

# Selecting a Depreciation Method

After you decide which depreciation method to use, you must also decide how often to calculate the depreciation expense and post it to the general ledger. Calculation and posting can be, for example, monthly or yearly.

ACS provides three methods to calculate depreciation. These formulas are based on Generally Accepted Accounting Procedures (GAAP). However, if these methods do not meet your organization's needs, you can create a custom depreciation method. Here's a description of the three GAAP methods of calculating depreciation along with an example of each.

## Straight Line Depreciation

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Depreciation under this method is a function of time rather than use. This method uses a lump sum derived from a mathematical formula based on the asset's useful life, historical cost, and salvage value.

The following variables are used:

- Historical Cost (H) — the original price or value of the fixed asset at the time of its acquisition
- Salvage Value (S) — the estimated dollar value an asset still holds after its useful life is expired
- Useful Life (U) — the estimated time, expressed in years, that a fixed asset holds its value for an organization. After this period, the asset is usually retired and sold for its salvage value

Straight Line Depreciation uses the following formula:

$$(H - S)/U = \text{Accumulated Depreciation}$$

For example:

You purchased a van for \$18,500. You expect the van to have a useful life of 15 years and a salvage value of \$9,500, and you decide to use the Straight Line Depreciation method.

- Item — Vehicle
- Historical Cost — \$18,500
- Salvage Value — \$9,500
- Useful Life — 15 years

$$(18,500 - 9,500)/15 = 600$$

The accumulated depreciation is \$600. This means that each year, a depreciation of \$600 is applied to the asset.

## Double Declining Balance Depreciation

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The Double Declining Balance Depreciation method uses a percentage rate calculated on an asset's useful life and then the percentage is doubled. This percentage is applied to the asset book value at the beginning of the year, but only until the amount is applied to the salvage value.

At the end of the asset's useful life, the book value depreciates in the amount necessary to bring the book value to its salvage value. Because the accumulated depreciation changes each year, the asset book value reduces each year, causing decreasing depreciation.

The following variables are used:

- Historical Cost (H) — the original price or value of the fixed asset at the time of its acquisition.
- Salvage Value (S) — the estimated dollar value an asset still holds after its useful life has expired.
- Useful Life — the estimated time, expressed in years, that a fixed asset holds useful value for an organization. After this period, the asset is usually retired and sold for its salvage value.
- Accumulated Value (A) — refers to the total, cumulative amount of depreciation expense recorded since the fixed asset was acquired. The purpose is to show how much of the total cost of a fixed asset has depreciated over time.
- Asset Book Value (C) — this is the historical cost less the accumulated depreciation. ( $C = H - A$ )

Double Declining Balance Depreciation uses the following formula:

$$C * (2/U) = \text{Depreciation}$$

For example:

You purchased a video camera for \$850. You expect it to have a useful life of 10 years and a salvage value of \$200. You decide to use the Double Declining Balance Depreciation method.

- Item — Video Camera
- Historical Cost — \$850
- Salvage Value — \$200
- Useful Life — 10 years

#### Year 1

$$C = 850 - 0$$

$$C = 850$$

$$850 * (2/10) = 170$$

The accumulated depreciation for the first year is \$170.

#### Year 2

$$C = 850 - 170$$

$$C = 680$$

$$680 * (2/10) = 136$$

The accumulated depreciation for the second year is \$136.

As illustrated, the amount to depreciate declines each year. The following table shows the amount of depreciation for the camera each year:

Year	Depreciation	Accumulated Depreciation	Asset Book Value
1	\$170.00	\$170.00	\$680.00
2	\$136.00	\$306.00	\$544.00
3	\$108.80	\$414.80	\$435.20
4	\$87.04	\$501.84	\$348.16
5	\$69.63	\$571.47	\$278.53
6	\$55.71	\$627.18	\$222.82

7	\$22.72*	\$650.00	\$200.00
8	\$0	\$650.00	\$200.00
9	\$0	\$650.00	\$200.00
10	\$0	\$650.00	\$200.00

\* The actual amount the formula returns is \$44.56. However, this would return an asset book value of \$482.62, which is less than the salvage value of \$200.00. Once the salvage value is reached, the asset is no longer depreciated.

## Sum of Year's Digits Depreciation

This method uses a percentage rate calculated on fractions where the numerators are based on the number of years of an asset's useful life, and the denominators are constants based upon the total sum of all the numerators added together. Because the denominator remains constant and numerator declines each year, the result is a decreasing depreciation expense.

Sum of Year's Digits Depreciation uses these variables:

- Historical Cost (H) — the original price or value of the fixed asset at the time of its acquisition.
- Salvage Value (S) — the estimated dollar value an asset has after its useful life is expired.
- Useful Life — the estimated time in years that a fixed asset has useful value for an organization. After this period, the asset is usually retired and sold for its salvage value.
- Age (Y) — the age of the asset in years.

**Denominator (N) —  $[(U + 1)/2] * U$**

Sum of the Year's Digits Depreciation uses the following formula:

**$((H - S * (U - Y + 1)) / N = \text{Depreciation})$**

For example:

You buy a new P.A. system for \$10,000. You expect it to have a useful life of 10 years and a salvage value of \$500. You decide to use the Sum of the Year's Digits Depreciation method.

- Item — P.A. System
- Historical Cost — \$10,000
- Salvage Value — \$500
- Useful Life — 10 years

Denominator —  $[(10 + 1)/2] * 10 = 55$

**Year 1**

$((10,000 - 500) * (10 - 1 + 1)) / 55 = \$1727.27$

The depreciation for the first year is \$1727.27.

**Year 2**

$((10,000 - 500) * (10 - 2 + 1)) / 55 = 1554.55$

The depreciation for the second year is \$1554.55.

As illustrated, the amount of depreciation declines each year. The following table shows the amount the P. A. system depreciates each year:

<b>Year</b>	<b>Depreciation</b>	<b>Accumulated Depreciation</b>	<b>Asset Book Value</b>
1	1727.27	1727.27	\$8272.73
2	\$1554.55	\$3281.82	\$6718.18
3	\$1381.82	\$4663.64	\$5336.36
4	\$1209.09	\$5872.73	\$4127.27
5	\$1036.36	\$6909.09	\$3090.91
6	\$863.64	\$7772.73	\$2227.27
7	\$690.91	\$8463.64	\$1536.36
8	\$518.19	\$8981.83	\$1018.17
9	\$345.45	\$9327.28	\$672.72
10	\$172.73	\$9500.01*	\$499.99

\*Totals do not equal salvage value due to rounding. ACS does not allow the final asset book value to equal less than the salvage amount.