

# Unit 10 Plant and Equipment

## I. Plant and Equipment Google "Free Business Books" for a library covering many business subjects.

- A. Plant and equipment are assets with a long life. They are used to generate income and not intended for resale.
- B. Included in the cost of these assets are freight, transit insurance, installation, trial run costs, and other costs reasonable and necessary to place said assets in position and condition for use.
- C. The cost of these assets is reported as depreciation expense.

## II. Depreciation (D) Google "Business Book Mall" for material to enhance your career.

- A. The cost of assets are accounted for with depreciation.
- B. Depreciation expense lowers income and equity. Depreciation also lowers the asset section of the balance sheet.
- C. The **depreciable base** of an asset is the amount that may be expensed.
  - 1. Assets are recorded at **cost (C)**.
  - 2. **Residual value (R)**, sometimes called **scrap** or **salvage** value, is the estimated value of the asset at the end of its useful life.
  - 3. **Depreciable base = cost - residual value.**
- D. **Useful life (n)** is an estimate of the amount of service, measured in time or units of production, expected from an asset.
- E. **Accumulated depreciation** of an asset is the sum of past periodic depreciation.
- F. **Book value**, the cost of the asset minus its accumulated depreciation, is reported on the balance sheet.

## III. Depreciation Methods

- A. The useful life of an asset and its residual value affect the annual depreciation expense.
  - 1. A short life will increase depreciation taken in earlier years by eliminating depreciation taken in later years.
  - 2. A low residual value increases the depreciable base.
  - 3. For tax purposes, many companies accept IRS guidelines concerning the useful life of an asset and the manufacturer's estimate concerning residual value.
- B. The IRS allows for either the **(1) proportional** or **(2) accelerated** depreciation of assets.
- C. The **straight-line method** provides a proportional cost recovery of a depreciable asset.

1. 
$$\text{Annual Depreciation} = \frac{1}{\text{Useful Life}} (\text{Cost} - \text{Residual Value})$$

2. The periodic depreciation for a \$50,000 computer with residual value of \$5,000 and a useful life of four years would be calculated as follows:

$$D = \frac{1}{n} (C - RV)$$

$$= \frac{1}{4} (\$50,000 - \$5,000) = \$11,250$$

- D. The **double-declining balance method** accelerates depreciation by allowing annual depreciation of up to twice the straight-line rate. For an asset lasting four years, the maximum rate is  $(2)(1/4) = 2/4 = 50\%$ .
  - 1. This higher rate is applied to the book value of an asset.
  - 2. Depreciation for our \$50,000 computer has been calculated in this chart.
  - 3. Use of this method for assets purchased after 1980 is not allowed for taxes. A similar IRS method may be used as a replacement.

Double-Declining Balance Method				
Year	Book value at the beginning of the year	Rate	Yearly depreciation	Accumulated depreciation
1	\$50,000	x 50%	\$25,000	\$25,000
2	25,000	x 50%	12,500	37,500
3	12,500	x 50%	6,250	43,750
4	6,250		1,250 <sup>1</sup>	45,000

<sup>1</sup>The depreciable base is \$50,000 - \$5,000 = \$45,000.  
 Depreciation Year 4 = \$45,000 - (\$43,750) = \$1,250.

- E. **Units of production method**
  - 1. This method is similar to the straight-line method except useful life is measured in units of production.
  - 2. Our \$50,000 computer will perform 1,000,000 tasks.

$$\text{Depreciation Per Unit} = \frac{\text{Cost} - \text{Residual Value}}{\text{Expected Production}} = \frac{\$50,000 - \$5,000}{1,000,000 \text{ units}} = \$0.045 \text{ per unit}$$

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#### IV. Comparing Depreciation Methods

- A. Yearly depreciation expense is different for each method. This causes net income to differ for each method. For accelerated methods, expenses are higher in the beginning and lower at the end. This causes net income to be lower in the beginning and higher at the end. This is good if you want to delay paying income taxes.
- B. Book value differs each year. For the accelerated method, higher depreciation in the beginning means lower book value. This lowers total assets on the balance sheets.
- C. This lower asset value is offset by lower equity caused by lower income.
- D. In later years, everything is the opposite. At the end of the asset's life, balance sheets for each method are the same.

Comparing Annual Depreciation		
Year	Straight Line	Double-Declining Balance
1	\$11,250	\$25,000
2	11,250	12,500
3	11,250	6,250
4	<u>11,250</u>	<u>1,250</u>
Total	<u>\$45,000</u>	<u>\$45,000</u>

#### V. Revising Depreciation

- A. The useful life and residual value of an asset may change after a period of operation.
- B. This may happen because of excess wear due to adverse environmental conditions, technological obsolescence, or just a poor estimate. When this happens, annual depreciation is changed.
- C. After two years, the total useful life of a \$7,000 computer/cash register is lowered from five years to four years. Residual value remains \$1,000. Revised annual straight-line depreciation would be \$1,800.

Original Depreciation	
Cost	\$7,000
Residual Value	\$1,000
$D = \frac{1}{n}(C - RV)$	
$= \frac{1}{5}(\$7,000 - \$1,000) = \$1,200$	

Book Value After Two Years
Book Value = Cost - Acc. Dep.
$= \$7,000 - 2 \times \$1,200$
$= \$7,000 - \$2,400$
$= \$4,600$

Revised Depreciation
$D = \frac{1}{n}(C - RV)$
$= \frac{1}{2}(\$4,600 - \$1,000)$
$= \$1,800$

#### VI. Partial Depreciation

- A. Assets bought during the accounting period may be depreciated proportionately based on time.
- B. An asset bought on September 1 would be depreciated for only four months or  $4/12 =$  one-third of a year.
  1. Suppose one year's depreciation for this asset with a useful life of five years is \$12,000.
  2. One-third, or \$4,000, would be taken in year one.
  3. Years two through five would have depreciation expense of \$12,000.
  4. Year six would have depreciation expense of two-thirds of \$12,000 or \$8,000.
- C. Partial depreciation of personal property purchased after 1980 is not appropriate for tax purposes. One-half year depreciation is taken in the year of purchase and accelerated depreciation applies thereafter. For real property, the straight-line method applies. Residual value is ignored for all depreciable assets.

#### VII. Group Depreciation

- A. Similar assets are often grouped for the purpose of depreciation.
- B. This is done for convenience.

#### VIII. Gains and Losses on the Disposal of Assets

- A. A long-term asset does not always sell for book value.
  1. Amounts received above book value are reported as gains.
  2. Amounts received below book value are reported as losses.
  3. Resulting gains or losses are not considered part of normal business operations and are reported separately from operating income on the income statement.
- B. Calculating gains and losses
  1. At the end of four years, the \$50,000 computer has a book value of \$5,000.
  2. Selling it for \$8,000 results in a gain of \$3,000.
  3. Selling it for \$4,000 results in a loss of \$1,000.

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