**CHAPTER 2**

**FIXED ASSETS AND INTANGIBLE ASSETS**

***OBJECTIVES***

***After studying this chapter, you should be able to:***

* Define fixed assets and describe the accounting for their cost.
* Compute depreciation, using the following methods: straight-line method, units-of-production method, and declining-balance method.
* Classify fixed asset costs as either capital expenditures or revenue expenditures.
* Journalize entries for the disposal of fixed assets.
* Define a lease and summarize the accounting rules related to the leasing of fixed assets.
* Describe internal controls over fixed assets.
* Compute depletion and journalize the entry for depletion.
* Describe the accounting for intangible assets, such as patents, copyrights, and goodwill.Describe how depreciation expense is reported in an income statement, and prepare a balance sheet that includes fixed assets and intangible assets.
* Compute and interpret the ratio of fixed assets to long-term liabilities.

**2.0 INTRODUCTION**

Assume that you are a certified flight instructor and you would like to earn a little extra money by teaching people how to fly. Since you don’t own an airplane, one of the pilots at the local airport is willing to let you use her airplane for a fixed fee per year. You will also have to pay your share of the annual operating costs, based on hours flown. In addition, the owner will consider your request for upgrading the plane’s equipment. At the end of the year, the owner has the right to cancel the agreement.

One of your friends is an airplane mechanic. He is familiar with the plane and has indicated that it needs its annual inspection. There is some structural damage on the right aileron. In addition to this repair, you would like to equip the plane with another radio and a better navigation system.

Since you will not have any ownership in the airplane, it is important for you to distinguish between normal operating costs and costs that add future value or worth to the airplane. These latter costs should be the responsibility of the owner. In this case, you should be willing to pay for part of the cost of the annual inspection. The cost of repairing the structural damage and upgrading the navigation system should be the responsibility of the owner.

Businesses also distinguish between the cost of a fixed asset and the cost of operating the asset. In this chapter, we discuss how to determine the portion of a fixed asset’s cost that becomes an expense over a period of time. We also discuss accounting for the disposal of fixed assets and accounting for intangible assets, such as patents and copyrights.

Before taking up depreciation, it should be understood that the costs relating to the use of long-term assets should be properly calculated and matched against the revenue earned so that periodic net income can be determined. These use costs or expense or periodic write off are known by different names for different category of assets given as under:

**Types of Long-Term Assets (Plant Assets) Term of expenses or write off or use costs**

1. ***Tangible Assets:***

(i) Land None

(ii) Plant, Building, Equipment, Tools,

 Furniture, Fixtures, and Vehicles Depreciation

(iii) Natural Resources such as Oil, Timber,

 Coal, Minerals Deposits Depletion

1. ***Intangible Assets such as Patents, Copyrights,***

 ***Trademarks, Goodwill***  Amortization

**2.1 NATURE OF FIXED ASSETS**

Businesses use a variety of fixed assets, such as equipment, furniture, tools, machinery, buildings, and land. ***Fixed assets*** are long-term or relatively permanent assets. They are **tangible assets** because they exist physically. They are owned and used by the business and are not offered for sale as part of normal operations. Other descriptive titles for these assets are **plant assets** or **property, plant, and equipment**.

**Classifying Costs**

The following diagram displays questions that help classify costs. If the purchased item is long-lived, then it should be *capitalized*, which means it should appear on the balance sheet as an asset. Otherwise, the cost should be reported as an expense on the income statement. Capitalized costs are normally expected to last more than a year. If the asset is also used for a productive purpose, which involves a repeated use or benefit, then it should be classified as a fixed asset, such as land, buildings, or equipment. An asset need not actually be used on an ongoing basis or even often. For example, standby equipment for use in the event of a breakdown of regular equipment or for use only during peak periods is included in fixed assets. Fixed assets that have been abandoned or are no longer used should not be classified as a fixed asset.



Fixed assets are owned and used by the business and are not offered for resale. Long-lived assets held for resale are not classified as fixed assets, but should be listed on the balance sheet in a section entitled *investments*. For example, undeveloped land acquired as an investment for resale would be classified as an investment, not land.

**The Cost of Fixed Assets**

The costs of acquiring fixed assets include all amounts spent to get the asset in place and ready for use. For example, freight costs and the costs of installing equipment are included as part of the asset’s total cost. The direct costs associated with new construction, such as labor and materials, should be debited to a “construction in progress” asset account. When the construction is complete, the costs should be reclassified by crediting the construction in progress account and debiting the appropriate fixed asset account. For growing companies, construction in progress can be significant. For example, **Intel Corporation** disclosed $2.7 billion of construction in progress, which was over 15 percent of its total fixed assets.

Exhibit 1 summarizes some of the common costs of acquiring fixed assets. These costs should be recorded by debiting the related fixed asset account, such as Land, Building, Land Improvements, or Machinery and Equipment. Only costs necessary for preparing a long-lived asset for use should be included as a cost of the asset. Unnecessary costs that do not increase the asset’s usefulness are recorded as an expense. For example, the following costs are included as an expense:

• Vandalism

• Mistakes in installation

• Uninsured theft

• Damage during unpacking and installing

• Fines for not obtaining proper permits from governmental agencies

**Exhibit 1: Costs of Acquiring Fixed Assets**

|  |  |
| --- | --- |
| **LAND:** | **BUILDING:** |
| Purchase price | Architects’ fees |
| Sales tax | Engineers’ fees |
| Permits for government agencies | Insurance costs incurred during construction |
| Brokers’ commissions | Interest on money borrowed to finance construction |
| Title fees | Walkways to and around the building |
| Surveying fees | Sales taxes |
| Delinquent real estate taxes | Repairs(purchase of existing building) |
| Raising or removing unwanted buildings, less any savage | Reconditioning(purchase of existing building) |
| Grading and leveling | Modifying for use |
| Paving a public street bordering the land | Permits from government agencies |
| **MACHINERY AND EQUIPMENT:** | **LAND IMPROVEMENTS:** |
| Sales taxes | Trees and shrubs |
| Frights | Fences |
| Installation | Outdoor lighting |
| Repairs (purchase of used equipment) | Paved parking areas |
| Reconditioning(purchase of used equipment) |  |
| Insurance while in transit |  |
| Assembly |  |
| Modifying for use |  |
| Testing for use |  |
| Permits from government agencies |  |

**Nature of Depreciation**

As we have discussed in earlier chapters, land has an unlimited life and therefore can provide unlimited services. On the other hand, other fixed assets such as equipment, buildings, and land improvements lose their ability, over time, to provide services. As a result, the costs of equipment, buildings, and land improvements should be transferred to expense accounts in a systematic manner during their expected useful lives. This periodic transfer of cost to expense is called ***depreciation***.

The adjusting entry to record depreciation is usually made at the end of each month or at the end of the year. This entry debits *Depreciation Expense* and credits a *contra asset* account entitled *Accumulated Depreciation* or *Allowance for Depreciation*. The use of a contra asset account allows the original cost to remain unchanged in the fixed asset account. Factors that cause a decline in the ability of a fixed asset to provide services may be identified as physical depreciation or functional depreciation. **Physical depreciation** occurs from wear and tear while in use and from the action of the weather. **Functional depreciation** occurs when a fixed asset is no longer able to provide services at the level for which it was intended. For example, a personal computer made in the 1980s would not be able to provide an Internet connection. Such advances in technology during this century have made functional depreciation an increasingly important cause of depreciation.

The term *depreciation* as used in accounting is often misunderstood because the same term is also used in business to mean a decline in the market value of an asset. However, the amount of a fixed asset’s unexpired cost reported in the balance sheet usually does not agree with the amount that could be realized from its sale. Fixed assets are held for use in a business rather than for sale. It is assumed that the business will continue as a going concern. Thus, a decision to dispose of a fixed asset is based mainly on the usefulness of the asset to the business and not on its market value.

Another common misunderstanding is that accounting for depreciation provides cash needed to replace fixed assets as they wear out. This misunderstanding probably occurs because depreciation, unlike most expenses, does not require an outlay of cash in the period in which it is recorded. The cash account is neither increased nor decreased by the periodic entries that transfer the cost of fixed assets to depreciation expense accounts.

**2.2 ACCOUNTING FOR DEPRECIATION**

 Three factors are considered in determining the amount of depreciation expense to be recognized each period. These three factors are (a) the fixed asset’s initial cost, (b) its expected useful life, and (c) its estimated value at the end of its useful life. This third factor is called the **residual value**, **scrap value**, **salvage value**, or **trade in value**.

***Cost-*** is the net purchase price plus all reasonable and necessary expenditures to get the asset in place and ready for use.

***Residual value-*** also known as *salvage value*, disposal value, scrape value, or trade-in value represents the estimated market value of the asset at the time of its retirement.

***Depreciable cost*** *-* represents the difference between the asset cost and its estimated residual value. For example, an item of equipment that costs Br. 5000 and has a residual value of Br. 500 would have a depreciable cost of Br. 4500, (Br. 5000 - Br. 500). The depreciable costs must be allocated over the estimated economic life of the asset.

***Estimated economic (useful) life-*** the estimated economic life of an asset is the total number of service units expected from the asset. Service units may be measured in terms of years the asset is expected to be used, units expected to be produced, miles or kilometers expected to be driven, or similar measures. In determining the estimated useful life of an asset, the accountant should consider all relevant information, including (1) past experience with similar repair assets, (2) the asset’s present condition, (3) the company’s repairs and maintenance policy, (4) current technological and industry trends, and (5) local conditions such as whether.

It is not necessarily that an enterprise uses a single method of computing depreciation for all classes of its depreciable assets. The methods used in the *accounts and financial statements* may also differ from the methods used in determining *income and property taxes*. The four method used most often are straight line, units of production, double-declining balance, and sum-of- the years-digits method.

**2.2.1 Straight-Line Depreciation**

When this method is used to allocate depreciation, the depreciable cost of the asset is spread evenly (uniformly) over the useful life of an asset. The straight-line method is based on the assumption that depreciation depends only on the passage of time. The depreciation expense for each period is computed by dividing the depreciable cost by the number of accounting periods in the asset’s estimated useful life. The depreciation expense to be reported is the same in each year. The following illustration will help us to understand the Straight-Line method of computing depreciation.

***Illustration - 2***

Suppose, for example, a business enterprise acquires a new computer (office equipment) at a cost of Birr 6,000. It is estimated that the computer has an estimated residual value of Birr 1000 at the end of its estimated useful life of 4 years. The yearly (annual) depreciation would be Birr 1250 computed as follows:

 Annual depreciation = Cost - Salvage value

 Estimated useful life

 = $\frac{Birr 6,000 – Birr 1,000}{4 years}$= Birr 1,250

The depreciation to be reported for each of the four years would be as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Cost** | **Yearly Depreciation** | **Accumulated Depreciation** | **Carrying value (Book Value)** |
| Beg. of first year | Br. 6000 | - | -` | Br. 6,000.00 |
| End of 1 year | 6000 | Br. 1250.00 | Br. 1250.00 | 4750.00 |
| End of 2 year | 6000 | 1250.00 | 2500.00 | 3500.00 |
| End of 3 year | 6000 | 1250.00 | 3750.00 | 2250.00 |
| End of 4 year | 6000 | 1250.00 | 5000.00 | 1000.00 |

***NB****. There are three important points to note from the depreciation schedule for the straight-line depreciation method. First, the depreciation is the same each year. Second, the accumulated depreciation increases uniformly. Third, the carrying (Book) value decrease uniformly until it reaches the estimated residual value.*

**2.2.2 Declining Balance Method (DBM)**

This method of depreciation results in relatively large amount of depreciation in the early years of an assets life and smaller amounts in later years. This method is based on the assumption of the passage of time. Since most kinds of plant assets are most efficient when new, and so they provide more and better service in the early years of useful life. It is consistent with the matching rule to allocate more depreciation to the early years than to later years if the benefits or services received in the early years are greater.

The declining-balance method is the most common accelerated method of depreciation. Under this method depreciation is computed by applying a fixed rate to the book value of the asset, resulting in higher depreciation charges during the early years of the asset’s life. Though any fixed rate might be used under the method, the most common rate is a percentage equal to twice the straight-line percentage. When twice the straight-line rate is used, the method is usually called the ***double-declining balance method (DDBM)***.

The ***declining-balance method*** provides for a declining periodic expense over the estimated useful life of the asset. To apply this method, the annual straight-line depreciation rate is doubled. For example, the declining-balance rate for an asset with an estimated life of 5 years is 40%, which is double the straight-line rate of 20% (100%/5). For the first year of use, the cost of the asset is multiplied by the declining balance rate. After the first year, the declining ***book value*** (cost minus accumulated depreciation) of the asset is multiplied by this rate. To illustrate, the annual declining balance depreciation for an asset with an estimated 5-year life and a cost of $24,000 is shown below.



You should note that when the declining-balance method is used, the estimated residual value is *not* considered in determining the depreciation rate. It is also ignored in computing the periodic depreciation. However, the asset should not be depreciated below its estimated residual value. In the above example, the estimated residual value was $2,000. Therefore, the depreciation for the fifth year is $1,110.40 ($3,110.40 - $2,000.00) instead of $1,244.16 (40% \* $3,110.40).

In the example above, we assumed that the first use of the asset occurred at the beginning of the fiscal year. This is normally not the case in practice, however, and depreciation for the first partial year of use must be computed. For example, assume that the asset above was in service at the end of the *third* month of the fiscal year. In this case, only a portion (9/12) of the first full year’s depreciation of $9,600 is allocated to the first fiscal year. Thus, depreciation of $7,200 (9/12 \* $9,600) is allocated to the first partial year of use. The depreciation for the second fiscal year would then be $6,720 [40% \* ($24,000 - $7,200)].

**2.2.3 Units of Production/Activity Method**

How would you depreciate a fixed asset when its service is related to use rather than time? When the amount of use of a fixed asset varies from year to year, the units-of-production method is more appropriate than the straight-line method. In such cases, the units-of-production method better matches the depreciation expense with the related revenue.

The ***units-of-production method*** provides for the same amount of depreciation expense for each unit produced or each unit of capacity used by the asset. To apply this method, the useful life of the asset is expressed in terms of units of productive capacity such as hours or miles. The total depreciation expense for each accounting period is then determined by multiplying the unit depreciation by the number of units produced or used during the period. If we assume that the office equipment from the previous illustration has an estimated useful life of 10,000 hours, the depreciation cost per hour would be determined as follows:

$$Hourly depreciation=\frac{cost-salvage value}{Estimated units of useful life}= \frac{6,000-1,000}{10,000 operating hours}=0.50 Birr $$

If we assume that the use of the equipment was 2,800 hours for the first year, 3,600 hours for the second, 2,400 hours for the third, and 1,200 hours for the fourth, the depreciation schedule for the office equipment would appear as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Cost** | **Hours** | **Depr. Per Hour** | **Yearly Depr.** | **Accum.****Depr.** | **Carrying value (Book value)** |
| Beg. of theFirst year | Br. 6,000 | - | Br. 0.50 | - | - | Br. 6,000 |
| End of 1 year | 6,000 | 2,800 | 0.50 | Br. 1,400 | Br. 1,400 | 4,600 |
| End of 2 year | 6,000 | 3,600 | 0.50 | 1,800 | 3,200 | 2,800 |
| End of 3 year | 6,000 | 2,400 | 0.50 | 1,200 | 4,400 | 1,600 |
| End of 4 year | 6,000 | 1,200 | 0.50 | 600 | 5,000 | 1,000 |

Under the production method, there is a direct relation between the amounts of depreciation each year and the units of output or use. Also, the accumulated depreciation increases each year indirect relation to units of output or use. Finally, the carrying amount decreases each year in direct relation to units of output or use until it reaches the estimated residual value.

Under the production method, the units of output or use that is used to measure estimated useful life for each asset should be appropriate for that asset. For example, for one machine number of units produced may be an appropriate measure, for another number of hours may be a better measure. The production method should be used only when the output of an asset over its useful life can be estimated with reasonable accuracy.

**2.2.4 The Sum of the Years Digits Method (SYDM)**

Like the declining balance method, the sum of the years’ digits method provides a higher amount of periodic depreciation expense in the earlier use of the asset's life and decline depreciation expense thereafter because a successively smaller fraction is applied each year to the depreciable cost of the asset. Under this method, first we must determine the denominator of the fraction, which is the sum of the digits representing the years of life. While computing depreciation, the denominator of the fraction is unchanged and would remain the same. On the other hand the numerator of the fraction, decreases year by year (4/10, 3/10/2/10/1/10). At the end of the asset’s useful life, the balance remaining should be equal to the salvage value. For example, for a plant asset with an estimated life of 4 years, the denominator of the fraction is 4+3+2+1 = 10. The method is illustrated by the following depreciation schedule for an asset with an assumed cost of Br.16, 000, residual value of Br.1, 000 and life of 5 years:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **Cost less residual value** | **Rate** | **Depreciation for the year** | **Accumulated Depreciation-end of year** | **Book Value – end of year** |
| 1 |  Br 15,000 | 5/15 | 5,000 | Br. 5,000 | Br. 11,000 |
| 2 | 15,000 | 4/15 | 4,000 | 9,000 | 7,000 |
| 3 | 15,000 | 3/15 | 3,000 | 12,000 | 4,000 |
| 4 | 15,000 | 2/15 | 2,000 | 14,000 | 2,000 |
| 5 | 15,000 | 1/15 | 1,000 | 15,000 | 1,000 |

**NB**. The above illustration for the sum of year’s digit method is based on the assumption that the first use of the asset coincides with the beginning of the fiscal period. When the first use of the asset does not coincide with the beginning of a fiscal year, it is necessary to allocate each full year’s depreciation b/n the two fiscal years benefited. Assuming that the asset in the example was placed in service after three months of the fiscal year had been elapsed, the depreciation for that fiscal year would be Br. 3,750 (9/12 \* 5/15 \* Br. 15,000). The depreciation for the second year would be Br. 4,250, computed as follows:

 3/12 \* 5/15 \* Br. 15,000 ……………………….. Br. 1,250

 9/12 \* 4/15 \* Br. 15,000 ……………………….. Br. 3.000

Total, second fiscal year ……………………………... Br. 4,250

**Comparing Depreciation Methods**

The straight-line depreciation provides a uniform or equal depreciation charges to expense throughout the service life of the asset. The production method of depreciation provides for periodic charges to depreciation expense that may vary considerably, depending upon the amount of usage of the asset. The production method does not generate a regular pattern because of the random fluctuation of the deprecation from year to year.

The major limitation of the production method is that it is not appropriate in situation in which depreciation is a function of time instead of activity. Another problem in using the production method is that an estimate of units of output or service hours received is often difficult to determine.

Both the declining balance and the sum of the years digits methods are referred to as accelerated depreciation methods, because they provides (report) relatively higher depreciation expense in the earlier uses of the life of the asset and a gradually declining periodic expense thereafter. The main justification for this approach is that more depreciation should be charged in earlier years because the asset suffers its greatest loss of services in those years.Accelerated depreciation method also recognizes that changing technologies make some equipment lose their capacity to yield services rapidly. Thus, it is appropriate to allocate more to depreciation in the early years, than in later years.

Another argument in favor of an accelerated method is that repair (maintenance) expense is likely to be greater in later years than in early years. Thus, the reduced amounts of depreciation reported in later years of the asset’s life are offset to some extent by increased repair (maintenance) expense.

**Depreciation methods for Income Tax**

It is not necessary that a business use a single method of computing depreciation for all its depreciable assets. The methods used in the *accounts and financial statements* may also differ from the methods used in determining *income taxes and property taxes*. **The Ethiopian Income Tax Proclamation number 286/2002** specifically states the method to be followed in the determination of depreciation expense of fixed assets of the business. This expense is part of deductible business expense from the total income of the business to determine taxable income. These methods are stated bellow:

1. In the determination of taxable business income, the owner of the business assets may deduct depreciation for business assets.
2. Fine art, antiques, jewelry, trading stock and other business assets not subject to wear and tear and obsolescence shall not be depreciated.
3. The acquisition or construction cost, and the cost of improvement, renewal and reconstruction, of buildings and constructions shall be depreciated individually on a straight-line basis at five per cent (5%).
4. The acquisition or construction cost, and the cost of improvement, renewal and reconstruction, of intangible assets shall be depreciated individually on a straight-line basis at ten percent (10%).
5. The following two categories of business assets shall be depreciated according to a pooling system at the following rates:

(a) Computers, information systems, softwareproducts and data storage equipment: twenty-five (25%).

(b) All other business assets: twenty percent (20%).

1. The depreciation base shall be the book value of the category as recorded in the opening balance sheet of the tax period:

(a) increased by the cost of assets acquired or created and the cost of improvement, renewal and reconstruction of assets in the category during the -tax period.

(b) decreased by the sales price of assets disposed of and the compensation received for the loss of assets due to natural calamities or other involuntary conversion during the tax period.

1. If the depreciation base is a negative amount, that amount shall be added to taxable profit and the depreciation base shall become zero.
2. If the depreciation base does not exceed Birr 1,000 the entire depreciation base shall be a deductible business expense.
3. If a revaluation of business assets takes place, no depreciation shall be allowed for the amount of the revaluation.
4. In determination of taxable business income a deduction is permitted in respect of each category of business assets for the maintenance and improvement expenses of business assets belonging to that category for the actual amount of the expenses, but not in excess of twenty percent (20%) of the depreciation base of the category at the end of the year. Any actual expenses exceeding this twenty percent (20%) shall increase the depreciation base of that category.

**Revising Depreciation Estimates**

Revising the estimates of the residual value and the useful life is normal. When these estimates are revised, they are used to determine the depreciation expense in future periods. They do not affect the amounts of depreciation expense recorded in earlier years.

To illustrate, assume that a fixed asset purchased for $130,000 was originally estimated to have a useful life of 30 years and a residual value of $10,000. The asset has been depreciated at $4,000 per year [($130,000 - $10,000) ÷30 years] for 10 years by the straight-line method. At the end of ten years, the asset’s book value (depreciated cost) is $90,000, determined as follows:

Asset cost ……………………………………………………………….. $130,000

Less accumulated depreciation ($4,000 per year \* 10 years)………………40,000

Book value (depreciated cost), end of tenth year …………………………$ 90,000

During the eleventh year, it is estimated that the remaining useful life is 25 years (instead of 20) and that the residual value is $5,000 (instead of $10,000). The depreciation expense for each of remaining 25 years is $3,400, computed as follows:

Book value (depreciated cost), end of tenth year…………………………… $90,000

Less revised estimated residual value ……………………………………… 5,000

Revised remaining depreciable cost …………………………………………$85,000

Remaining years ……………………………………………………………… ÷ 25

Revised annual depreciation expense ………………………………………..$ 3,400

**Composite Depreciation Methods**

Many business enterprises find it means to account for depreciation of certain kinds of plant assets on a composite or group basis, to minimize the record keeping for individual assets. Composite or group depreciation is a process of averaging the economic lives of a number of plant assets and computing depreciation on the entire class of assets as if it were an operating unit. The term composite generally refers to a collection of somewhat dissimilar plant assets; the term group usually refers to a collection of similar assets. The procedures for the computation of periodic depreciation are essentially the same in either case.

Several methods may be used to develop a composite or group depreciation rate to be applied to the total cost of a group of plant assets. The computation of a straight-line composite depreciation rate for a group of machines owned by XYZ Company is illustrated as follows:

**XYZ Company**

**Computation of Straight-Line Composite Depreciation Rate for Machinery**

**Machine Cost Net Residual Value Deprn. Est. Life Annual Deprn.**

 A Br 60,000 - Br 60,000 5 Br 12,000

 B 100,000 12,000 88,000 8 11,000

 C 150,000 10,000 140,000 10 14,000

 D 190,000 10,000 180,000 12 15,000

**Total Br 500,000 Br 32,000 Br 468,000 Br 52,000**

Composite Depreciation Rate based on Cost: Br 52,000 / 500,000 =**10.4%**

Composite Economic Life of Machines: Br 468,000 / Br 52,000 = **9 Years.**

The composite depreciation rate is 10.4%, and the composite rate to the cost of $ 5,00,000 will reduce the composite net residual value of the machines to $ 32,000 in exactly 9 years [Br 5,000,000 – (52,000 X 9) = Br 32,000].

Once the composite depreciation rate is computed, it is continued in use until a material change occurs in the composition of plant assets or in the estimate of their economic lives. The assumption underlying the use of composite depreciation methods are (1) plant assets are regularly retired near the end of their economic lives (2) retired plant assets are regularly replaced with similar assets, and (3) proceeds on retirement are approximately equal to the net residual value for the computation of the composite depreciation rate. If the assets are not replaced, for example, the use of 10.4% rate computed above eventually would result in the recording of excessive depreciation.

In the determination of yearly depreciation, the 10.4% rate is applied to the balance of the Machinery ledger account at the beginning of the year, which balance excludes the original cost of all machines retired prior to the beginning of the year. Thus, for each of the first five years, annual depreciation is Br 52,000; and in the sixth year (assuming machine “**A**” was replaced at the end of the fifth year with a similar machine costing Br 90,000), depreciation would be Br 55,120 [Br 5,000,000 – Br 60,000 + Br 90,000) \* 10.4% = Br 55, 120]. The composite depreciation rate is not revised when plant assets are replaced with comparable assets, and the asset group should not be depreciated below net residual value at any time.

When composite depreciation procedures are employed, a record is not maintained for accumulated depreciated or individual plant assets. When an asset is retired from use or sold, a journal entry is required to remove the original cost from the plant asset account, and any difference between original cost and the proceeds received is debited to Accumulated depreciation; a gain or loss is not recognized because gains or losses are assumed to offset over time. As for example: If machine were sold at the end of the fourth year for Br 15,000, the journal entry to record the sale would be as follows:

Cash A/c ………………………………………… 15,000

Accumulated Depreciation of Machinery………… 45,000

 To Machinery Account…………………. 60,000

To record sale of machine, XYZ Company depreciation method is used; therefore, no gain or loss is recognized.

The primary advantage of the composite depreciation method is that the averaging procedure may obscure significant variations from average. The accuracy of the straight line composite depreciation rate may be verified by re-computing depreciation on the straight line basis for individual plant assets. Any significant discrepancies between the two results require a change in the composite depreciation rate.

The advantages claimed for the composite method are simplicity, convenience, and a reduction in the amount of detail involved in plant asset records and depreciation computations. The availability of computers has reduced the force of this argument. In many cases unit plant asset records are now feasible, although composite methods previously were considered a necessity.

The requisites for the successful operation of composite depreciation procedures are that there are a large number of homogeneous plant assets, of relatively small individual value, with similar economic lives. Telephone and Electricity transmission poles, underground cables, railroad tracks, and hotel furniture are examples of plant assets for which composite depreciation methods may give satisfactory results.

**2.3 CAPITAL AND REVENUE EXPENDITURES**

The costs of acquiring fixed assets, adding to a fixed asset, improving a fixed asset, or extending a fixed asset’s useful life are called ***capital expenditures***. Such expenditures are recorded by either debiting the asset account or its related accumulated depreciation account. Costs that benefit only the current period or costs incurred for normal maintenance and repairs are called ***revenue expenditures***. Such expenditures are debited to expense accounts. For example, the cost of replacing spark plugs in an automobile or the cost of repainting a building should be debited to an expense account.

To properly match revenues and expenses, it is important to distinguish between capital and revenue expenditures. Capital expenditures will affect the depreciation expense of more than one period, while revenue expenditures will affect the expenses of only the current period.

**Capital Expenditure**

**(a) Addition to Plant Assets**

Expenditures for additions to existing plant assets would be debited to plant asset accounts. The costs of additions would be depreciated over the estimated useful life of the additions. As for example, the costs of adding an air conditioning system to a building or of addition of a wing to a building would be treated as capital expenditures.

**(b) Betterments**

Expenditures that increase operating efficiency or capacity for the remaining useful life of a plant asset are called betterments. Such expenditures would be added to the plant asset account. As for example, if the power unit attached to a machine is replaced by one of the greater capacity, the cost would be debited to the plant asset account. Also, the cost and the accumulated depreciation related to the old power unit would be removed from the accounts. The cost of the new power unit would be depreciated over its estimated useful life.

**(c) Extra Ordinary Repairs**

Expenditures that increase the useful life of an asset beyond the original estimate are called extraordinary repairs. They should be debited to the appropriate accumulated depreciation account, however, rather than to asset account.

In such circumstances, the extra ordinary repairs may be said to restore or “make good” a portion of the depreciation accumulated in prior years. In addition, the periodic depreciation for future periods would be re-determined on the basis of the revised book value of the asset and the revised estimate of the remaining useful life.

**Revenue Expenditures**

Expenditures for ordinary maintenance and repairs of a recurring nature should be classified as revenue expenditures and debited to expenses accounts. For example, the costs of replacing spark plugs in the automobile or the cost of repainting a building should be debited to proper expenses accounts.

Small expenditures are usually treated as repair expense, even though they may have the characteristics of capital expenditure

**Stages of Acquiring Fixed Assets**

The costs incurred for fixed assets can be classified into four stages: preliminary, pre-acquisition, acquisition or construction, and in-service. These stages are illustrated below.



The *preliminary stage* occurs *before* management believes acquiring a fixed asset is probable. During this stage, a company may conduct feasibility studies, marketing studies, and financial analyses to determine the viability of a fixed asset acquisition. These costs are not associated with a particular fixed asset, so must be treated as revenue expenditures.At the *pre-acquisition stage*, acquiring the fixed asset has become probable, but has not yet occurred. Costs that are incurred during this stage, such as surveys, zoning, and engineering studies, can be associated with a specific fixed asset and should be treated as a capital expenditure. As we stated previously, capital expenditures are the costs of acquiring, constructing, adding, or replacing fixed assets.

During the *acquisition* or *construction stage*, the acquisition has occurred or construction has begun, but the fixed asset is not yet ready for use. Costs directly identified with the fixed asset during this stage should be capitalized in the fixed asset account or in a construction in progress account. General and administrative costs should *not* be allocated to fixed asset acquisition or construction for capitalization.

These costs are debited to the appropriate general and administrative expense account. When the fixed asset is ready for use, the capitalized costs should be transferred from construction in progress to the related fixed asset account. During the *in-service stage*, the fixed asset is complete and ready for use. During this stage, the fixed asset should be depreciated as described in the previous section. In addition, normal, recurring, or periodic repairs and maintenance activities related to fixed assets during this stage should be charged to maintenance expense for the period. Costs incurred to either acquire additional components of fixed assets or replace existing components of fixed assets should be capitalized, as described in the next section. Exhibit 2 summarizes the accounting for capital and revenue expenditures for the four stages of acquiring fixed assets.

**Exhibit 2 Capital and Revenue Expenditures**



**2.4 DISPOSAL OF FIXED ASSETS**

Fixed assets that are no longer useful may be discarded, sold, or traded for other fixed assets. The details of the entry to record a disposal will vary. In all cases, however, the book value of the asset must be removed from the accounts. The entry for this purpose debits the asset’s accumulated depreciation account for its balance on the date of disposal and credits the asset account for the cost of the asset.

A fixed asset should not be removed from the accounts only because it has been fully depreciated. If the asset is still used by the business, the cost and accumulated depreciation should remain in the ledger. This maintains accountability for the asset in the ledger. If the book value of the asset was removed from the ledger, the accounts would contain no evidence of the continued existence of the asset. In addition, the cost and the accumulated depreciation data on such assets are often needed for property tax and income tax reports.

 **[A] Discarding Fixed Assets**

When fixed assets are no longer useful to the business and have no residual or market value, they are discarded. To illustrate, assume that an item of equipment acquired at a cost of $25,000 is fully depreciated at December 31, the end of the preceding fiscal year. On February 14, the equipment is discarded. The entry to record this is as follows:



If an asset has not been fully depreciated, depreciation should be recorded prior to removing it from service and from the accounting records. To illustrate, assume that equipment costing $6,000 is depreciated at an annual straight-line rate of 10%. In addition, assume that on December 31 of the preceding fiscal year, the accumulated depreciation balance, after adjusting entries, is $4,750. Finally, assume that the asset is removed from service on the following March 24. The entry to record the depreciation for the three months of the current period prior to the asset’s removal from service is as follows:



The discarding of the equipment is then recorded by the following entry:



The loss of $1,100 is recorded because the balance of the accumulated depreciation account ($4,900) is less than the balance in the equipment account ($6,000). Losses on the discarding of fixed assets are non-operating items and are normally reported in the Other Expense section of the income statement.

**[B] Selling Fixed Assets**

The entry to record the sale of a fixed asset is similar to the entries illustrated above, except that the cash or other asset received must also be recorded. If the selling price is more than the book value of the asset, the transaction results in a gain. If the selling price is less than the book value, there is a loss.

To illustrate, assume that equipment is acquired at a cost of $10,000 and is depreciated at an annual straight-line rate of 10%. The equipment is sold for cash on October 12 of the eighth year of its use. The balance of the accumulated depreciation account as of the preceding December 31 is $7,000. The entry to update the depreciation for the nine months of the current year is as follows:



After the current depreciation is recorded, the book value of the asset is $2,250 ($10,000 - $7,750). The entries to record the sale, assuming three different selling prices, are as follows:

**Sold at book value, for $2,250. No gain or loss.**



**Sold below book value, for $1,000. Loss of $1,250.**



**Sold above book value, for $2,800. Gain of $550.**



 **[C] Exchanging Similar Fixed Assets**

Old equipment is often traded in for new equipment having a similar use. In such cases, the seller allows the buyer an amount for the old equipment traded in. This amount, called the ***trade-in allowance***, may be either greater or less than the book value of the old equipment. The remaining balance—the amount owed—is either paid in cash or recorded as a liability. It is normally called ***boot***, which is its tax name.

The basic accounting for exchanges of plant assets is similar to accounting for sales of plant assets for cash. If the trade-in allowance received is greater than the carrying value of the assets surrendered, there has been a gain. If the trade-in allowance is less than the carrying value, there has been a loss.

There are special rules for recognizing these gains and losses, depending on the nature of the assets exchanged.

|  |  |  |
| --- | --- | --- |
| **Exchange** | **Losses Recognized** | **Gains Recognized** |
| ***For Financial Reporting Purposes:**** ***Of Similar Assets***
* ***Of Dissimilar Assets***
 | YesYes | NoYes |
| ***For Income Tax Purposes:**** ***Of Similar Assets***
* ***Of Dissimilar Assets***
 | NoYes | NoYes |

Both Gains and Losses are recognized when a company exchanges dissimilar assets. Assets are dissimilar when they perform different functions; assets are similar when they perform the same function.

For financial reporting purposes, gains on exchanges of similar assets are not recognized because the earning lives of the asset surrendered are not considered to be completed.

When a company trades-in an older machine on a newer machine of the same type, the economic substance of the transaction is the same as that of a major renovation and upgrading of the older machine.

Accounting for exchange of similar assets is complicated by the fact that neither gains nor losses are recognized for income tax purposes.

 **i. Gains on Exchanges**

Gains on exchanges of similar fixed assets are not recognized for financial reporting purposes. This is based on the theory that revenue occurs from the production and sale of goods produced by fixed assets and not from the exchange of similar fixed assets. When the trade-in allowance exceeds the book value of an asset traded in and no gain is recognized, the cost recorded for the new asset can be determined in either of two ways:

Cost of new asset = List price of new asset - Unrecognized gain

*or*

 Cost of new asset = Cash given (or liability assumed) - Book value of old asset

To illustrate, assume the following exchange:

*Similar equipment acquired (new):*

List price of new equipment . . . . . . . . . . . . . . . . . . . . . . $5,000

Trade-in allowance on old equipment . . . . . . . . . . . . . . . 1,100

Cash paid at June 19, date of exchange . . . . . . . . . . . . . . $3,900

*Equipment traded in (old):*

Cost of old equipment . . . . . . . . . . . . . . . . . . . . . . . . . . . $4,000

Accumulated depreciation at date of exchange . . . . . . . . 3,200

Book value at June 19, date of exchange . . . . . . . . . . . . . $ 800

*Recorded cost of new equipment:*

**Method One:**

List price of new equipment . . . . . . . . . . . . . . . . . . . . . . $5,000

Trade-in allowance . . . . . . . . . . . . . . . . . . . . . $1,100

Book value of old equipment . . . . . . . . . . . . . (800)

Unrecognized gain on exchange . . . . . . . . . . . . . . . . . . . (300)

Cost of new equipment . . . . . . . . . . . . . . . . . . . . . . . . . . **$4,700**

**Method Two:**

Book value of old equipment . . . . . . . . . . . . . . . . . . . . . . $ 800

Cash paid at date of exchange . . . . . . . . . . . . . . . . . . . . . 3,900

Cost of new equipment . . . . . . . . . . . . . . . . . . . . . . . . . . **$4,700**

The entry to record this exchange and the payment of cash is as follows:



Not recognizing the $300 gain ($1,100 trade-in allowance minus $800 book value) at the time of the exchange reduces future depreciation expense. That is, the depreciation expense for the new asset is based on a cost of $4,700 rather than on the list price of $5,000. In effect, the unrecognized gain of $300 reduces the total amount of depreciation taken during the life of the equipment by $300.

 **ii. Losses on Exchanges**

For financial reporting purposes, losses are recognized on exchanges of similar fixed assets if the trade-in allowance is less than the book value of the old equipment. When there is a loss, the cost recorded for the new asset should be the market (list) price. To illustrate, assume the following exchange:

*Similar equipment acquired (new):*

List price of new equipment . . . . . . . . . . . . . . . . . . . . . . $10,000

Trade-in allowance on old equipment . . . . . . . . . . . . . . . 2,000

Cash paid at September 7, date of exchange . . . . . . . . . . $ 8,000

*Equipment traded in (old):*

Cost of old equipment . . . . . . . . . . . . . . . . . . . . . . . . . . . $ 7,000

Accumulated depreciation at date of exchange . . . . . . . . 4,600

Book value at September 7, date of exchange . . . . . . . . . $ 2,400

Trade-in allowance on old equipment . . . . . . . . . . . . . . . 2,000

Loss on exchange . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . $ 400

The entry to record the exchange is as follows:



**2.5LEASING FIXED ASSETS**

You are probably familiar with leases. A *lease* is a contract for the use of an asset for a stated period of time. Leases are frequently used in business. For example, automobiles, computers, medical equipment, buildings, and airplanes are often leased.

The two parties to a lease contract are the lessor and the lessee. The *lessor* is the party who owns the asset. The *lessee* is the party to whom the rights to use the asset are granted by the lessor. The lessee is obligated to make periodic rent payments for the lease term. All leases are classified by the lessee as either capital leases or operating leases.

A ***capital lease*** is accounted for as if the lessee has, in fact, purchased the asset. The lessee debits an asset account for the fair market value of the asset and credits a long-term lease liability account. The asset is then written off as expense (amortized) over the life of the capital lease. The accounting for capital leases and the criteria that a capital lease must satisfy are discussed in more advanced accounting texts.

A lease that is not classified as a capital lease for accounting purposes is classified as an ***operating lease***. The lessee records the payments under an operating lease by debiting *Rent Expense* and crediting *Cash*. Neither future lease obligations nor the future rights to use the leased asset are recognized in the accounts. However, the lessee must disclose future lease commitments in notes to the financial statements.

**2.6INTERNAL CONTROL OF FIXED ASSETS**

Because of their dollar value and long-termnature, it is important to design and apply effective internal controls over fixed assets. Such controls should begin with authorization and approval procedures for the purchase of fixed assets. Controls should also exist to ensure that fixed assets are acquired at the lowest possible costs. One procedure to achieve this objective is to require competitive bids from preapproved vendors.

As soon as a fixed asset is received, it should be inspected and tagged for control purposes and recorded in a subsidiary ledger. This establishes the initial accountability for the asset. Subsidiary ledgers for fixed assets are also useful in determining depreciation expense and recording disposals. Operating data that may be recorded in the subsidiary ledger, such as number of breakdowns, length of time out of service, and cost of repairs, are useful in decidingwhether to replace the asset. A company that maintains a computerized subsidiary ledger may use bar-coded tags, similar to the one on the back of this textbook, so that fixed asset data can be directly scanned into computer records.

Fixed assets should be insured against theft, fire, flooding, or other disasters. They should also be safeguarded from theft, misuse, or other damage. For example, fixed assets that are highly open to theft, such as computers, should be locked or otherwise protected when not in use. For computers, safeguarding also includes climate controls and special fire-extinguishing equipment. Procedures should also exist for training employees to properly operate fixed assets such as equipment andmachinery.

A physical inventory of fixed assets should be taken periodically in order to verify the accuracy of the accounting records. Such an inventory would detect missing, obsolete, or idle fixed assets. In addition, fixed assets should be inspected periodically in order to determine their condition.

Careful control should also be exercised over the disposal of fixed assets. All disposals should be properly authorized and approved. Fully depreciated assets should be retained in the accounting records until disposal has been authorized and they are removed from service.

**2.7NATURAL RESOURCES**

The fixed assets of some businesses include timber, metal ores, minerals, or othernatural resources. As these businesses harvest or mine and then sell these resources, a portion of the cost of acquiring them must be debited to an expense account. This process of transferring the cost of natural resources to an expense account is called ***depletion***. The amount of depletion is determined by multiplying the quantity extracted during the period by the depletion rate. This rate is computed by dividing the cost of the mineral deposit by its estimated size.

Computing depletion is similar to computing units-of-production depreciation. To illustrate, assume that a business paid $400,000 for the mining rights to a mineral deposit estimated at 1,000,000 tons of ore. The depletion rate is $0.40 per ton ($400,000/1,000,000 tons). If 90,000 tons are mined during the year, the periodic depletion is $36,000 (90,000 tons \* $0.40). The entry to record the depletion is shown below.



Like the accumulated depreciation account, Accumulated Depletion is a *contra asset* account. It is reported on the balance sheet as a deduction from the cost of the mineral deposit.

1. **Patents**

Manufacturers may acquire exclusive rights to produce and sell goods with one or more unique features. Such rights are granted by ***patents***, which the federal government issues to inventors. These rights continue in effect for specified years, depending on the low of the land. A business may purchase patent rights from others, or it may obtain patents developed by its own research and development efforts.

The initial cost of a purchased patent, including any related legal fees, is debited to an asset account. This cost is written off, or amortized, over the years of the patent’s expected usefulness. This period of time may be less than the remaining legal life of the patent. The estimated useful life of the patent may also change as technology or consumer tastes change.

The straight-line method is normally used to determine the periodic amortization. When the amortization is recorded, it is debited to an expense account and credited directly to the patents account. A separate contra asset account is usually *not*used for intangible assets.

To illustrate, assume that at the beginning of its fiscal year, a business acquires patent rights for $100,000. The patent had been granted 6 years earlier by the Federal Patent Office. Although the patent will not expire for 14 years, its remaining useful life is estimated as 5 years. The adjusting entry to amortize the patent at the end of the fiscal year is as follows:



Rather than purchase patent rights, a business may incur significant costs in developingpatents through its own research and development efforts. Such *researchand development costs* are usually accounted for as current operating expenses in the period in which they are incurred. Expensing research and development costs is justified because the future benefits from research and development efforts are highly uncertain.

1. **Copyrights and Trademarks**

The exclusive right to publish and sell a literary, artistic, or musical composition is granted by a ***copyright***. Copyrights are issued by the federal government and extend for 70 years beyond the author’s death. The costs of a copyright include all costs of creating the work plus any administrative or legal costs of obtaining the copyright. A copyright that is purchased from another should be recorded at the price paid for it. Copyrights are amortized over their estimated useful lives. For example, **Sony Corporation** states the following amortization policy with respect to its artistic and music intangible assets:

*Intangibles, which mainly consist of artist contracts and music catalogs, are being amortized on a straight-line basis principally over 16 years and 21 years, respectively.*

A ***trademark*** is a name, term, or symbol used to identify a business and its products. For example, the distinctive red-and-white **Coca-Cola** logo is an example of a trademark. Most businesses identify their trademarks with ® in their advertisements and on their products. Under federal law, businesses can protect against others usingtheir trademarks by registering them for 10 years and renewing the registration for 10-year periods thereafter. Like a copyright, the legal costs of registering a trademark with the federal government are recorded as an asset. Thus, even though the Coca-Cola trademarks are extremely valuable, they are not shown on the balance sheet, because the legal costs for establishing these trademarks are immaterial. If, however, a trademark is purchased from another business, the cost of its purchase is recorded as an asset. The cost of a trademark is in most cases considered to have an indefinite useful life. Thus, trademarks are not amortized over a useful life, as are the previously discussed intangible assets. Rather, trademarks should be tested periodically for impaired value. When a trademark is impaired from competitive threats or other circumstances, the trademark should be written down and a loss recognized.

1. **Goodwill**

In business, ***goodwill*** refers to an intangible asset of a business that is created from such favorable factors as location, product quality, reputation, and managerial skill. Goodwill allows a business to earn a rate of return on its investment that is often in excess of the normal rate for other firms in the same business. Generally accepted accounting principles permit goodwill to be recorded in the accounts only if it is objectively determined by a transaction. An example of such a transaction is the purchase of a business at a price in excess of the net assets (assets - liabilities) of the acquired business. The excess is recorded as goodwill and reported as an intangible asset. Unlike patents and copyrights, goodwill is not amortized. However, a loss should be recorded if the business prospects of the acquired firm become significantly impaired. This loss would normally be disclosed in the Other Expense section of the income statement. To illustrate, **Time Warner** recorded one of the largest losses in corporate history (nearly $54 billion) for the write-down of goodwill associated with the AOL and Time Warner merger. The entry is recorded as:



**2.8FINANCIAL REPORTING FOR FIXED ASSETS AND INTANGIBLE ASSETS**

How should fixed assets and intangible assets be reported in the financial statements?The amount of depreciation and amortization expense of a period should be reported separately in the income statement or disclosed in a note. A general description of the method or methods used in computing depreciation should also be reported.

The amount of each major class of fixed assets should be disclosed in the balance sheet or in notes. The related accumulated depreciation should also be disclosed, either by major class or in total. The fixed assets may be shown at their **book value** (cost less accumulated depreciation), which can also be described as their **net** amount. If there are too many classes of fixed assets, a single amount may be presented in the balance sheet, supported by a separate detailed listing. Fixed assets are normally presented under the more descriptive caption of **property, plant,and equipment**.

The cost of mineral rights or ore deposits is normally shown as part of the fixed assets section of the balance sheet. The related accumulated depletion should also be disclosed. In some cases, the mineral rights are shown net of depletion on the face of the balance sheet, accompanied by a note that discloses the amount of the accumulated depletion.

Intangible assets are usually reported in the balance sheet in a separate section immediately following fixed assets. The balance of each major class of intangible assets should be disclosed at an amount net of amortization taken to date. Exhibit 3 is a partial balance sheet that shows the reporting of fixed assets and intangible assets.

**Exhibit 3: Fixed Assets and Intangible Assets in the Balance Sheet**



EXERCISES

1. McCollum Company, a furniture wholesaler, acquired new equipment at a cost of$150,000 at the beginning of the fiscal year. The equipment has an estimated life of 5 years and an estimated residual value of $12,000. Ellen McCollum, the president, has requested information regarding alternative depreciation methods.

**Instructions**

i. Determine the annual depreciation for each of the five years of estimated useful life of the equipment, the accumulated depreciation at the end of each year, and the book value of the equipment at the end of each year by (a) the straight-line method and (b) the declining-balance method (at twice the straight-line rate).

ii. Assume that the equipment was depreciated under the declining-balance method. In the first week of the fifth year, the equipment was traded in for similar equipment priced at $175,000. The trade-in allowance on the old equipment was$10,000, and cash was paid for the balance. Journalize the entry to record the exchange.

1. Immediately after a used truck is acquired, a new motor is installed and the tiresare replaced at a total cost of $5,750. Is this a capital expenditure or a revenueexpenditure?
2. For some of the fixed assets of a business, the balance in Accumulated Depreciationis exactly equal to the cost of the asset. (a) Is it permissible to recordadditional depreciation on the assets if they are still useful to the business? Explain.(b) When should an entry be made to remove the cost and the accumulateddepreciation from the accounts?
3. A company has developed a tract of land into a ski resort. The company has cutthe trees, cleared and graded the land and hills, and constructed ski lifts. (a) Shouldthe tree cutting, land clearing, and grading costs of constructing the ski slopes be debited to the land account? (b) If such costs are debited to Land, should they bedepreciated?
4. Alligator Delivery Company acquired an adjacent lot to construct a new warehouse,paying $35,000 and giving a short-term note for $125,000. Legal fees paidwere $1,100, delinquent taxes assumed were $12,500, and fees paid to remove anold building from the land were $18,000. Materials salvaged from the demolitionof the building were sold for $3,600. A contractor was paid $512,500 to constructa new warehouse. Determine the cost of the land to be reported on the balancesheet.
5. A refrigerator used by a meat processor has a cost of $312,000, an estimated residualvalue of $42,000, and an estimated useful life of 15 years. What is the amountof the annual depreciation computed by the straight-line method?
6. A diesel-powered generator with a cost of $345,000 and estimated residual value of$18,000 is expected to have a useful operating life of 75,000 hours. During July, thegenerator was operated 1,250 hours. Determine the depreciation for the month
7. A backhoe acquired on January 5 at a cost of $84,000 has an estimated useful lifeof 12 years. Assuming that it will have no residual value, determine the depreciationfor each of the first two years (a) by the straight-line method and (b) by thedeclining-balance method, using twice the straight-line rate. Round to the nearestdollar
8. Sandblasting equipment acquired at a cost of $54,000 has an estimated residual valueof $10,800 and an estimated useful life of 12 years. It was placed in service on April1 of the current fiscal year, which ends on December 31. Determine the depreciationfor the current fiscal year and for the following fiscal year by (a) the straight-line method and (b) the declining-balance method, at twice the straight-line rate.
9. A warehouse with a cost of $800,000 has an estimated residual value of $200,000,an estimated useful life of 40 years, and is depreciated by the straight-line method.(a) What is the amount of the annual depreciation? (b) What is the book value atthe end of the twentieth year of use? (c) If at the start of the twenty-first year it isestimated that the remaining life is 25 years and that the residual value is $150,000,what is the depreciation expense for each of the remaining 25 years?
10. Hicks Co. incurred the following costs related to trucks and vans used in operatingits delivery service:

1. Removed a two-way radio from one of the trucks and installed a new radio witha greater range of communication.

2. Overhauled the engine on one of the trucks that had been purchased three years ago.

3. Changed the oil and greased the joints of all the trucks and vans.

4. Installed security systems on four of the newer trucks.

5. Changed the radiator fluid on a truck that had been in service for the past 4 years.

6. Installed a hydraulic lift to a van.

7. Tinted the back and side windows of one of the vans to discourage theft of contents.

8. Repaired a flat tire on one of the vans.

9. Rebuilt the transmission on one of the vans that had been driven 40,000 miles. The van was no longer under warranty.

10. Replaced the trucks’ suspension system with a new suspension system that allows for the delivery of heavier loads.

Classify each of the costs as a capital expenditure or a revenue expenditure. For those costs identified as capital expenditures, classify each as an additional or replacement component.

1. Jacobs Company replaced carpeting throughout its general offices. The old carpetwas removed at a cost of $1,500 on March 15. The book value of the old carpetwas $6,000 on March 15 ($18,000 original cost less $12,000 accumulated depreciation).New carpet was purchased and installed during the last two weeks of Marchfor a total cost of $45,000. The carpet is estimated to have a 15-year useful life.

a. Record the cost of removing the old carpet.

b. Prepare the journal entries necessary for recording the replacement of the old carpet with the new carpet.

c. Record the December 31 adjusting entry for the partial-year depreciation expense for the carpet, assuming that Jacobs uses the straight-line method.

1. Metal recycling equipment acquired on January 3, 2003, at a cost of $240,000, has an estimated useful life of 10 years, an estimated residual value of $15,000, and is depreciated by the straight line method.

a. What was the book value of the equipment at December 31, 2006, the end of the fiscal year?

b. Assuming that the equipment was sold on July 1, 2007, for $135,000, journalize the entries to record (1) depreciation for the six months until the sale date, and (2) the sale of the equipment.

1. Equipment acquired on January 3, 2003, at a cost of $96,000, has an estimated useful life of 6 years and an estimated residual value of $6,000.

a. What was the annual amount of depreciation for the years 2003, 2004, and 2005, using the straight-line method of depreciation?

b. What was the book value of the equipment on January 1, 2006?

c. Assuming that the equipment was sold on January 2, 2006, for $38,000, journalize the entry to record the sale.

d. Assuming that the equipment had been sold on January 2, 2006, for $53,000 instead of $38,000, journalize the entry to record the sale.

1. A printing press priced at $315,000 is acquired by trading in a similar press and payingcash for the difference between the trade-in allowance and the price of the new press.

a. Assuming that the trade-in allowance is $110,000, what is the amount of cash given?

b. Assuming that the book value of the press traded in is $98,750, what is the cost of the new press for financial reporting purposes?

1. On April 1, O’Dell Co. acquired a new truck with a list price of $80,000. O’Dell received a trade-in allowance of $29,000 on an old truck of similar type, paid cash of $11,000, and gave a series of five notes payable for the remainder. The following information about the old truck is obtained from the account in the equipment ledger: cost, $62,500; accumulated depreciation on December 31, the end of the preceding fiscal year, $36,000; annual depreciation, $6,000. Journalize the entries to record (a) the current depreciation of the old truck to the date of trade-in and (b) the transaction on April 1 for financial reporting purposes.
2. On the first day of the fiscal year, a delivery truck with a list price of $55,000 was acquired in exchange for an old delivery truck and $30,000 cash. The old truck hada book value of $28,250 at the date of the exchange.

a. Determine the depreciable cost for financial reporting purposes.

b. Assuming that the book value of the old delivery truck was $24,000, determine the depreciable cost for financial reporting purposes.

1. Discovery Co. acquired mineral rights for $80,000,000. The mineral deposit is estimated at 100,000,000 tons. During the current year, 15,500,000 tons were mined and sold for $16,500,000.

a. Determine the amount of depletion expense for the current year.

b. Journalize the adjusting entry to recognize the depletion expense.

1. Colmey Company acquired patent rights on January 3, 2003, for $472,500. The patent has a useful life equal to its legal life of 15 years. On January 5, 2006, Colmey successfully defended the patent in a lawsuit at a cost of $75,000.

a. Determine the patent amortization expense for the current year ended December 31, 2006.

b. Journalize the adjusting entry to recognize the amortization.

1. Cero Company purchased waterproofing equipment on January 2, 2005, for $214,000. The equipment was expected to have a useful life of 4 years, or 31,250 operating hours, and a residual value of $14,000. The equipment was used for 10,750 hours during 2005, 9,500 hours in 2006, 6,000 hours in 2007, and 5,000 hours in 2008.

**Instructions**

Determine the amount of depreciation expense for the years ended December 31, 2005, 2006, 2007, and 2008, by (a) the straight-line method, (b) the units-of-productionmethod, and (c) the declining-balance method, using twice the straight-line rate.Also determine the total depreciation expense for the four years by each method.

1. Caribou Company purchased tool sharpening equipment on July 1, 2005, for $194,400. The equipment was expected to have a useful life of 3 years, or 22,950 operating hours, and a residual value of $10,800. The equipment was used for 4,650 hours during 2005, 7,500 hours in 2006, 7,350 hours in 2007, and 3,450 hours in 2008.

**Instructions**

Determine the amount of depreciation expense for the years ended December 31, 2005, 2006, 2007, and 2008, by (a) the straight-line method, (b) the units-of-production method, and (c) the declining-balance method, using twice the straight-line rate.

1. The following transactions, adjusting entries, and closing entries were completed by Yellowstone Furniture Co. during a 3-year period. All are related to the use of delivery equipment. The declining-balance method (at twice the straight-line rate) of depreciation is used.

**2005**

Jan. 2 Purchased a used delivery truck for $37,000, paying cash.

 5 Paid $5,000 to replace the engine. The old engine was estimated to have a value of $2,000. The new engine is expected to have a useful life equal to the remaining life of the truck.

 Apr. 7 Paid garage $125 for changing the oil, replacing the oil filter, and tuning the engine on the delivery truck.

Dec. 31 Recorded depreciation on the truck and engine component for the fiscal year. The estimated useful life of the truck and engine is 8 years, with a residual value of $3,000 for the truck.

**2006**

Jan. 1 Purchased a new truck for $80,000, paying cash.

Mar. 13 Paid garage $180 to tune the engine and make other minor repairs on the truck.

Apr. 30 Sold the used truck for $24,500. (Record depreciation to date in 2006 for the truck.)

Dec. 31 Recorded depreciation on the truck. It has an estimated trade-in value of $4,000 and an estimated life of 10 years.

**2007**

July 1 Purchased a new truck for $45,000, paying cash.

Oct. 2 Sold the truck purchased Jan. 1, 2006, for $63,075. (Record depreciation for the year.)

Dec. 31 Recorded depreciation on the remaining truck. It has an estimated residual value of $4,500 and an estimated useful life of 10 years.

 **Instructions:**

Journalize the transactions and the adjusting entries.

1. Data related to the acquisition of timber rights and intangible assets during the current year ended December 31 are as follows:

a. Goodwill in the amount of $29,500,000 was purchased on January 18.

b. Governmental and legal costs of $225,600 were incurred on July 5 in obtaining a patent with an estimated economic life of 8 years. Amortization is to be for one-half year.

c. Timber rights on a tract of land were purchased for $820,000 on April 10. The stand of timber is estimated at 4,000,000 board feet. During the current year, 550,000 board feet of timber were cut.

**Instructions**

1. Determine the amount of the amortization or depletion expense for the current year for each of the foregoing items.

2. Journalize the adjusting entries to record the amortization or depletion expense for each item.