Depreciation

What is Depreciation?

- _Depreciation:_ Reduction in the value of an asset over a period of time.

Methods of depreciation

- There are several accounting methods that are used to determine an asset's depreciation expense over the period of its useful life.

  - Straight Line Method

  - Declining Balance Method (DBM)

  - Double Declining Balance Method(DDBM)

Methods of depreciation

Straight-Line Depreciation

It assumes that the value of an asset decreases at a constant rate.

Straight-line depreciation is calculated by dividing the differences of the purchase price and the salvage value by the years of useful life.

$$Annual\ depreciation\ (Dt) = \frac{Purchase\ Price - Salvage\ Value}{Years\ of\ useful\ life}$$

Expression relating Book value and Depreciation is

$$B_t = B_{t-1} - D_t \qquad \text{t is the time period}$$

Or

$$B_t = P - t(D_t)$$

➤ For an asset with an estimated life of n years the depreciation rate by straight line method will be **1/n** .

Straight-Line Depreciation

- A person started a small business and rent an office. He furnished the office with $25,000 worth of office furniture. The useful life of the furniture is 5 years and the salvage value is $5,000. Make a straight-line depreciation schedule showing the depreciation on each year.

Straight-Line Depreciation

Solution:

Annual Depreciation = ($25,000 - $5,000)/5 = $4,000

Year	Value before Depreciation	Depreciation	Value after Depreciation (Book value)
1	$25,000	$4,000	$21,000
2	$21,000	$4,000	$17,000
3	$17,000	$4,000	$13,000
4	$13,000	$4,000	$9,000
5	$9,000	$4,000	$5,000

Straight-Line Depreciation

Example 2: A m/c has a first cost of Rs 3,00,000 & salvage value of Rs 60,000 and a life of 5 years. It is being depreciated according to straight line method. The management is trying to find a replacement at the end of 3 years of its useful life. What market value the management should fetch so that the capital invested in the m/c is fully recovered.

Declining-Balance Method (DBM) Depreciation

This method assumes that an asset decreases in value at a faster rate in the early portion of the service life than in the latter portion of its life.

The depreciation rate (R) is given by

$$R = 1 - [(B_t / P)]^{1/t} \quad \text{(In percentage)}$$

P- initial cost ; B – book value ; t- time period

The book value for the year is given by $B_t = B_{t-1}(1-R)$…. (**use this formula If book value of previous year is given**)

The book value is given by

$$B_t = (1-R)^t P \quad \text{..... (use this formula if initial cost is given)}$$

The depreciation charge for any year t is given by

$$D_t = R(1-R)^{t-1} P$$

Declining-Balance Depreciation

Example 3: An asset costs Rs 5000 now and its salvage value is Rs 1000 with a service life of 5 years. The depreciation rate is 30 % per year. Determine the depreciation charges for 5 years & its book value at the end of the years.

- <u>Solution</u>:
- Do= 0
- D1= RP = 0.3 * 5000 = 1500
- D2= R (1-R)P = 0.3(1-0.3)5000 = 1050
- D3= 735
- D4= 515
- D5= 360

Cont'd

Bo = 5000

B1 = (1-R)P = (1- 0.3)5000 = 3500

B2 = (1-R)^2 * P= (1-0.3)^2 * 5000= 2450

B3= 1715

B4= 1200

B5= 840

Double Declining-Balance Depreciation

Straight-line depreciation uses the same amount of depreciation each year, *while double declining-balance depreciation uses the same rate of depreciation each year.*

Numerical

- A person started a small business and rent an office. He furnished the office with $25,000 worth of office furniture. The useful life of the furniture is 5 years and the salvage value is $5,000. Make a double declining-balance depreciation schedule for the office furniture.

<u>Solution</u>:

- **_Step1:_** find the annual rate of depreciation

Annual rate of depreciation = 2 / years of useful life(n)… in %.

Annual rate of depreciation = 2/5 = 40%

Double Declining-Balance Depreciation

Example 4 :

A person started a small business and rent an office. He furnished the office with $25,000 worth of office furniture. The useful life of the furniture is 5 years and the salvage value is $5,000. Make a double declining-balance depreciation schedule for the office furniture.

Solution:

Annual rate of depreciation = 2/5 = 40%

Year	Value before Depreciation	Depreciation	Value after Depreciation
1	$25,000	$10,000	$15,000
2	$15,000	$6,000	$9,000
3	$9,000	$3,600	$5,400
4	$5,400	$400	$5,000
5	$5,000	$0	$5,000

0.4($25,000) = $10,000

The value of $400 must be adjusted so that the value after depreciation does not go below the salvage value.

Depreciation

Double Declining-Balance Depreciation

Example :An asset was purchased 10 years ago for Rs 5,00,000. It is depreciated according to DDB for an estimated life of 20 years. The salvage value is Rs 50,000 . calculate its current book value.

Depreciation

Straight-Line Depreciation

Example 4: You started a small business and rent an office. You furnish the office with $25,000 worth of office furniture. The useful life of the furniture is 7 years and the salvage value is $4,000. Make a straight-line depreciation schedule showing the depreciation you are to expense each year.

Depreciation

Straight-Line Depreciation

Example 4: You started a small business and rent an office. You furnish the office with $25,000 worth of office furniture. The useful life of the furniture is 7 years and the salvage value is $4,000. Make a straight-line depreciation schedule showing the depreciation you are to expense each year.

Annual Depreciation = ($25,000 - $4,000)/7 = $3,000

Depreciation

Straight-Line Depreciation

Year	Value Before Depresciation	Depreciation	Value After Depreciation
1	$25,000	$3,000	$22,000
2	$22,000	$3,000	$19,000
3	$19,000	$3,000	$16,000
4	$16,000	$3,000	$13,000
5	$13,000	$3,000	$10,000
6	$10,000	$3,000	$7,000
7	$7,000	$3,000	$4,000

Depreciation

Double Declining-Balance Depreciation

Example 5:

Make a double declining-balance depreciation schedule for the office furniture in example 1 using a useful life of 7 years and a salvage value of $4,000.

Depreciation

Double Declining-Balance Depreciation

Example 5:

Make a double declining-balance depreciation schedule for the office furniture in example 1 using a useful life of 7 years and a salvage value of $4,000.

Annual rate of depreciation = 2/7 = 28.5714285714%

Depreciation

Double Declining-Balance Depreciation

Year	Value Before Depreciation	Depreciation	Value After Depreciation
1	$25,000	$7,142.86	$17,857.14
2	$17,857.14	$5,102.04	$12,755.10
3	$12,755.10	$3,644.31	$9,110.79
4	$9,110.79	$2,603.08	$6,507.71
5	$6,507.71	$1,859.35	$4,648.36
6	$4,648.36	$648.36	$4,000.00
7	$4,000	$0	$4,000