Financial mathematics - practice test 2

Name: _____ Date: _____

16 questions | 43 marks | 60 minutes

All amounts are Australian dollars. Use the stated classroom models; exclude fees, tax and other transactions unless given. Round final currency to cents unless asked otherwise.

A scientific calculator may be used.

1. Write the factor for losing 12% of current value. [2 marks]

2. Find the total of 2500 dollars after 2 years at 4% simple interest. [2 marks]

3. Find the total of 2500 dollars after 2 years at 4% annual compound interest. [2 marks]

4. An annual-compounding model grows 1600 dollars to 1936 dollars in 2 years. Find its annual rate. [3 marks]

5. A nominal rate is 10% annually, compounded every half-year for 3 years. State the period rate and exponent. [2 marks]

6. An initial 800 dollars grows at 1% per month for 4 months. Find the balance and interest to cents. [3 marks]

7. A reducing-balance model is $V = 4500(0.9)^t$. Find its year-3 value and state the annual loss rate. [3 marks]

8. A straight-line asset model is $V = 2100 - 350t$. Give the largest whole year for a nonnegative model value. [2 marks]

9. A price rises by 25%, then falls by 20%. Find the combined percentage change. [2 marks]

10. What percentage increase restores an amount after a 20% loss? [2 marks]

11. Compare two deposit timings for an opening 600 dollars, a 50-dollar deposit and 2% period interest. [4 marks]

(a) Find the close if the deposit is made at the end. [2 marks]

(b) Find the close if the deposit is made before interest. [2 marks]

12. A loan rule is $L_{n+1} = 1.01L_n - 200$, beginning at $L_0 = 1000$. [6 marks]

(a) Find its first two closing balances. [3 marks]

(b) A separate loan has an opening balance of 150 dollars and the same 1% monthly interest rate. What exact final payment clears it after that month’s interest? [3 marks]

13. A spreadsheet enters 4 in its decimal-rate column instead of 0.04. Explain the factor error. [2 marks]

14. For an opening 750, rate 0.02 and end deposit 60, find the close and the next opening. [2 marks]

15. Compare 1000 dollars at 6% with a 20-dollar final fee against 1000 dollars at 5% without a fee, both for one year. Which model ends higher? [3 marks]

16. An advertisement says a 6% rate is always better than a 5% rate. Give two pieces of missing information needed for a fair mathematical comparison. [3 marks]