Depreciation, compound interest and rates

Learn and practise | Free preview

A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the worked example, then show each step in the practice questions. A scientific, statistical or financial calculator, or suitable spreadsheet, can support these calculations. Record the formula, inputs and interpretation.

What you will practise

- Depreciation of assets
- Compound interest investments and loans

Useful starting skills: Relevant General Mathematics Units 1–2 arithmetic, algebra, statistics, matrices and networks.

A recurrence $u_{n+1}=R\,u_n+d$ models repeated percentage change and fixed additions or deductions. Choose a period and label u_0.

Nominal annual rates must be divided by the number of compounding periods for a per-period rate. Effective annual growth accounts for compounding: $(1+j/m)^m-1$.

Worked example

An asset worth \$12000 depreciates 10% yearly. Find its value after 2 years.

$u_n=12000(0.9)^n$; $12000\times0.81=9720$.

Answer: \$9720.

Try it yourself

Name: _____ Date: _____

1. An asset \$15000 loses \$2000 each year. Give recurrence and u_4.

2. A machine worth \$8000 loses \$0.40 per unit produced. Find value after 3000 units.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. $u_0=15000$, $u_{n+1}=u_n-2000$; $u_4=7000$.

Four fixed reductions.

2. $6800.

Unit-cost reduction $0.4\times3000=1200$.

Curriculum reference: General Mathematics Units 3–4 — Depreciation of assets; General Mathematics Units 3–4 — Compound interest investments and loans

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