Depreciation Methods

Straight-line Method (S/L)

Used when an asset gives equal benefits to the company throughout it's useful life (for example, building).

Depreciation expense is the same amount each year.

Depreciation rate = 1/useful life (for example, 1/5 years=20%).

(Cost-salvage value)/useful life = yearly depreciation expense.

Depreciation Expense

$$\frac{\text{(Cost - Salvage Value)}}{\text{Useful Life}}$$

Example:
The Asset was purchased on 1/1/2009
Cost: $1,000

2009: (1,000-100)/5 years = 180
2010: (1,000-100)/5 years = 180

Income Statement (1st year)

Revenues	2,000
COGS	1,050
Gross Profit	**950**
Operating Expenses	650
EBTDA*	**300**
Depreciation Expense	180
Income Before Income Tax	**120**

Accelerated Methods

Used when an asset gives greater benefits in earlier years than in later years (for example, office equipment).

Sum of the years digits (SYD)

An accelerated depreciation method that is considered less aggressive than the double-declining method.

Numerator = the number of years left in the asset useful life. For example, if it were a 3-year asset, in the first year the numerator would be 3, then 2, then 1.

Denominator = the sum of the years in the asset's useful life. The formula is Nx(N+1)/2. For example 3(3+1)/2=6. In year 1 the basis is multiplied by 3/6, then 2/6, then 1/6.

Depreciation Expense

$$\text{(Cost-Salvage Value) Basis} \times \frac{\text{\# of Yrs Left in Asset's Life}}{\text{Sum of Yrs in Asset's Life}}$$

Estimated useful life: 5 years
Estimated salvage value: $100

2009: (1,000-100)x5/(1+2+3+4+5) = 900 x 5/15 = 300
2010: (1,000-100)x4/(1+2+3+4+5) = 900 x 4/15 = 240

Income Statement (1st year)

Revenues	2,000
COGS	1,050
Gross Profit	**950**
Operating Expenses	650
EBTDA	**300**
Depreciation Expense	300
Income Before Income Tax	**0**

Double declining balance (DDB)

A depreciation rate that is twice the straight-line rate is applied against the book value of the asset. For example, 1/5=20% (S/L rate) x 2 = 40% (DDB rate).

Salvage value is ignored.

Depreciation expense should not be reduced below the salvage value.

In the final year either:
1. Calculate depreciation expense in the last year as the amount to reduce the carrying value to the salvage value.
2. Switch from DDB to either SYD or S/L toward the end of the asset useful life, depreciating the asset to its salvage value.

Depreciation Expense

Year 1: Cost x (1/3 of Years) x 2
Year 2: (Cost - Depreciation Expense Yr 1) x (%)

Estimated total outputs: 1,000 units
2009 output: 250 units
2010 output: 300 units

2009: 1,000 x 2/5 = 400
2010: (1,000-400) x 2/5 = 240

Income Statement (1st year)

Revenues	2,000
COGS	1,050
Gross Profit	**950**
Operating Expenses	650
EBTDA	**300**
Depreciation Expense	400
Income (Loss) Before Income Tax	**(100)**

Units of production

Better matching since asset in more productive in earlier years.

Minimize loss due to obsolescence. Since the asset was depreciated more quickly, the carrying value is lower therefore the loss is smaller.

Helps to even out expenses. Since repair and maintenance in the earlier years us lower, if we take more depreciation earlier on, the total expenses would be more constant over time.

Depreciation Expense
per unit/hr

$$\frac{\text{(Cost - Salvage Value)}}{\text{Estimated \# of Recoverable Units}}$$

2009: (1,000-100) x 250 / 1,000 = 225
2010: (1,000-100) x 300 / 1,000 = 270

Income Statement (1st year)

Revenues	2,000
COGS	1,050
Gross Profit	**950**
Operating Expenses	650
EBTDA	**300**
Depreciation Expense	225
Income Before Income Tax	**75**

*Earnings Before Taxes, Depreciation and Amortization