**CHAPTER 8**

**Answers to EOC Questions, Mini-Exercises, Multiple Choice Questions,**

**and Assigned Exercises and Problems.**

ANSWERS TO QUESTIONS

1. Long-lived assets are noncurrent assets, which a business retains beyond one year, not for sale, but for use in the course of normal operations. Long-lived assets include land in use, plant and equipment, natural resources, and certain intangibles such as a patent used in operating the business. Long-lived assets are acquired because of the future use that is expected of them. Thus, they may be thought of as a bundle of future services to be used over a period of time to earn revenue. As those services are used, as in the case of a machine, the cost of the asset is allocated as a periodic expense (i.e., matched with revenue).

2. The fixed asset turnover ratio =

 Net sales
 [(Beginning net fixed asset balance + Ending net fixed asset balance) ÷ 2]

 This ratio measures how efficiently a company utilizes its investment in property, plant, and equipment over time. The ratio can also be compared to the ratio for the company’s competitors.

3. Long-lived assets are classified as follows:

 (1) Tangible long-lived assets—assets that are tangible (i.e., have physical substance) and long-lived (i.e., beyond one year); they are acquired for use in the operation of a business and are not intended for resale. They are comprised of three different kinds of assets:

 (a) Land—not subject to depreciation.

 (b) Plant and equipment—subject to depreciation.

 (c) Natural resources—mines, gravel pits, and timber tracts. Natural resources are subject to depletion.

 (2) Intangible long-lived assets—assets held by the business because of the special valuable rights that they confer; they have no physical substance. Examples are patents, copyrights, franchises, licenses, trademarks, technology, and goodwill. Intangible assets with definite lives are subject to amortization.

4. When a long-lived asset is acquired, it is recorded in the accounts in conformity with the cost principle. That is, the acquisition cost of a long-lived asset is the cash equivalent price paid for it plus all incidental costs expended to obtain it, to place it in the location in which it is to be used, and to prepare it for use.

5. In measuring and reporting long-lived assets, the expense matching principle is applied. As a long-lived asset is used, revenues are earned over a period of time. Over that same period of time, the long-lived asset tends to be used up or worn out. As a consequence, under the expense matching principle, the acquisition cost of the asset must be allocated to the periods in which it is used to earn revenue. In this way the cost of the asset is matched, as expense, with the revenues as they are earned from period to period through the use of the asset.

6. Ordinary repairs—expenditures for the normal maintenance and upkeep of machinery and other tangible long-lived assets that are necessary to keep the assets in their usual operating conditions. Generally, ordinary repairs are recurring in nature, involve relatively small amounts at each occurrence and do not extend the useful estimated life of the asset. Ordinary repairs are debited to expense in the period in which incurred.

 Improvements—unusual, nonrecurring, major renovations that are necessary because of unusual conditions. Generally, they are large in amount, not recurring, and tend to either make the asset more efficient or to extend its useful life. Improvements are a type of capital expenditure involving acquiring an asset (e.g., equipment) that will help earn revenue for periods beyond the current accounting period. Improvements (capital expenditures) should be debited to appropriate asset accounts and then allocated to those future periods in which revenues will be earned and against which the expenditures will be matched.

7. Depreciation—allocation of the cost of a tangible long-lived asset over its useful life. Depreciation refers to allocation of the costs of such items as plant and equipment, buildings, and furniture.

 Depletion—allocation of the cost of a natural resource over its useful life. It is identical in concept to depreciation except that it relates to a different kind of asset, depletable natural resources.

 Amortization—allocation of the cost of an intangible asset over its estimated useful life. Conceptually, it is the same as depreciation and depletion except it relates to an intangible asset.

8. To compute depreciation, the three values that must be known or estimated are:

 Cost—the actual total expenditures incurred in acquiring the asset in conformity with the cost principle.

 Estimated useful life—the estimated length of time that the asset will be used by the present owner for the purposes for which it was acquired.

 Residual value—the estimated amount of cash that is expected to be recovered at the end of the estimated useful life of the asset. The residual value is the estimated cash recovery amount minus the estimated cost of removing and disposing of the asset at the end of its estimated useful life.

 Notice that, on the acquisition date, the first of these values is an actual known amount, while the latter two are estimates.

9. The estimated useful life and estimated residual value of a long-lived asset when used for depreciation purposes relate to the current owner-user and not to all potential users of the asset because the asset’s cost must be allocated to the revenue that it generates during the period in which it is to be used by the current owner. The fact that the current owner may dispose of the asset and others may use it to earn revenues for a number of periods after that is of no consequence to the measurement of the asset and income for the current owner (other than for the effect of estimated residual value).

10. a. The straight-line method of depreciation causes an equal amount of depreciation expense to be apportioned to, or matched with, the revenues of each period. It is especially appropriate for tangible long-lived assets that are used at an approximately uniform level from period to period.

 b. The units-of-production method of depreciation causes a depreciation expense pattern that varies in amount with the rate at which the asset is used productively each year. For example, if in the current year the asset is used twice as much as in the prior year, twice as much depreciation expense would be matched with the revenue of the current year as compared with the previous year. Usually use is measured in terms of productive output. The units-of-production method of depreciation is particularly appropriate for those assets that tend to earn revenue with use rather than with the passage of time. Thus, it normally would apply to assets that are not used at a uniform rate from period to period.

 c. The double-declining-balance method of depreciation is a form of accelerated depreciation, causing a higher amount of depreciation expense to be matched with revenue in early periods of the estimated useful life of the asset. The double-declining-balance method is particularly appropriate when the long-lived assets perform more efficiently and therefore produce more revenue in the early years of their useful life than in the later years.

11. The cost of an addition to an existing long-lived asset should be depreciated over the shorter of the estimated life of the addition or the remaining life of the existing asset to which it relates. This rule is necessary because an addition to an existing long-lived asset has no use after the useful life of the existing asset has expired.

1. Asset impairment—when events or changes in circumstances cause the book value of long-lived assets to be higher than their related estimated future cash flows. It is accounted for by writing down the asset to the asset’s fair value and recording a loss.
2. When equipment is sold, the Equipment account is credited for the asset’s historical cost. Its related Accumulated Depreciation account is debited for the amount representing prior usage. The Cash account is debited for the sales price. If the cash received exceeds the cost less accumulated depreciation (net book value), a Gain on Sale of Equipment is recorded for the difference. If the cash received is lower than the net book value, a Loss on Sale of Equipment is recorded for the difference. Net book value is the asset’s historical cost less accumulated depreciation on the asset.
3. An intangible asset is acquired and held by the business for use in operations and not for sale. Intangible assets are acquired because of the special rights they confer on ownership. They have no physical substance but represent valuable rights that will be used up in the future. Examples are patents, copyrights, trademarks, technology, franchises, goodwill, and licenses.

When an intangible asset is purchased, managers determine if it has a definite or indefinite life. If it has a definite life, the intangible asset’s cost is amortized on a straight-line basis over its expected useful life. However, an intangible asset with an indefinite life is not amortized, but is tested annually for possible impairment.

1. Goodwill represents an intangible asset that exists because of the good reputation, customer appeal, and general acceptance of a business. Goodwill has value because other parties often are willing to pay a substantial amount for it when they buy a business. Goodwill should be recorded in the accounts and reported in the financial statements only when it has been purchased at a measurable cost. The cost of goodwill is measured in conformity with the cost principle. Because it is considered to have an indefinite life, goodwill is not amortized, but it is reviewed annually for possible impairment of value.
2. Depreciation expense is a noncash expense. That is, *e*ach period when depreciation is recorded, no cash payment is made. (The cash outflow associated with depreciation occurs when the related asset is first acquired.) Since no cash payment is made for depreciation, the effect of the depreciation expense on net income needs to be reversed in the reconciliation to cash flows. Depreciation expense was originally subtracted to arrive at net income; thus, to reverse its effect, depreciation expense needs to be added back to net income on the statement of cash flows (indirect method).

ANSWERS TO MULTIPLE CHOICE

 1. a

 2. a

 3. d

 4. b

 5. a

 6. d

 7. a

 8. d

 9. d

10. e

MINI-EXERCISES

**M8–1.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Asset** | **Nature** | **Cost** **Allocation Concept** |
| (1) | Tractors | E | DR |
| (2) | Land in use | L | NO |
| (3) | Timber tract | NR | DP |
| (4) | Warehouse  | B | DR |
| (5) | New engine for old machine | E | DR |
| (6) | Operating license | I | A |
| (7) | Production plant  | B | DR |
| (8) | Trademark | I | A |
| (9) | Silver mine | NR | DP |
| (10) | Land held for sale  | O (investment) | NO |

**M8–2.**

Young’s fixed asset turnover ratio is

 = Net sales
 [(Beginning net fixed asset balance + Ending net fixed asset balance) ÷ 2]

 = $3,600,000 = 1.89
 [($1,500,000 + $2,300,000) ÷ 2]

Young’s ratio is higher than Southwest’s 2011 ratio of 1.38, indicating that Young may be more efficient in its use of fixed assets.

**M8–3.**

(1) C

(2) E

(3) N

(4) C

(5) N

(6) E

(7) E

(8) C

(9) C

**M8–4.**

Machinery (original cost) $31,000

Accumulated depreciation at end of third year

 Depreciation expense =

 ($31,000 cost – $1,000 residual value) x 1/5 = $6,000

 Accumulated depreciation = $6,000 annual depreciation expense x 3 yrs = 18,000

Net book value at the end of the third year $13,000

**M8–5.**

Machinery (original cost) $55,000

Accumulated depreciation at end of first year:

 Depreciation expense = ($55,000 – $0 acc. depr.) x 2 / 5 = $22,000 22,000

Net book value at end of first year $33,000

Machinery (original cost) $55,000

Accumulated depreciation at end of second year:

 Depreciation expense = ($55,000 - $22,000 acc. depr.) x 2 / 5 = $13,200

 Accumulated depreciation = Year 1, $22,000 + Year 2, $13,200 = 35,200

Net book value at end of second year $19,800

Machinery (original cost) $55,000

Accumulated depreciation at end of third year:

 Depreciation expense = ($55,000 - $35,200 acc. depr.) x 2 / 5 = $7,920

 Accumulated depreciation = (Year 2, $35,200 + Year 3, $7,920) = 43,120

Net book value at end of third year $11,880

**M8–6.**

Machinery (original cost) $26,000

Accumulated depreciation at end of third year

 Depreciation expense per machine hour

 = ($26,000 cost – $1,000 residual value) = $0.50 per machine hour

 50,000 machine hours

 Accumulated depreciation

 = $0.50 depreciation expense per machine hr

 x (3,200 + 7,050 + 7,500) hrs = 8,875

Net book value at end of third year $17,125

**M8–7.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Impairment** | **Loss** | Cost - Fair Value |
| a. Machine | Y | $6,000 | $15,500 -$ 9,500 |
| b. Copyright | N |  — | Estimated cash flows exceed book value |
| c. Factory building | Y | $31,000 | $58,000 - $27,000 |
| d. Building | N | —  | Estimated cash flows equal book value |

**M8–8.**

Store fixtures (original cost) $6,500

Accumulated depreciation at end of tenth year

 Depreciation expense =

 ($6,500 cost – $800 residual value) x 1/12 = $475

 Accumulated depreciation = $475 annual depreciation expense x 10 yrs = 4,750

Net book value at end of tenth year (i.e., NBV immediately prior to sale) $1,750

Journal entry to record the disposal is as follows.

 Cash (+A) 1,800

 Accumulated depreciation, store fixtures (−XA, +A) 4,750

 Gain on sale of store fixtures (+Gain, +SE) 50

 Store fixtures (−A) 6,500

**M8–9.**

Elizabeth Pie Company’s management may choose to accept the offer of $5,000,000 as this amount is more than the $4,800,000 market value of separately identifiable assets and liabilities ($4,500,000 market value of recorded assets and liabilities and $300,000 for the patent). If so, Giant Bakery would record $200,000 of goodwill on the date of purchase (i.e., the excess of the $5,000,000 purchase price over the $4,800,000 fair value of identifiable assets and liabilities). The $110,000 difference in goodwill (Elizabeth’s $310,000 estimated value of goodwill less goodwill of $200,000 provided by the offer) provides potential for Elizabeth’s management to negotiate a higher purchase price.

**M8–10.**

|  |
| --- |
| **Garrett Company****Excerpts from Statement of Cash Flows****For the Year Ended December 31, 2015** |
|  |  |
| Cash flows from operating activities: |  |
| Net income | $ 18,000 |
| Add back: Depreciation expense | 5,500 |
| Cash provided by (used in) operating activities | 23,500 |
|  |  |
| Cash flows from investing activities: |  |
| Purchase of equipment | (156,000) |
| Sale of land | 20,000 |
| Cash provided by (used in) investing activities | (136,000) |

**Exercises**

**E8–2.**

Req. 1

Fixed asset turnover ratio: (in millions)

Sales ÷ [(beginning net fixed assets + ending net fixed assets) ÷ 2]

|  |  |  |
| --- | --- | --- |
| **2009** | **2010** | **2011** |
| $36,537 ÷ $2,704.5 | $62,225 ÷ $3,861.0 | $108,249 ÷ $6,272.5 |
| 13.51 | 16.12 | 17.26 |

Computation of denominator:

|  |  |  |
| --- | --- | --- |
| 2009 | ($2,954 + $2,455) ÷ 2 | = $2,704.5 |
| 2010 | ($4,768 + $2,954) ÷ 2 | = $3,861.0 |
| 2011 | ($7,777 + $4,768) ÷ 2 | = $6,272.5 |

Req. 2

Apple’s fixed asset turnover ratio increased each year from 2009 to 2011. This suggests that Apple’s management became more efficient at utilizing its long-lived assets over time. The increase in 2010 and 2011 was due primarily to a large increase in sales during those years. An analyst can use longitudinal analysis to observe possible trends over time. In addition, the analyst may compare Apple’s ratios to those of competitors in the industry.

**E8–8.**

Req. 1

 a. Straight-line:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Computation** | **Depreciation Expense** | **Accumulated Depreciation** | **Net****Book Value** |
| At acquisition |  |  |  | $950,000 |
| 1 | ($950,000 - $50,000) x 1/5 | $180,000 | $180,000 | 770,000 |
| 2 | ($950,000 - $50,000) x 1/5 |  180,000 |  360,000 | 590,000 |
| 3 | ($950,000 - $50,000) x 1/5 |  180,000 |  540,000 | 410,000 |
| 4 | ($950,000 - $50,000) x 1/5 |  180,000 |  720,000 | 230,000 |
| 5 | ($950,000 - $50,000) x 1/5 |  180,000 |  900,000 | 50,000 |

 b. Units-of-production: ($950,000 – $50,000) ÷ 300,000 = $3.00 per unit of output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Computation** | **Depreciation Expense** | **Accumulated Depreciation** | **Net****Book Value** |
| At acquisition |  |  |  | $950,000 |
| 1 | $3.00 x 70,000 units | $210,000 | $210,000 | 740,000 |
| 2 | $3.00 x 67,000 units |  201,000 |  411,000 | 539,000 |
| 3 | $3.00 x 50,000 units |  150,000  |  561,000 | 389,000 |
| 4 | $3.00 x 73,000 units |  219,000 |  780,000 | 170,000 |
| 5 | $3.00 x 40,000 units |  120,000 |  900,000 | 50,000 |

 c. Double-declining-balance:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Computation** | **Depreciation Expense** | **Accumulated Depreciation** | **Net****Book Value** |
| At acquisition |  |  |  | $950,000 |
| 1 | ($950,000 - 0) x 2/5 | $380,000 | $380,000 |  570,000 |
| 2 | ($950,000 - $380,000) x 2/5 | 228,000 |  608,000 |  342,000 |
| 3 | ($950,000 - $608,000) x 2/5 |  136,800 |  744,800 |  205,200 |
| 4 | ($950,000 - $744,800) x 2/5 | 82,080 | 826,880 | 123,120 |
| 5 | ($950,000 - $826,880) x 2/5 |  ~~49,248~~ |  ~~876,128~~ |  ~~73,872~~ |
|  |   | 73,120 | 900,000 | 50,000 |

Too large. Net book value should equal residual value at end of useful life. Change depreciation expense to yield a net book value of $50,000.

**E8–8. (continued)**

Req. 2

If the machine is used evenly throughout its life and its efficiency (economic value in use) is expected to decline steadily each period over its life, then straight-line depreciation would be preferable. If the machine is used at a consistent rate but the efficiency is expected to decline faster in the earlier years of its useful life, then an accelerated method would be appropriate [such as, double-declining-balance]. If the machine is used at different rates over its useful life and its efficiency declines with output, then the units-of-production method would be preferable because it would result in a better matching of depreciation expense with revenue earned.

**E8–16.**

Req. 1

Computation of acquisition cost of the deposit in 2015:

February 2015: Purchase of mineral deposit $ 800,000

March 2015: Preparation costs 70,000

 Total acquisition cost in 2015 $ 870,000

Req. 2

Computation of depletion for 2015:

$870,000 cost ÷ 1,000,000 cubic yards = $.87 per cubic yard depletion rate
60,000 cubic yards in 2015 x $.87 = $52,200

Req. 3

Computation of net book value of the deposit after the developmental work:

 Total acquisition cost in 2015 $ 870,000

 Less: 2015 depletion (52,200)

 January 2016 developmental costs 6,000

 Net book value $ 823,800

**ASSIGNED PROBLEMS**

**P8–6.**

Req. 1

a. Machine A - Sold on Jan. 1, 2015:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (1) | Depreciation expense in 2015 - none recorded because disposal date was Jan. 1, 2015. |  |  |  |
| (2) | To record disposal: |  |  |  |
|  |  Cash (+A)  | 5,000 |  |  |
|  |  Accumulated depreciation, Machine A (−XA, +A)  | 15,750 |  |  |
|  |  Loss on disposal of machine (+Loss, −SE)  | 250 |  |  |
|  |    Equipment (Machine A) (−A)  |  |  | 21,000 |

b. Machine B – Sold on December 31, 2015:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (1) | To record depreciation expense for 2015: |  |  |  |
|  |  Depreciation expense (+E, −SE)  | 4,600 |  |  |
|  |    Accumulated depreciation, Machine B (+XA, −A)  |  |  | 4,600 |
|  |  ($50,000 – $4,000) ÷ 10 years = $4,600. |  |  |  |
| (2) | To record disposal: |  |  |  |
|  |  Cash (+A)  | 2,500 |  |  |
|  |  Note receivable (+A)  | 8,000 |  |  |
|  |  Accumulated depreciation, Machine B ($36,800 + $4,600)  (−XA, +A)  | 41,400 |  |  |
|  |   Gain on disposal of machine (+Gain, +SE)  |  |  | 1,900 |
|  |    Equipment (Machine B) (−A)  |  |  | 50,000 |

c. Machine C – Disposal on January 1, 2015:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (1) | Depreciation expense in 2015 - none recorded because disposal date was Jan. 1, 2015. |  |  |  |
| (2) | To record disposal: |  |  |  |
|  |  Accumulated depreciation, Machine C (−XA, +A)  | 64,000 |  |  |
|  |  Loss on disposal of machine (+Loss, −SE)  | 21,000 |  |  |
|  |   Equipment (Machine C) (−A)  |  |  | 85,000 |

Req. 2

Machine A: Disposal of a long-lived asset with the price below net book value results in a loss.

Machine B: Disposal of a long-lived asset with the price above net book value results in a gain.

Machine C: Disposal of a long-lived asset due to damage results in a loss equal to remaining book value.

**P8–10.**

Req. 1

|  |  |
| --- | --- |
| *a.* | Patent amortization for one year, $55,900 ÷ 13 years = $4,300. |
|  |  |
| *b.* | Copyright amortization for one year, $22,500 ÷ 10 years = $2,250. |
|  |  |  |  |
| *c.* | Franchise amortization for one year, $14,400 ÷ 10 years = $1,440. |
|  |  |  |  |
| *d.* | License amortization for one year, $14,000 ÷ 5 years = $2,800. |
|  |  |  |  |
| *e.* | Goodwill has an indefinite life and is not amortized. |

Req. 2

Net Book Value on December 31, 2015:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Item* | *Date Acquired* | *Book Value Computations* |  | *Book ValueDec. 31, 2015* |
| *a.* | Patent  | Jan. 1, 2014 |  | $55,900 – ($4,300 x 2) |  |  |  $ 47,300 |  |
| *b.* | Copyright  | Jan. 1, 2014 |  | $22,500 – ($2,250 x 2) |  |  |  18,000 |  |
| *c.* | Franchise  | Jan. 1, 2014 |  | $14,400 – ($1,440 x 2) |  |  |  11,520 |  |
| *d.* | License  | Jan. 1, 2013 |  | $14,000 – ($2,800 x 3) |  |  |  5,600 |  |
| *e.* | Goodwill  | Jan. 1, 2011 |  | $40,000 (not amortized) |  |  |  40,000 |  |
|  | Total book value  |  |  |  |  |  | $122,420 |  |

Req. 3

The book value of the copyright on January 1, 2016 ($18,000) exceeds the expected future cash flows ($17,000). Therefore, the asset is impaired.

|  |  |
| --- | --- |
|  Book value of copyright  | $18,000  |
|  Fair value of copyright  | 16,000  |
|  Impairment loss to be recorded, January 2, 2016  | $ 2,000  |

**CASES AND PROJECTS**

## **CP8–3.**

1.

|  |  |  |
| --- | --- | --- |
|  | **American Eagle Outfitters** | **Urban** **Outfitters** |
| Fixed assets as a % of total assets | 29.8% | 46.2% |
|  | ($582,162 / $1,950,802) | ($684,979 / $1,483,708) |

 American Eagle Outfitters has a lower fixed-assets-to-total-assets percentage due in part to its difference in strategy of locating stores primarily in malls, in which the company does not own the facilities. Urban Outfitters, on the other hand, does not rent mall space, and may own more of its store buildings located in urban settings.

2.

|  |  |  |
| --- | --- | --- |
|  | **American Eagle Outfitters** | **Urban** **Outfitters** |
| Percent of gross fixed assets that have been depreciated | 60.1% | 47.4% |
|  | ($876,360 accum. depr. / $1,458,522 cost.) | ($616,787 accum. depr. / $1,301,766 cost) |

Differences are potentially due to Urban Outfitters having slightly newer fixed assets and also depreciating buildings over 39 years rather than 25 years as American Eagle does.

3.

|  |  |  |
| --- | --- | --- |
|  | **American Eagle Outfitters** | **Urban** **Outfitters** |
| Fixed Asset Turnover | 5.16 | 3.89 |
|  | $3,159,818/ ($643,120 + $582,162)/2 | $2,473,801/ ($684,979 + $586,346)/2 |

American Eagle appears to have the higher efficiency level for fixed assets. The company generates more than one and one-quarter times as much in net sales as Urban Outfitters, but has fewer fixed assets.

***CP8*–*3. (continued)***

4.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Industry Average** | **American Eagle Outfitters** | **Urban** **Outfitters** |
| Fixed Asset Turnover | 7.43 | 5.16 | 3.89 |

Both American Eagle Outfitters and Urban Outfitters have a fixed asset turnover ratio that is below the industry average, with Urban Outfitters having the lower fixed asset turnover ratio. This suggests that both companies are less efficient in generating sales with fixed assets than the average company in the industry. This could be due to both companies continuing growth strategies of investing in new stores which have yet to reach their potential to generate sales.