MULTIPLE CHOICE

1. $420 is invested at 2.35% simple interest for 5 years. Determine the interest earned.
   A. $469.35   B. $49.35   C. $51.72   D. $471.72

2. $10 000 is invested at 9.2% simple interest for 10 years. Determine the future value of the investment.
   A. $9200   B. $24 111.62   C. $19 200   D. $14 111.62

3. $5000 is invested at 6.7% simple interest for 20 years. Determine the interest earned.
   A. $6700   B. $11 700   C. $335   D. $33 500

4. According to the Rule of 72, how long would it take for $400 to grow to $800 at 5.6% interest, compounded monthly?
   A. 12.9 years   B. 403 years   C. 1 year   D. None is correct.

5. How long would it take for $500 to grow to $1200 at 6.6% interest, compounded monthly?
   A. 2 years   B. 159.6 years   C. 10 years   D. 13.3 years

6. Determine the present value of a 5-year GIC with an interest rate of 6.3%, compounded monthly, if the future value is $10 000.
   A. $7303.90   B. $2696.10   C. $13 691.31   D. $3691.31

7. Determine the present value of a 10-year CSB with an interest rate of 4.9%, compounded semi-annually, if the future value is $5000.
   A. 41 918.72   B. $3081.28   C. $8113.52   D. $3113.52

8. For 8 years, regular monthly payments of $500 are deposited into an account in which interest is compounded monthly. If the final value of the account is $60 000, what was the interest rate?
   A. 0.54%   B. 4.69%   C. 2.5%   D. 5.45%

9. Jason was born yesterday. His aunt is considering two portfolios to pay for his education.

Portfolio X	Portfolio Y
• a $25 deposit each week into an account earning 4.3%, compounded weekly	• a $125 deposit each month into an account earning 3.9%, compounded monthly
• a $5000 investment averaging 4.6%, compounded annually	• a $6000 investment averaging 5.2%, compounded semi-annually

Which portfolio has the better rate of return over 18 years?

A. Portfolio X, 64%   C. Portfolio Y, 111%

B. Portfolio X, 47%   D. Portfolio Y, 64%

NUMERICAL RESPONSE

10. A principal of $3000 was invested at 4.5% simple interest, paid annually, when Brynn was born. Today is Brynn's 18th birthday.

a) The interest earned on the investment is $_____, to the nearest dollar.

b) The accumulated value of the investment is $_____, to the nearest dollar.

c) The rate of return is _____ %, to the nearest percent.

11. A principal of $4000 is invested at 6.5% simple interest.

a) To the nearest year, it will take _____ years for the future value of the investment to grow to $5000.

b) The rate of return, to the nearest tenth of a percent, is _____ %.

12. Kenzie invests $395 for 4 years at 2.6% interest, compounded annually. The interest earned, to the nearest cent, is $_____.

13. José has earned $9000 from his co-op work term. He will invest it for 5 years. He must choose between these two options.

A. 4.6% simple interest, paid monthly

B. 4.1% interest, compounded annually

Option A will earn $_____ and Option B will earn

$_____, so Option A will earn $_____ more interest, to the nearest cent.

14. On Gladys's 21st birthday, she invested $4500 in an account that earns 6.5% interest, compounded semi-annually. On her 31st birthday, she moved her investment to an account that paid 6.8% interest, compounded monthly. On her 41st birthday, the account will be worth $_____, to the nearest cent.

15. Larry invests a sum of money for 10 years at 5.25% interest, compounded quarterly. The future value of the investment is $200 000. The interest earned is $_____, to the nearest cent.

16. Jason plans to retire in 25 years, when he is 60. He estimates that he will need $450 000 to supplement his company pension, invested at 4% interest, compounded quarterly. To meet his goal, he should invest $_____ now, to the nearest cent.

17. An interest rate of _____ %, compounded annually, will make annual payments of $6500 grow to $2 000 000 in 40 years. Round your answer to the nearest hundredth of a percent.

18. It will take _____ years, to the nearest tenth, for monthly payments of $235 to grow to more than $50 000 at an interest rate of 8.3%, compounded monthly.

19. Karim is planning to buy new furniture in 2 years. He intends to spend $5000. He has $4000 to invest in an account that compounds interest monthly. The rate of interest that Karim will need in order to meet his goal is _____ %, to the nearest tenth.

20. Pip has inherited a large sum of money. He does not want to retire now, but he hopes to retire in 20 years with $1 500 000 in the bank. Suppose Pip earns 7.4% interest, compounded quarterly, on his investments. To the nearest cent, Pip needs to invest $_____ now to retire in 20 years.

21. Ahab is saving up to buy a new fishing boat. He invests $25 000 at 4.25% interest, compounded monthly, for 5 years. His rate of return will be _____ %, to the nearest tenth.

22. This portfolio was started 5 years ago.
- quarterly deposits of $750 into an account compounded quarterly
- a 5-year $15 000 investment averaging 7.1% interest, compounded annually

Its current value, to the nearest cent, is $_____.

23. This portfolio was started 8 years ago.
- monthly deposits of $280 into an account earning 3.15%, compounded monthly
- an 8-year $3200 investment averaging 5.2% interest, compounded annually

The portfolio's current rate of return is _____ %, to the nearest tenth of a percent.

Q3: The future value of an investment with a regular deposits or payments is the sum of all the payments or deposits plus the accumulated interest.

Q4: $A = R(1 + i)^0 + R(1 + i)^1 + R(1 + i)^2 + R(1 + i)^3 + \cdots + R(1 + i)^{n-1}$

- A portfolio can have different types of investments, such as single-payment investments like CSBs and GICs and/or investments involving regular payments.
- Portfolios earn more interest when the term is longer, the principal is compounded more often, and/or the interest rate is higher. You can use rate of return to compare investment portfolios.

Chapter 1 Test, page 30

1. B.   2. C   3. A   4. A   5. D.
6. A.   7. C.   8. D.   9. D.
10. a) $2450   b) $5430   c) 81%
11. a) 4 years   b) 25%
12. $42.71
13. $11 070.00; $11 002.62; $67.38
14. $6807.39
15. $81 284.15
16. $155 370.05
17. 8.65%
18. 10.3 years
19. 7.5%
20. $346 105.57
21. 23.6%
22. $37 360.89
23. 17.4%
24. 3 years
25. Bob invested $3.84 more.
26. $5793.37
27. 12.5%

Chapter 2

Getting Started, page 34

1. a) ii)   b) iv)   c) i)   d) iv)
2. a) $7.15   b) $1102   c) $16.43   e) iii)
3. a) i) $17 025   b) $2025   c) $5000   e) 2.5%
4. a) $17 117.50; $2117.50   b) $1800   c) 37 months   d) 2.6%
5. a) $1876.14; $75.14   b) $275   c) 40 weeks   d) 3.7%

Lesson 2.1, page 36

1. a) $466.20   b) $146.20
2. a) $2354.13   b) $154.13
3. a) $27 027.39   b)
4. b) i) less, e.g., because more of the principal is paid off sooner; $73 823.84   iii) more; e.g., because the principal is paid off later: $34 784.76
4. a) $28 033.19   b) $1966.81
5. D.
6. loan Y; e.g., because it will cost $1359.81 − $1131.50 or $228.31 less, even though it takes 1 year longer to pay off

Lesson 2.2, page 40

1. a) store: $4325.11; bank: $4192.91
   b) store: $325.11; bank $192.91
   c) store 13 months; bank 12 months
   d) bank, since it will cost $132.20 less
2. 5 months, $1300.87, $31.25, $1269.58; 5 months, $1294.25; Card Gold
3. A.

Lesson 2.3, page 42

1. a) $118.59   b) a) $113.53   10) $5.06
2. a) $315.96, $7583.10
   b) $231.05; $8317.84
   c) e.g., dealer; pay less in total, but monthly payments are higher bank payment in total, but monthly payments are less
3. Option B will cost less.
   e.g., With Option A, the monthly payments will be $176.20 for a total payment of $1409.62. With Option B, the monthly payments will be $184.73 for a total payment of $1477.84.
4. a) A: $256.69; B: $248.39   b) A: $137.81; B: $81.14
5. a) 11 months   b) $71.81   c) $42.74
6. disagree; e.g., Line of credit: monthly payments will be $973.41, for a total payment of $5840.46. Credit card: monthly payments will be $964.91, for a total payment of $5789.49. Rico should use the credit card since it costs less.
7. a) 57 months; 59 months
   b) line of credit: e.g., Line of credit total payment will be $2845.59, including $428.59 in interest. Credit card: total payment will be $3532.91, including $1111.91 in interest.
   c) Line of credit: $209.37; Credit card: $220.01

Lesson 2.4, page 46

1. a) e.g., Renting a room for 6 months would cost 180 · $80 or $9000. Leasing an apartment would cost 6 · $1250 or $7500. However, Calvin would need a large sum of money to pay up front for the apartment.
   b) e.g., I would lease the apartment because it costs less, and the facilities are about the same. I am assuming he has the money needed to pay for the up-front costs associated with this option. If he doesn't, then he would have to rent the room at the hotel.
2. a) lease 3 · ($6506 + $2400 + $315) = $28 563; purchase: $24 000 + $6000 + $1200 = $31 200
   b) e.g., Leasing is better because it will cost less and the equipment will be worthless after 3 years anyway.
3. a) rent: 14 · $60 = $840; buy: $1500; renting is more economical
   b) rent: 30 · $60 = $1800; buy: $1500; buying is more economical
4. a) e.g., rent, because this costs less, even if there is a slight overrun on time
5. a) $6591.78
6. a) $7238.62; $6500
   b) e.g., If Elvira buys the bikes, she can use them for 6 years at a cost of $1834.66 per year. If she leases them, it will cost $3250 per year for 2 years, and then she will need to lease them again. It will cost less to buy the bikes.
7. a) Jackson paid $46 980.80 more than Ronnie
   b) Jackson made the wiser decision, because he has the equity of his down payment and the principal that he has paid off.
8. a) Luha paid $8605.54 more than Jamia
   b) Luha made the wiser decision, because she has the equity of her down payment and the principal that she has paid off.

Chapter 2 Test Prep, page 51

Q1: A1: When a loan involves a single payment at the end of the term, the same formula that apply to investment situations can be used.
A2: An amortization table is a schedule for a loan with regular payments. It can be created with spreadsheet software, and shows details such as the total amount of interest paid over the course of paying off the loan.
A3: A financial application on a calculator can be used to determine the unknown variable in a compound interest loan problem. It can also be used to investigate "what-if" situations that involve borrowing money.