 6,000,000 / 1,500,000 tonnes = $ 4 per tonne of ore extracted

Year 1	Inventory ($ 4 x 50,000).....	200,000	
	Accumulated Depletion—Resource.....		200,000
Year 2	Inventory ($ 4 x 110,000).....	440,000	
	Accumulated Depletion—Resource.....		440,000
Year 3	Inventory ($ 4 x 205,000).....	820,000	
	Accumulated Depletion—Resource.....		820,000

Bloomcode: Application
Difficulty: Medium
Learning Objective: Record natural resource transactions and calculate depletion.
Section Reference: Natural Resources

CPA: Financial Reporting
AACSB: Analytic

Exercise 38

Below are several transactions for McLaughlin Inc.:

1. Timber rights were purchased on a tract of land for $ 600,000. The timber is estimated at 2,800 cubic metres. During the current year, 180 cubic metres of timber were cut and sold.
2. A company purchased another company on July 1 and recorded goodwill of $ 400,000.
3. Costs of $ 18,000 were incurred on January 1 to obtain a patent. Shortly thereafter, $ 9,000 was spent in legal costs to successfully defend the patent against competitors. The patent has a legal life of 20 years and an estimated 9-year useful life.
4. The company acquired a trademark for the cost of $ 25,000. The trademark has 20 years until it expires and then it can be renewed for another 20 years for the cost of $ 25.

Instructions

For each of the unrelated transactions, determine the amount of the depreciation, depletion or amortization expense for the current year and present the adjusting entries required to record each expense at year end.

Solution 38 (10 min.)

1. Calculation of depletion/cubic metre:
   $ 600,000 ÷ 2,800 = $ 214.29/cubic metre
   180 × $ 214.29 = $ 38,572.

Inventory.....	38,572	
Accumulated Depletion - Resource.....		38,572

2. No entry. Goodwill is not amortized.

3. Legal costs to successfully defend a patent are capitalized.

Amorization Expense.....	3,000	
Accumulated Amortization—Patent.....		3,000
($ 27,000 ÷ 9 years = $ 3,000)		

4. No amortization is necessary. The trademark can be renewed for a small cost thus it may be treated as if it has indefinite life.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Record natural resource transactions and calculate depletion.
Section Reference: Natural Resources
Learning Objective: Identify the basic accounting issues for intangible assets and goodwill.
Section Reference: Intangible Assets and Goodwill
CPA: Financial Reporting
AACSB: Analytic

Exercise 39

During the current year, Lui Company incurred several expenditures:

1. Spent $ 50,000 in legal costs in a patent defence suit. The patent was unsuccessfully defended.
2. Purchased a trademark from another company. The trademark can be renewed indefinitely. Lui Company expected the trademark to contribute to revenue indefinitely.
3. Lui Company acquires a patent for $ 2,000,000. The company selling the patent has spent $ 1,000,000 on the research and development of it. The patent has a remaining legal life of 15 years and an estimated 5-year useful life.
4. Lui Company is spending considerable time and money in developing a different patent for another product. So far $ 3,000,000 has been spent this year on research. Lui Company is very confident it will obtain this patent in the next few years.

Instructions

Briefly explain whether the expenditures listed above should be recorded as an operating expense or as an intangible asset. If you view the expenditure as an intangible asset, indicate whether the asset should be amortized or not, and if so, the number of years over which it should be amortized. Explain your answer.

Solution 39 (10 min.)

1. Operating Expense. Only successful patent defence costs can be capitalized.

2. Intangible Asset. Trademarks are renewable. Since Lui Company expects to use the trademark indefinitely, no depreciation is recorded.

3. Intangible Asset. The patent cost of $ 2,000,000 should be amortized over its expected remaining useful life of 5 years since this is shorter than the remaining legal life of 15 years.

4. Operating Expense. Research costs should be expensed when incurred.

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Identify the basic accounting issues for intangible assets and goodwill.
Section Reference: Intangible Assets and Goodwill
CPA: Financial Reporting
AACSB: Analytic

Exercise 40

1. A company purchased a patent on January 1, 2021 for $ 2,500,000. The patent's legal life is 20 years but the company estimates that the patent's useful life will only be 5 years from the date of acquisition. On June 30, 2021 the company paid legal costs of $ 162,000 in successfully defending the patent in an infringement suit. Prepare the journal entry to amortize the patent at year end on December 31, 2021.

2. Walker Company purchased a franchise from the Tasty Food Company for $ 400,000 on January 1, 2021. The franchise is for an indefinite time period and gives Walker Company the exclusive rights to sell Tasty Wings in a particular territory. Prepare the journal entry to record the acquisition of the franchise and any necessary adjusting entry at year end on December 31, 2021.
3. Chernomyrdin Company incurred research costs of $ 200,000 and successful development costs of $ 500,000 in 2021 in developing a new product that the company was able to patent. The company expects the product to be useful for 10 years. Prepare the necessary journal entries during 2021 to record these events and any adjustments at year end on December 31, 2021.

Solution 40 (15 min.)

1. December 31, 2021

Amortization Expense	518,000	
Accumulated Amortization-Patent		518,000
To record patent amortization		
$ 2,500,000 ÷ 5 years	$ 500,000	
$ 162,000 ÷ 54 months = $ 3,000 × 6 months	18,000	
	$ 518,000	

2. January 1, 2021

Franchise	400,000	
Cash		400,000
To record acquisition of Tasty Food franchise		

December 31, 2021
Indefinite life, no amortization necessary; no entry.

3. 2021

Research Expense	200,000	
Cash		200,000
To record research expense for the current year		
Patent	500,000	
Cash		500,000
To capitalize development costs		

December 31, 2021

Amortization Expense ($ 500,000 ÷ 10 years)	50,000	
Accumulated Amortization—Patent		50,000
To record amortization of successful development costs relating to the patent		

Bloomcode: Application
Difficulty: Medium
Learning Objective: Identify the basic accounting issues for intangible assets and goodwill.
Section Reference: Intangible Assets and Goodwill
CPA: Financial Reporting
AACSB: Analytic

Exercise 41

Identify whether the following intangible assets are considered finite life (F) or indefinite life (I).

____ Franchise

____ Patents

____ Goodwill

____ Development Costs

____ Trademarks

____ Licence

____ Copyrights

Solution 41 (5 min.)

__I__ Franchise

__F__ Patents

__I__ Goodwill

__F__ Development Costs

__I__ Trademarks

__I__ Licence

__F__ Copyrights

Bloomcode: Knowledge
Difficulty: Easy
Learning Objective: Identify the basic accounting issues for intangible assets and goodwill.
Section Reference: Intangible Assets and Goodwill
CPA: Financial Reporting
AACSB: Analytic

Exercise 42

During 2021 Blackmud Research had the following transactions for cash. This is Blackmud's first year of operations.

Mar 1 Registered a new patent, with a legal life of 20 years, at a cost of $ 30,000.
Jun 30 Incurred research costs of $ 68,000.

Aug 1 Incurred development costs of $ 50,000 related to a product that meets the standards required for capitalization of costs. The costs are expected to provide commercial benefits for 5 years.

Aug 31 Purchased a trademark with an indefinite life for $ 102,000.

Nov 1 Purchased software copyright for $ 300,000. The copyright has a remaining legal life of 30 years, and the related software is expected to produce revenue for 6 years.

Instructions

a) Record the transactions.

b) Prepare the section of the December 31, 2021 balance sheet of Blackmud Research that reports intangible assets. Show calculations where applicable.

Solution 42 (20 min.)

a)

Mar 1	Patent	30,000	
	Cash		30,000
Jun 30	Research Expense	68,000	
	Cash		68,000
Aug 1	Development Costs	50,000	
	Cash		50,000
Aug 31	Trademark	102,000	
	Cash		102,000
Nov 1	Copyright	300,000	
	Cash		300,000

b)

BLACKMUD RESEARCH
Balance Sheet (partial)
December 31, 2021

Intangible assets (non-current assets)		
Finite-life intangible assets ($ 30,000 + 50,000 + 300,000)	$ 380,000	
Less: Accumulated amortization*	13,750	$ 366,250
Indefinite-life intangible assets		102,000
Total intangible assets		$ 468,250

Amortization:	
Patent = ($ 30,000 ÷ 20 x 10 ÷ 12)	$ 1,250
Development costs ($ 50,000 ÷ 5 x 5 ÷ 12)	4,167
Copyright ($ 300,000 ÷ 6 x 2 ÷ 12)	8,333
Total	$ 13,750

Bloomcode: Application

Difficulty: Medium
Learning Objective: Identify the basic accounting issues for intangible assets and goodwill.
Section Reference: Intangible Assets and Goodwill
Learning Objective: Illustrate the reporting and analysis of long-lived assets.
Section Reference: Statement Presentation and Analysis
CPA: Financial Reporting
AACSB: Analytic

Exercise 43

The following information is available from the audited financial statements of Molson Coors Brewing Company and Big Rock Breweries Income Trust for their year ends.

	Molson/Coors (in millions of US dollars)	Big Rock Breweries (in thousands of Cdn dollars)
Net revenue	$ 5,844	$ 38,701
Profit	$ 373	$ 8,380
Total assets, ending	$ 11,603	$ 42,170
Total assets, beginning	$ 11,799	$ 41,786

Instructions

a) Calculate both companies' asset turnover and return on assets.
b) Compare the companies' effectiveness in using their assets to produce revenue and profit.

Solution 43 (10 min.)

a)

	Molson/Coors	Big Rock
Asset turnover	5,844 ÷ [(11,603 + 11,799)÷2] = 0.50	$ 38,701 ÷ [(42,170 + 41,786)÷2] = 0.92
Return on assets	$ 373 ÷ [(11,603 + 11,799)÷2] = 3.2%	$ 8,380 ÷ [(42,170 + 41,786)÷2] = 20%

b) Big Rock's performance in asset management is better when measured by either of the two ratios. This suggests that Big Rock is more effective in using its assets to generate revenue and profit even though it is a smaller company.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Illustrate the reporting and analysis of long-lived assets.
Section Reference: Statement Presentation and Analysis
CPA: Financial Reporting

AACSB: Analytic

Exercise 44

Presented below is information related to long-lived assets at year end on December 31, 2021 for Jankowski Company:

Buildings	$ 1,080,000
Goodwill	420,000
Patents	600,000
Coal Mine	390,000
Accumulated depreciation—building	670,000
Accumulated depreciation—coal mine	275,000
Accumulated amortization—patents	120,000

Instructions

Prepare a partial balance sheet for Jankowski Company that shows how the above listed items would be presented.

Solution 44 (10 min.)

JANKOWSKI COMPANY
Balance Sheet (Partial)
December 31, 2021

Property, Plant, and Equipment		
Buildings	$ 1,080,000	
Less: Accumulated depreciation	670,000	$ 410,000
Coal mine	$ 390,000	
Less: Accumulated depreciation	275,000	115,000
Total property, plant, and equipment		525,000
Intangible Assets		
Patents	$ 600,000	
Less: Accumulated amortization	120,000	
Total Intangible Assets		480,000
Goodwill		420,000
Total long-lived assets		$ 1,425,000

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Illustrate the reporting and analysis of long-lived assets.
Section Reference: Statement Presentation and Analysis
CPA: Financial Reporting
AACSB: Analytic

Exercise 45

Indicate in the blank spaces below, the appropriate group heading for financial reporting purposes. Use the following code to identify your answer:

PPE	Property, Plant, and Equipment
NR	Natural Resources
I	Intangible Assets
O	Other
N/A	Not on the balance sheet

_____ 1. Goodwill

_____ 2. Land improvements

_____ 3. Development costs for a patented product

_____ 4. Accumulated depreciation—buildings

_____ 5. Trademarks

_____ 6. Research costs

_____ 7. Timberlands

_____ 8. Franchises

_____ 9. Licences

_____ 10. Equipment

_____ 11. Depreciation expense

_____ 12. Land

Solution 45 (5 min.)

1.	I	Goodwill
2.	PPE	Land improvements
3.	I	Patent
4.	PPE	Accumulated depreciation—buildings
5.	I	Trademarks
6.	N/A	Research costs
7.	NR	Timberlands
8.	I	Franchises
9.	I	Licences
10.	PPE	Equipment
11.	N/A	Depreciation expense
12.	PPE or NR	Land

Bloomcode: Analysis
Difficulty: Medium
Learning Objective: Illustrate the reporting and analysis of long-lived assets.
Section Reference: Statement Presentation and Analysis
CPA: Financial Reporting
AACSB: Analytic

Exercise 46

Net sales were $ 1,500,000 and profit was $ 250,000 in the second year of operation for Tirekicker's Used Car Company. Total assets in the first year were $ 800,000 and in the second year $ 1,200,000.

Instructions

a) Determine the asset turnover and the return on assets for Tirekicker's Used Car Company.
b) What do these ratios show?

Solution 46 (5 min.)

a) Asset Turnover = Net Sales ÷ Average Assets
= $ 1,500,000 ÷ [($ 800,000 + $ 1,200,000) ÷ 2)] = 1.5 times

Return on Assets = Profit ÷ Average Assets
= $ 250,000 ÷ [($ 800,000 + $ 1,200,000) ÷ 2)] = 25%

b) The Asset Turnover ratio shows how efficiently a company uses its assets to generate sales revenue. The Return on Assets ratio shows the profitability of assets used in the earning process.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Illustrate the reporting and analysis of long-lived assets.
Section Reference: Statement Presentation and Analysis
CPA: Financial Reporting
AACSB: Analytic

Exercise 47

The following information is taken from the records of Wasp Industrial Ltd.

	2022	2021	2020
Total assets reported year end	$ 14,110,500	$ 12,083,700	$ 10,669,900
Sales revenue	2,037,210	2,097,100	2,120,500
Sales discounts	14,521	17,554	16,808
Total expenses	875,770	890,425	925,860

Instructions

a) Calculate the 2022 and 2021 asset turnover and return on assets.
b) Briefly interpret the results of each ratio examined in part a).

Solution 47 (10 min.)

a) 2022 asset turnover =
($ 2,037,210 – $ 14,521) ÷ [($ 14,110,500 + $ 12,083,700) ÷ 2] = 0.15

2021 asset turnover =
($ 2,097,100 – $ 17,554) ÷ [($ 12,083,700 + $ 10,669,900) ÷ 2] = 0.18

2022 return on assets =
($ 2,037,210 – $ 14,521 – $ 875,770) / [($ 14,110,500 + $ 12,083,700) ÷ 2] = 0.09

2021 return on assets =
($ 2,097,100 – $ 17,554 – $ 890,425) / [($ 12,083,700 + $ 10,669,900) ÷ 2] = 0.10

b) The asset turnover ratio suggests that for each dollar that Wasp has invested in assets, it produced $ 0.15 (2022) and $ 0.18 (2021) in sales. This demonstrates a declining trend that should be closely compared to the industry average.
The return on assets ratio suggests that Wasp generated profits of 9% (2022) and 10% (2021) for every dollar invested in assets. This demonstrates a declining trend that should be closely compared to the industry average.

Bloomcode: Application
Difficulty: Medium
Learning Objective: Illustrate the reporting and analysis of long-lived assets.
Section Reference: Statement Presentation and Analysis
CPA: Financial Reporting
AACSB: Analytic

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