Investing and borrowing - Practice test 1

10 questions | 56 marks | 70 minutes

An original mixed topic paper. Show calculations, label rates and periods, and explain conclusions using the supplied hypothetical financial rules. Round final monetary answers to cents unless a minimum deposit is requested.

Equivalent correct methods earn the corresponding marks.

1. A coat has a marked price of AUD 180. The store gives a 15% discount. [4 marks]

(a) Find the discounted price. [2 marks]

$180 \times 0.85 = 153.$

Answer: AUD 153.00

(b) The store then adds a AUD 9 delivery fee. Find the total and the saving compared with the original marked price. [2 marks]

$153 + 9 = 162.$

$180 - 162 = 18.$

Answer: AUD 162 total; AUD 18 saving

2. A savings statement has an opening balance of AUD 840, a deposit of AUD 200, a withdrawal of AUD 125, AUD 2.20 interest and a AUD 3 fee. [4 marks]

(a) Find the closing balance. [2 marks]

$840 + 200 - 125 + 2.20 - 3 = 914.20.$

Answer: AUD 914.20

(b) Another withdrawal is later found. The corrected closing balance is AUD 864.20. Find the missing withdrawal. [2 marks]

$914.20 - 864.20 = 50.$

Answer: AUD 50.00

3. AUD 4500 is invested at 4% simple interest per year. [6 marks]

(a) Find interest earned in 18 months. [3 marks]

$t = 1.5; \quad I = 4500 \times 0.04 \times 1.5 = 270.$

Answer: AUD 270.00

(b) How long would it take to earn AUD 720 interest at this rate? [3 marks]

$t = \frac{720}{(4500 \times 0.04)} = 4.$

Answer: 4 years

4. AUD 3000 is invested for 3 years at 5% per year. [6 marks]

(a) Find the final value with annual compounding. [3 marks]

$A = 3000(1.05)^3 = \text{AUD } 3{,}472.88.$

Answer: AUD 3,472.88

(b) Find the extra interest over simple interest for the same term. [3 marks]

$\text{Simple final} = 3000(1 + 0.05 \times 3) = 3450.$

$\text{Difference} = \text{compound final} - 3450.$

Answer: AUD 22.88

5. A club needs AUD 7000 in 4 years. A single deposit earns 4.5% compounded annually. [6 marks]

(a) Find the present value to the nearest cent. [3 marks]

$\text{PV} = \frac{7000}{(1.045)^4}.$

Answer: AUD 5,869.93

(b) State the minimum deposit that meets the target and explain the rounding. [3 marks]

Round the unrounded present value upward to cents.

Rounding downward produces a future amount below 7000.

Answer: AUD 5,869.93

6. An account quotes 6% nominal annual interest compounded monthly. [6 marks]

(a) Find its effective annual rate to 3 decimal places. [3 marks]

$i = 0.005; \quad \text{effective} = 1.005^{12} - 1.$

Answer: 6.168%

(b) Would 6.1% compounded annually give greater annual growth, ignoring fees? [3 marks]

Compare effective annual rates, not nominal labels.

Answer: No;6.1% is below 6.168%.

7. For one year, account A pays 3% simple interest without fees. B pays 4% simple interest and charges AUD 30 annually. [6 marks]

(a) Find the starting balance at which final values are equal. [3 marks]

$1.03P = 1.04P - 30.$

$0.01P = 30.$

Answer: AUD 3,000.00

(b) Which account gives more on AUD 1800? Give both final balances. [3 marks]

$A = 1800 \times 1.03.$

$B = 1800 \times 1.04 - 30.$

Answer: A: AUD 1854; B: AUD 1842. A gives AUD 12 more.

8. Mia buys 120 shares at AUD 9 with AUD 18 brokerage. She later receives a AUD 0.30 dividend per share and sells at AUD 9.80 with AUD 18 brokerage. [6 marks]

(a) Find the net profit. [3 marks]

$\text{Purchase} = 1080 + 18 = 1098.$

$\text{Receipts} = 1176 - 18 + 36 = 1194.$

$\text{Profit} = 96.$

Answer: AUD 96.00

(b) Find ROI to 2 decimal places. [3 marks]

$\frac{96}{1098} \times 100 = 8.743\ldots\%.$

Answer: 8.74%

9. AUD 8000 earns 5% simple interest for one year. A supplied 25% tax applies only to the interest. Prices rise 2% over the year. [6 marks]

(a) Find the after-tax closing balance. [3 marks]

$\text{Interest} = 400; \quad \text{tax} = 100.$

$8000 + 300 = 8300.$

Answer: AUD 8,300.00

(b) Find the real percentage gain to 3 decimal places. [3 marks]

$\text{Net nominal factor} = \frac{8300}{8000} = 1.0375.$

$\text{Real factor} = \frac{1.0375}{1.02}.$

Answer: 1.716%

10. A simplified AUD 1800 loan charges 1% interest each month before a AUD 250 month-end repayment. [6 marks]

(a) Find the balance after two months. [3 marks]

$B_1 = 1800 \times 1.01 - 250 = 1568.$

$B_2 = 1568 \times 1.01 - 250 = 1333.68.$

Answer: AUD 1,333.68

(b) Explain why subtracting two repayments from the original loan before calculating interest gives a different answer. [3 marks]

Each month interest applies to that month’s opening balance, then payment is subtracted.

Answer: It changes the timing and incorrectly reduces the amount earning interest in the first month.