Regular savings and investment targets

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

• Compound interest investment with periodic and equal additions to the principal

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

A regular saving model with an end-period deposit A follows $S_{n+1}=(1+i)S_n+A$. Separate the initial balance from later deposits.

Use a table or financial solver to find target time, contribution or rate. The first whole period reaching a target may be later than a non-integer solution.

Worked example

Start with \$500, earn 1% per month, and deposit \$100 at month-end. Find first two balances.

$500\times1.01+100=605$; $605\times1.01+100=711.05$.

Answer: \$605 then \$711.05.

Try it yourself

Name: _____ Date: _____

1. $S_0=0$, $S_{n+1}=1.02\ S_n+50$. Find S_1, S_2, S_3.

2. Derive S_n for $S_0=0$ and end-period deposits A at rate $i\neq 0$.

Answers and explanations

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

1. 50, 101, 153.02.

Iterate in order.

2. $S_n=A((1+i)^n-1)/i$.

Expand as geometric sum $A[1+(1+i)+...+(1+i)^{(n-1)}]$.

Curriculum reference: General Mathematics Units 3–4 — Compound interest investment with periodic and equal additions to the principal

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