##### 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:

Effect on Annual

Method Depreciation Calculation

Straight-line Constant amount (Cost − residual value) ÷

estimated useful life

(in years)

Diminishing- Diminishing Carrying amount at

balance amount beginning of year ×

diminishing-balance rate

Units-of- Varying (Cost − residual value) ÷

production amount 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.

Land

Item Land Improvements Building Other Account Title

##### Solution 1 (15 min.)

Land

Item 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. P aid $ 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 14,063

(187,500 ÷ 10) x 9 ÷ 12)

Accumulated Depreciation—Equipment (office) 8,250

(55,000 ÷ 5) x 9 ÷ 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 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) Allocation of

% of Appraised Value 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 Annual End of Year

Beginning Depreciation Depreciation Accumulated 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
4. 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

1. 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

1. 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

$ 540,000 – $ 55,000

2021 —————————– = $ 48,500 × 3 ÷ 12 = $ 12,125

10 years

2022 $ 48,500

b) Double diminishing-balance method

Depreciation rate = 200% ÷ 10 years = 20%

2021 $ 540,000 × 20% × 3 ÷ 12 = $ 27,000

2022 $ 513,000 × 20% = $ 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.)

$ 96,000 – $ 5,000

a) Straight-line method: ——————–—— = $ 11,375 per year

8

$ 96,000 – $ 5,000

b) Units-of-production method: —————–——— = $ 0.91 per unit

100,000 units

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:

Accumulated

Estimated Life Depreciation Kilometres Operated

Car Cost Residual Value in Kilometres Beg. of the Year 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.)

$ 18,000 – $ 3,000

a) Car 1 ——————–—— = $ 0.30 per km.

50,000 km.

$ 15,000 – $ 2,400

Car 2 —————–——— = $ 0.21 per km.

60,000 km.

$ 20,000 – $ 2,500

Car 3 —————–——— = $ 0.25 per km.

70,000 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.)

$ 75,000 – $ 7,500

a) i) Straight-line method: ———————— = $ 16,875 per year

4 years

$ 75,000 – $ 7,500

ii) Units-of-production method: —————–——— = $ 6.75/hour

10,000 hours

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**

1. 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)
2. Straight-line method

ii) Double diminishing-balance method

1. 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%

Carrying amount Depreciation Annual Accumulated

Year Beginning Year × Rate = Depreciation 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

Depreciable Depreciation Annual Accumulated

Year Cost × Rate = Depreciation 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

Carrying amount Depreciation Annual Accumulated

Year Beginning Year × Rate = Depreciation 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:

Purchase Useful Residual Depreciation Sales

Machine Cost Date Life Value Method Date Sold 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- 12/31/21 $ 32,000

balance

**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

Annual Accumulated

Year Depreciable Cost × Depreciation Rate = Depreciation 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

Carrying amount Annual Accumulated

Year Beginning of Year × DDB Rate Depreciation 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

———————–— = $ 8,500 annual depreciation expense

10 years

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:

$ 73,000 – $ 6,000

——————–—— = $ 11,167 revised annual depreciation

6 years remaining

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.

Telephone Expense Depreciation Expense Profit

Overstated Overstated Overstated

Year (Understated) (Understated) (Understated)

———————————————————————————————————————————

2021

2022

2023

2024

##### Solution 26 (25 min.)

Telephone Expense Depreciation Expense Profit

Overstated Overstated Overstated

Year (Understated) (Understated) (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 12,800

($ 2,400 × 5) + ($ 2,400 x 1 ÷ 3)

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 7. Timberlands

2. Land improvements 8. Franchises

3. Development costs for a patented product 9. Licences

4. Accumulated depreciation—buildings 10. Equipment

5. Trademarks 11. Depreciation expense

6. Research costs 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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