

1.5 Depreciation

Need to Know

Depreciation is the process by which items decrease in value. The depreciation value is the loss in dollars during 1 year.

Straight-line depreciation formula:

\[ D_T = \frac{P}{R} \]

where \( D_T \) = cumulative depreciation after \( T \) years, in dollars

\( P \) = prime cost or initial cost, in dollars

\( R \) = rate of depreciation (p.a.) as a decimal and

\( T \) = time in years

Also:

\[ V_T = P - D_T \]

where \( V_T \) = written-down value or adjusted value after \( T \) years, in dollars

Reducing balance depreciation formula:

\[ V_T = P(1 - R)^T \]

where \( V_T \) = written-down value after \( T \) years, in dollars

\( P \) = prime cost, in dollars

\( R \) = rate of depreciation (p.a.) as a decimal

\( T \) = time in years

‘Straight-line depreciation’ can also be expressed as:

‘depreciation at a percentage of its prime cost or initial value or purchase price every year’.

‘Reducing balance depreciation’ can also be expressed as:

‘depreciation at a percentage of its reduced value every year’.

Worked Example 10

The initial cost of a washing machine 2 years ago was $1950. It depreciates at 18.5% p.a. Assuming straight-line depreciation what is the:

(a) cumulative depreciation since the time of purchase

(b) current written-down value of the machine?

Working

(a) \( D_T = \frac{P}{R} \)

\[ P = 1950, \ R = 18.5\% = 0.185, \ T = 2 \]

\[ D_2 = 1950 \times 0.185 \times 2 \]

\[ = 721.50 \]

(b) \( V_T = P - D_T \)

\[ P = 1950, \ D_2 = 721.50 \]

\[ V_2 = 1950 - 721.50 \]

\[ = 1228.50 \]

Worked Example 11

The prime cost of a lawn mower 7 years ago was $3600. If it depreciates at 9% p.a. assuming reducing balance depreciation, calculate the:

(a) current written-down value of the mower

(b) cumulative depreciation since the time of purchase.

Working

(a) \( V_T = P(1 - R)^T \)

\[ P = 5600, \ R = 9\% = 0.09, \ T = 7 \]

\[ V_7 = 5600(1 - 0.09)^7 \]

\[ = 2895.86 \]

(b) \( D_T = P - V_T \)

\[ P = 5600, \ V_7 = 2895.86 \]

\[ D_T = 5600 - 2895.86 \]

\[ = 2704.14 \]

Worked Example 12

A laptop is expected to work for 6000 hours before it has a resale or scrap value of $100. The purchase price is $1500. Find:

(a) the total possible depreciation

(b) the unit cost depreciation

(c) the depreciation after 1000 hours of use

(d) the written-down value after 1000 hours of use.

\[ \text{Total possible depreciation} = \text{prime cost} - \text{scrap value} \] (salvage value or residual value)\n
\[ \text{Unit cost depreciation} = \frac{\text{total possible depreciation}}{\text{expected life}} \] 

\[ \text{Depreciation (after a certain amount of use or work)} = \text{Unit cost depreciation} \times \text{number of units of work done} \]