Depreciation: Straight Line and Written-Down Value

Yearly depreciation and book value of an asset by the straight-line and written-down (declining balance) methods, from cost, residual value and life.

Method: Straight-line and written-down-value methods

Input parameters

Unit system: SI

Parameter	Value	Unit
Cost of the asset (your currency)	1.0000e+07	
Residual (salvage) value at the end of life	500,000	
Useful life, years	15.000	
Year to report the book value after	5.0000	

Calculated results

Parameter	Value	Unit
Straight-line depreciation per year	633,333	
Book value after year k, straight line	6,833,333	
Written-down value rate that reaches the residual value	18.104	%
First-year depreciation, written-down value	1,810,363	
Book value after year k, written-down value	3,684,031	

Notes for this case

- Engineering-economics methods; tax and company-law depreciation follow the rates and rules set by your tax authority.

Formula and method

$$D_{SL} = \frac{C - S}{n}, \quad B_{SL} = C - kD_{SL}$$

$$r = 1 - (S/C)^{1/n}, \quad D_1 = Cr, \quad B_{WDV} = C(1-r)^k$$

Variables

C	cost	currency
S	residual value	currency
n	life	years
k	years elapsed	years
D_{SL}	straight-line depreciation per year	currency
B_{SL}	book value, straight line	currency
r	written-down rate	-
D_1	first-year depreciation, WDV	currency
B_{WDV}	book value, WDV	currency

Method and standards

Straight line spreads cost less residual value evenly; the written-down value method takes a constant share of the remaining book value, with the rate that reaches the residual value at the end of the life.

Assumptions and limits

- Whole years; constant life and residual value.
- A zero residual value is allowed for straight line; the written-down-value results are then not shown.

References

- Straight-line and written-down-value methods

Report details

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Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/economics/depreciation

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Reopens the calculator with the inputs of this report.