# 12. The Double-Declining Balance Method

As one of several "accelerated depreciation" methods, double-declining balance (DDB) results in relatively large amounts of depreciation in early years of asset life and smaller amounts in later years. This method can be justified if the quality of service produced by an asset declines over time, or if repair and maintenance costs will rise over time to offset the declining depreciation amount. With this method, a fixed percentage of the straight-line rate (i.e., 200% or "double") is multiplied times the remaining book value of an asset (as of the beginning of a particular year) to determine depreciation for a particular year. As time passes, book value and annual depreciation decrease.
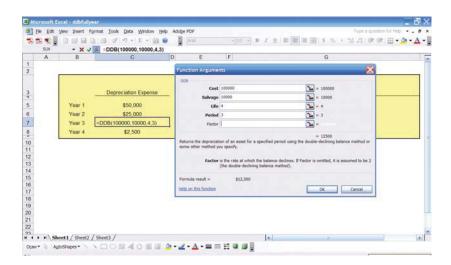
To illustrate, let's again utilize our example of the $100,000 asset, with a four-year life, and $10,000 salvage value. Depreciation for each of the four years would appear as follows:

|        | Depreciation Expense | Accumulated Depreciation at End of Year | Annual Expense Calculation |
|--------|----------------------|------------------------------------------|-----------------------------|
| Year 1 | $50,000              | $50,000                                  | $100,000 X 50%              |
| Year 2 | $25,000              | $75,000                                  | ($100,000 - $50,000) X 50%  |
| Year 3 | $12,500              | $87,500                                  | ($100,000 - $75,000) X 50%  |
| Year 4 | $ 2,500              | $90,000                                  | see discussion below        |

The amounts in the above table deserve additional commentary. Year one is hopefully clear -- expense equals the cost times twice the straight line rate (4 year life = 25% straight-line rate; 25% X 2 = 50% rate). Year two is the 50% rate applied to the remaining balance of the asset as of the beginning of the year; the remaining balance would be the cost minus the accumulated depreciation ($100,000 - $50,000). Year three is just like year two -- 50% times the beginning book value

## 12.1 Spreadsheet Software

DDB is also calculable from built-in depreciation functions. Below is the routine that returns the $12,500 annual depreciation value for Year 3.



## 12.2 Fractional Period Depreciation

Under DDB, fractional years involve a very simple adaptation to the approach presented above. The first partial year will be a fraction of the annual amount, and all subsequent years will be the normal calculation (twice the straight-line rate times the beginning of year book value). If our example asset were purchased on April 1, 20X1, the following calculations result:

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| | Depreciation Expense | Accumulated Depreciation at End of Year | Annual Expense Calculation |
|---|---|---|---|
| Year 1 | $37,500 | $37,500 | $100,000 X 50% X 9/12 |
| Year 2 | $31,250 | $68,750 | ($100,000 - $37,500) X 50% |
| Year 3 | $15,625 | $84,375 | ($100,000 - $68,750) X 50% |
| Year 4 | $ 5,625 | $90,000 | ~~($100,000 - $84,375) X 50%~~ **Limited to depreciable base** |
| Year 5 | $ 0 | Not applicable -- assumed disposed on March 31 | $0 |

## 12.3 Alternatives to DDB

150% and 125% declining balance methods are quite similar to DDB, but the rate is 150% or 125% of the straight-line rate (instead of 200% as with DDB).