Modelling and checking financial problems with digital tools

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. A savings model starts at 80 AUD. Weekly income is 15 AUD and spending is 9 AUD. Find the balance after five weeks. [2 marks]

Net change: $15 - 9 = 6$ AUD per week.

$80 + 5 \times 6 = 110$.

Answer: 110 AUD

2. Columns B, C and D contain opening balance, income and spending. Write a spreadsheet formula for closing balance E2. [2 marks]

Add income to opening balance and subtract spending.

Answer: $= \mathrm{B2} + \mathrm{C2} - \mathrm{D2}$

3. A row has $\mathrm{B2} = 200$, $\mathrm{C2} = 25$ and $\mathrm{D2} = 17$. A formula displays 242. Check the row and give the correct closing balance. [2 marks]

$200 + 25 - 17 = 208$.

The displayed 242 does not fit the intended rule.

Answer: 208 AUD

4. Compare two alternative six-week plans, each starting with 150 AUD. In Plan A, the net weekly gain is 10 AUD. In Plan B, weekly spending is 4 AUD higher than in Plan A while income is unchanged. Find the balance after six weeks under each plan. [3 marks]

Original: $150 + 6 \times 10 = 210$.

New net gain: $10 - 4 = 6$ AUD.

Changed: $150 + 6 \times 6 = 186$.

Answer: Original: 210 AUD; changed spending: 186 AUD.

5. Use a simple-interest model for 300 AUD at 5% per year for three years. Find interest and final balance. [2 marks]

Interest: $300 \times 0.05 \times 3 = 45$.

Balance: $300 + 45 = 345$.

Answer: 45 AUD interest; 345 AUD balance.

6. A model predicts a 400 AUD balance after saving 20 AUD weekly for ten weeks from a 200 AUD start. State two assumptions and explain how an unplanned 35 AUD expense changes the prediction. [3 marks]

Original: $200 + 10 \times 20 = 400$.

Subtract the extra expense: $400 - 35 = 365$.

Other valid assumptions include timing, fixed income or no interest; the model must match its stated rules.

Answer: Assume net weekly saving stays 20 AUD and no fees/other changes; the revised prediction is 365 AUD.