Financial mathematics - practice test 1

Name: _____ Date: _____

16 questions | 44 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 growth factor for a 7% increase. [2 marks]

2. Find the yearly simple interest on 1200 dollars at 5%. [2 marks]

3. Find the total after 3 years on 1200 dollars at 5% simple interest. [2 marks]

4. Find the total after 3 years on 1200 dollars at 5% annual compound interest. Round to cents. [2 marks]

5. State the period rate and number of periods for nominal 8% annually compounded quarterly over 2 years. [2 marks]

6. An account model starts at 3000 dollars with nominal 6% annually compounded quarterly for 2 years. Find its balance to cents. [3 marks]

7. A 900-dollar asset loses 10% of current value annually. Find its value after 2 years. [2 marks]

8. An asset starts at 1800 dollars and loses 200 dollars per year under a straight-line model. Find its value after 5 years. [2 marks]

9. A 200-dollar item is discounted 20%, then 10%. Find its final price and total percentage discount. [3 marks]

10. A price is 276 dollars after a 15% increase. Find its original value. [3 marks]

11. A saving rule is $B_{n+1} = 1.03B_n + 100$, with $B_0 = 500$. [4 marks]

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

(b) Find the second closing balance. [2 marks]

12. A loan starts at 1500 dollars. Each month it adds 2% interest, then a 300-dollar repayment. [4 marks]

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

(b) How much of the first payment reduces the amount below its opening value? [2 marks]

13. A spreadsheet uses B = opening, C = decimal rate, D = end deposit and E = closing. Write the formula for E4. [2 marks]

14. A final fee-free model balance is 1820 dollars. A 35-dollar fee is charged only at the end. Find the adjusted balance. [2 marks]

15. Why can a model starting at 2000 dollars not be judged better than one starting at 1000 dollars solely because it has a larger final balance? [3 marks]

16. A fund starts at 1000 dollars, earns 4% annually, and then pays a 10-dollar fee at each year end. [6 marks]

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

(b) Find the difference from the no-fee year-2 balance and explain why it is not exactly 20 dollars. [3 marks]