

Chapter 5 Appendix: Methods of Depreciation

There are a number of different methods for calculating yearly depreciation. Carter Consulting Services uses the straight-line method for calculating depreciation on its assets. With this method, an equal amount of depreciation is taken in each year of the asset's expected life.

Other acceptable methods for calculating depreciation include the **declining-balance method**, the **sum-of-the-years'-digits method**, and the **units of output method**. These methods are discussed in detail in Chapter 18. An abbreviated discussion is presented here to supplement your study of depreciation methods.

Declining-Balance Method

Under the declining-balance method, an appropriate percentage, or factor, is multiplied by the book value (cost - accumulated depreciation) of the asset at the beginning of each year to obtain the amount of depreciation expense for that year. In the past the percentage allowable on depreciable property, other than real estate, for income tax purposes was twice the straight-line rate. The straight-line rate for a five-year asset is $1/5$, or 20 percent. Therefore, the *double-declining* rate is $2 \times 20\%$, or 40%. This method is an accelerated method of depreciation because more depreciation is taken in the early years of the asset's life than under the straight-line method.

Sum-of-the-Years'-Digits Method

Another accelerated method of depreciation is the sum-of-the-years'-digits method. This method requires that a fractional part of the depreciable cost of the asset be debited to depreciation expense each year. The denominator (bottom part) of the fraction is always the "sum of the years' digits." This amount is found by adding together the numbers representing the years of the asset's useful life. For example, the digits for a machine expected to have a useful life of five years are 1, 2, 3, 4, and 5. Thus the sum of the years digits is $1 + 2 + 3 + 4 + 5 = 15$. The numerator (top part) of the fraction for any year is the number of years remaining in the useful life of the asset. Thus for the first year the fraction of an asset with a five-year life is $5/15$, for the second year $4/15$, etc. This fraction is multiplied by the cost minus the salvage value of the asset.

Units of Output Method

In some situations, the useful life of an asset is related more directly to units of work performed by the asset than to the passage of time. In such cases, depreciation can be calculated at the same rate for each unit of output. The expense for any time period is determined by multiplying the rate for each unit by the number of units produced. This method of computing depreciation is called the units of output method. For example, assume that a firm purchases a printing press for \$21,000 that is expected to have a useful life of 1,000,000 impressions and a net salvage value of \$1,000 at the end of the useful life. The rate of each impression is \$0.02 $[(\$21,000 - \$1,000) \div 1,000,000]$. If 50,000 impressions are made during a period, the depreciation charge is $50,000 \times \$0.02$, or \$1,000.

The equipment purchased by Carter Consulting Services for \$35,000 has a useful life of five years and no salvage value. One month's depreciation using the straight-line method was \$583. If we assume that the equipment is expected to produce 20,000 units and produced 500 units for the month of December, the depreciation under each of the other methods would be:

- Double-declining-balance method: $(1/5 \times 2 \times \$35,000 \times 1/12) = \$1,167$
- Sum-of-the-years'-digits method: $(5/15 \times \$35,000 \times 1/12) = 972$
- Units of output method: $(\$35,000/20,000 = \$1.75; \$1.75 \times 500) = 875$