

The Declining Balance Method (DBM), or Matheson Formula method, assumes that an asset depreciates by a constant annual percentage rate ( $k$ ) calculated against the remaining value at the start of each year. The asset's book value drops exponentially over its lifespan. To find the value at Year 3 ( $C_3$ ), we determine the required constant percentage rate  $k$  that seamlessly drops the asset value from its initial cost ( $C_o$ ) to its final salvage value ( $C_L$ ) over 8 years.

First, compute the constant depreciation rate  $k$ :

$$k = 1 - \left( \frac{C_L}{C_o} \right)^{\frac{1}{L}} = 1 - \left( \frac{\text{P}5,000}{\text{P}50,000} \right)^{\frac{1}{8}} = 0.2501 \text{ (or 25.01\%)}$$

Using this rate, calculate the remaining book value at the end of the 3rd year ( $C_3$ ):

$$C_3 = C_o(1 - k)^n = \text{P}50,000(1 - 0.2501)^3$$

$$C_3 = \text{P}21,084.83$$