# Chapter 8

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# Reporting and Interpreting Property, Plant, and Equipment

## Classifying Long-lived Assets

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1. Tangible Assets - have physical substance
   a. Land
   b. Fixed Assets
      i. Aka Buildings, fixtures, and equipment
      ii. Aka property, plant, and equipment
2. Intangible assets
      i. Long-lived assets without physical substance that confer specific rights on their owner.
      ii. Patents, copyrights, franchises, licenses, and trademarks

## Fixed Asset Turnover

Measures the sales dollars generated by each dollar of fixed assets used.

$$\text{Fixed Asset Turnover} = \frac{Net\ Sales\ (Operating\ Revenues)}{Average\ Net\ Fixed\ Assets}$$

Acquisition Cost - The net cash equivalent amount paid or to be paid for an asset.

| | |
|---|---|
| Invoice price | $122,000,000 |
| Less: Discount from Boeing | (4,000,000) |
| Net cash invoice price | 118,000,000 |
| Add: Transportation charges paid by Southwest | 400,000 |
| Preparation costs paid by Southwest | 1,600,000 |
| Cost of the aircraft (added to the asset account) | $120,000,000 |

Capitalized interest - Interest expenditures included in the cost of a self-constructed asset.

## Repairs, Maintenance, and Improvements

1. Ordinary repairs and maintenance - expenditures that maintain the productive capacity of the assets during the current accounting period only.

| | Debit | Credit |
|---|---|---|
| a. Maintenance and repairs expense (+E, −SE) | 1,000 | |
| Cash (−A) | | 1,000 |

2. Improvements - expenditures that increase the productive life, operating efficiency, or capacity of the asset.
   a. These capital expenditures are added to the appropriate asset accounts.

| | Debit | Credit |
|---|---|---|
| Flight equipment (+A) | 300 | |
| Cash (−A) | | 300 |

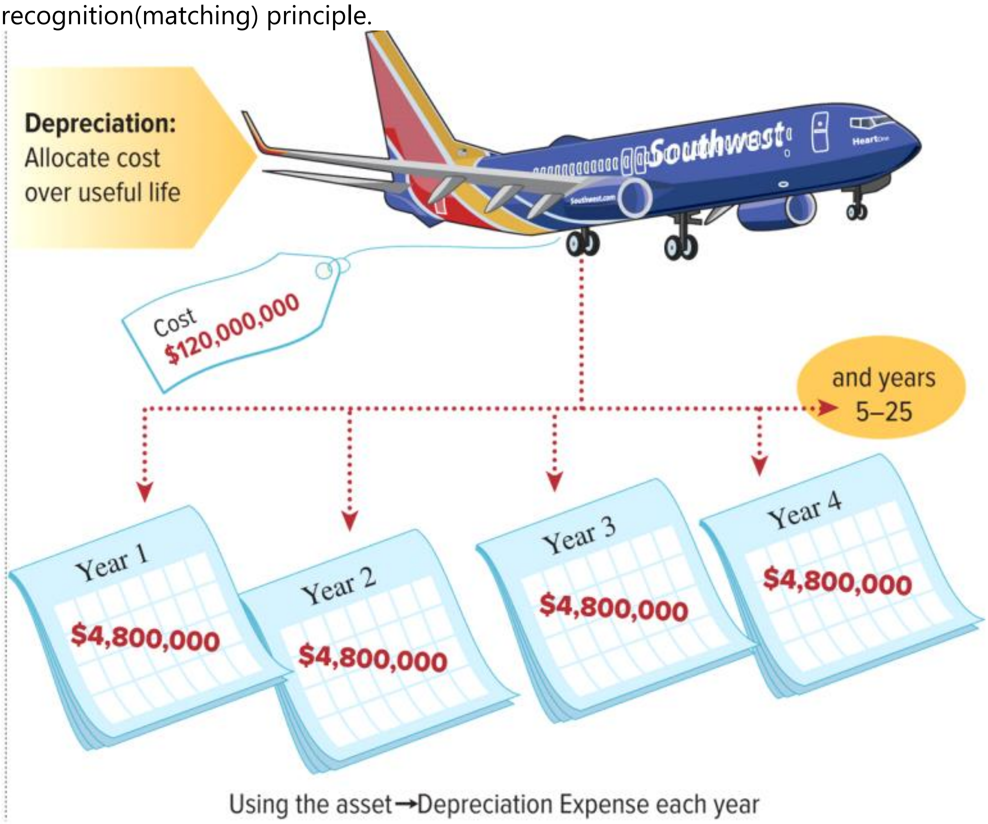
b.

| Assets | | = | Liabilities | + | Stockholders' Equity |
|---|---|---|---|---|---|
| Flight equipment | +300 | | | | |
| Cash | −300 | | | | |

# Use, Impairment, and Disposal of Plant and Equipment

## Depreciation Concepts

Depreciation - the process of allocating the cost of buildings and equipment (but not land) over their productive lives using a systematic and rational method, following the expense recognition(matching) principle.




To record depreciation, an adjusting entry is used at the end of each period.

| | Debit | Credit |
|---|---|---|
| Depreciation expense (+E, −SE) | x,xxx | |
| Accumulated depreciation (+XA, −A) | | x,xxx |

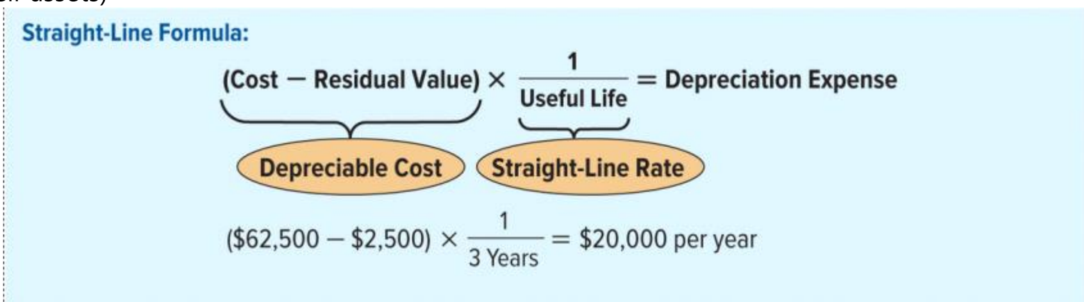
| Assets | | = | Liabilities | + | Stockholders' Equity | |
|---|---|---|---|---|---|---|
| Accumulated depreciation (+XA) | −x,xxx | | | | Depreciation expense (+E) | −x,xxx |

1. Amount of Depreciation each period is recorded as "Depreciation Expense"
2. Amount of depreciation accumulated is reported on the balance sheet as a contra-account, called "Accumulated Depreciation"
3. Net amount on the balance sheet is the net book value / carrying value
   a. Acquisition Cost - Accumulated Depreciation

But how do we calculate depreciation expense, these pieces of info are required:
1. Acquisition cost
2. Estimated useful life to the company
3. Estimated residual (or salvage) value at the end of the asset's useful life to the company

Note: Depreciation Expense is an estimate

## Depreciation Methods

1. Straight-line (the most common, used by more than 98% of companies for many or all of their assets)
   a. 

   b. Companies often create a "depreciation schedule" that shows the computed amount of depreciation expense each year over the entire useful life of the asset.

*Amount for the adjusting entry:* **Reported on the income statement (closed at year-end)**

*Balance in the contra-asset account after the adjusting entry*

*Cost less accumulated depreciation:* **Reported on the balance sheet**

c.

**Straight-Line Method:**

| Year | Computation (Cost − Residual Value) × 1/Useful Life | Depreciation Expense | Accumulated Depreciation | Net Book Value |
|---|---|---|---|---|
| At acquisition | | | | $62,500 |
| 2019 | ($62,500 − $2,500) × 1/3 | $20,000 | $20,000 | 42,500 |
| 2020 | ($62,500 − $2,500) × 1/3 | 20,000 | 40,000 | 22,500 |
| 2021 | ($62,500 − $2,500) × 1/3 | 20,000 | 60,000 | 2,500 |
| | Total | $60,000 | | |

*Equal to estimated residual value at end of useful life*

2. Units-of-production

a.

**Units-of-Production Formula:**

$$\frac{\text{(Cost − Residual Value)}}{\text{Estimated Total Production}} \times \text{Actual Production} = \text{Depreciation Expense}$$

$$\frac{(\$62{,}500 - \$2{,}500)}{100{,}000 \text{ miles}} = \$0.60 \text{ per mile depreciation rate}$$

$$\$0.60 \text{ per mile} \times 30{,}000 \text{ actual miles in 2019} = \underline{\underline{\$18{,}000}} \text{ for 2019}$$

3. Declining-Balance
   a. Applying a rate exceeding the straight-line rate to the asset's net book value over time. Rate is often double the straight-line rate and is termed double-declining-balance rate.

b.

*Accumulated Depreciation increases over time*

**Double-Declining-Balance Formula:**

$$\text{(Cost − Accumulated Depreciation)} \times \frac{2}{\text{Useful Life}} = \text{Depreciation Expense}$$

$$(\$62{,}500 - \$0 \text{ in 2019}) \times \frac{2}{3 \text{ years}} = \$41{,}667 \text{ in the first year}$$

## Intangible Assets

Intangible assets are recorded at historical cost only if they have been purchased
Upon acquisition, managers determine whether the separate intangibles have definite or indefinite lives.

1. Definite Life
   a. Cost is allocated on a straight-line basis each period over its useful life in a process called amortization(摊销) similar to depreciation.
   b. Most companies do not measure a residual value for their intangible assets.

| | Debit | Credit |
|---|---|---|
| Amortization expense (+E, −SE) | 40,000 | |
| Patents (−A) (or Accumulated amortization +XA, −A)[1] | | 40,000 |

c.

| Assets | | = | Liabilities | + | Stockholders' Equity | |
|---|---|---|---|---|---|---|
| Patents (or Accumulated amortization (+XA)) | −40,000 | | | | Amortization expense (+E) | −40,000 |

2. Indefinite Life
   a. Not amortized
   b. Reviewed at least annually for possible impairment of value by first using qualitative factors to determine whether it is more likely than not that the fair value of the indefinite-life intangible is less than its carrying amount.

## Examples of Intangible Assets

**Goodwill** - most frequently reported intangible asset.

1. Favorable reputation that a company has with its customers
2. Internally generated and not reported as an asset
3. Only way to review and report is to purchase another business. Then goodwill would be the purchase price less the fair value of all of its net assets (assets - liabilities)

| Amazon.com's Purchase of Whole Foods Market | In Billions |
|---|---|
| **Purchase price** | **$13.2** |
| − Fair value of assets purchased and liabilities assumed: | |
| Property and equipment | 3.8 |
| Other assets | 1.8 |
| Intangible assets | 2.3 |
| Debt and other liabilities | (3.7) |
| **Net assets, at fair value** | **4.2** |
| **Goodwill** | **$ 9.0** |

**Trademarks 商标** - special name, image or slogan identified with a product or a company, protected by law.

Most of expenditures of developing trademarks are recorded as expenses rather than being capitalized as an intangible asset.

**Copyrights 版权** - exclusive right to publish, use, and sell a literary, musical, or artistic piece for a period not exceeding 70 years after the author's death.

**Technology** - acquiring a domain name and developing graphics are capitalized as intangible asset. For software, any cost during the preliminary concept phase of a software project should be expensed. Once the software project reaches "technology feasibility" - the point at which there is a detailed design and completion of a working model, the direct costs (coding, testing) should be capitalized as an intangible asset.
Depending on the use,

1. Internally
    a. The intangible asset is amortized over a short useful life with the amortization reported as a general expense, on the income statement
2. Sold/leased/marketed
    a. Amortization expense is included as part of the cost of sales.

**Patents 专利** - exclusive right granted by the federal government for a period of 20 years - enables the owner to use, manufacture, and sell both the subject of the patent and the patent itself.
Patents are recorded at their purchase price, or if developed internally, at only their registration and legal costs because GAAP requires the immediate expensing of R&D costs.

**Franchises 特许经营权** - granted by the government or a business for a specified period and purpose.
Usually require an investment by the franchisee, and therefore they should be accounted for as intangible assets.

## Acquisition and Depletion of Natural Resources

Natural Resources are called **wasting assets** because they are **depleted** (physically used up). When natural resources are acquired or developed, they are recorded using the cost principle. As a natural resource is used up, its acquisition cost must be apportioned among the periods in which revenues are earned in conformity with the expense recognition principle.
Depletion - process of allocating the natural resource's cost over the period of its exploitation.

| | **Debit** | **Credit** |
|---|---|---|
| Inventory (+A) | 106,000 | |
| Timber tract (−A) (or Accumulated depletion (+XA, −A)) | | 106,000 |

HW Notes

| | Item | Book Value Dec. 31, 2021 |
|---|---|---|
| *a.* | Patent | $ 68,200 |
| *b.* | Copyright | 25,600 |
| *c.* | Franchise | 13,040 |
| *d.* | License | 6,360 |
| *e.* | Goodwill | 59,000 |
| | Total book value | $ 172,200 |

**3.** Assume that on January 2, 2022, the copyrighted item was impaired in its ability to continue to produce strong revenues. The other intangible assets were not affected. Starn estimated that the copyright would be able to produce future cash flows of $22,700. The fair value of the copyright was determined to be $21,700. Compute the amount, if any, of the impairment loss to be recorded.

**Answer is complete and correct.**

| | |
|---|---|
| Impairment loss | $ 3,900 |

We review long-lived assets for impairment when circumstances indicate the carrying amount of an asset may not be recoverable based on the undiscounted future cash flows of the asset. If the carrying amount of the asset is determined not to be recoverable, a write-down to fair value is recorded. Fair values are determined based on quoted market values, discounted cash flows, or external appraisals, as appropriate.

| | Dollars in Millions |
|---|---|
| Cost of property and equipment (beginning of year) | $40,219 |
| Cost of property and equipment (end of year) | 41,940 |
| Capital expenditures during the year | 2,621 |
| Accumulated depreciation (beginning of year) | 21,490 |
| Accumulated depreciation (end of year) | 22,651 |
| Depreciation expense during the year | 1,953 |
| Cost of property and equipment sold during the year | 900 |
| Accumulated depreciation on property sold | 792 |
| Cash received on property sold | 89 |

**Required:**
**1.** Reconstruct the journal entry for the disposal of property and equipment during the year.
**2.** Compute the amount of property and equipment that United Parcel wrote off as impaired during the year, if any. (Hint: Set up T-accounts.)

**Answer is complete and correct.**

**Complete this question by entering your answers in the tabs below.**

Required 1 | Required 2

Reconstruct the journal entry for the disposal of property and equipment during the year. (If no entry is required for a transaction/event, select "No journal entry required" in the first account field. Enter your answers in millions (i.e., 10,000,000 should be entered as 10).)

| No | Transaction | General Journal | Debit | Credit |
|---|---|---|---|---|
| 1 | a | Cash | 89 | |
| | | Accumulated depreciation | 792 | |
| | | Loss on sale of property and equipment | 19 | |
| | | Property and equipment | | 900 |

< Required 1 | Required 2 >

More Notes: Impaired Loss = book value of asset - fair market value