14. **a)** $A(n) = 500(1.05)^n$
b) \$578.81
c) \$78.81
d) No, in 6 years, he saves \$670.05.

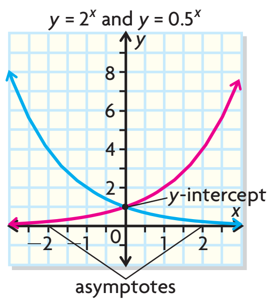
Chapter Self-Test, p. 446

1. **a)** $\frac{1}{125}$ **c)** 2 **e)** -1
b) $\frac{16}{9}$ **d)** $\frac{1}{8}$ **f)** $\frac{1}{1000}$

2. **a)** $6^{\frac{1}{2}}$ **c)** 10^5 **e)** $\frac{1}{a^5}$
b) 4^5 **d)** 7^2 **f)** $\frac{1}{b^3}$

3. $4^{\frac{1}{2}} = 2$

4.



5. **a)** Car A starts at \$20 000 while car B has an initial value of \$25 000. Car B's value declines more quickly than car A's.
b) Since car B's value falls faster, it has a higher depreciation rate.

6. 23%

7. **a)** $P = 1600(1.015)^n$. The population, P, is initially 1600 and grows at 1.5% for n years.
b) $n = 2008 - 1980 = 28$, so $P \doteq 2428$

Chapter 8

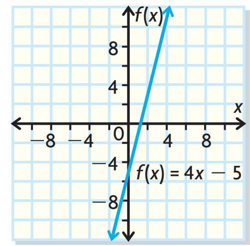
Getting Started, pp. 450–452

1. **a)** (ii) **b)** (i) **c)** (iv) **d)** (iii)
2. **a)** 0.35 **b)** 0.67 **c)** 0.085 **d)** 0.0275
3. **a)** 11.25 **b)** 51 **c)** 2.1 **d)** 145
4. **a)** 12 288, 0.000 73 **c)** 9, 4
b) 320, 0.078 125 **d)** 24 379.89, 29 718.95

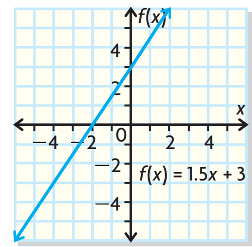
5. **a)** $\frac{6}{73}$ **c)** $\frac{2}{3}$ **e)** $\frac{25}{13}$
b) $\frac{1}{2}$ **d)** $\frac{80}{73}$ **f)** $\frac{3}{2}$

6. **a)** 42 **b)** 117 **c)** 1825 **d)** 3
7. **a)** 0.35 **c)** 0.146 **e)** 0.0275
b) 0.05 **d)** 1.15 **f)** 0.1475
8. **a)** \$4.88 **c)** \$247.50 **e)** \$3.00
b) \$3.92 **d)** \$30.00 **f)** \$2000.00
9. **a)** 3.14 **c)** 1464.10 **e)** 1754.87
b) 0.49 **d)** 2220.06 **f)** $-281\ 825.99$

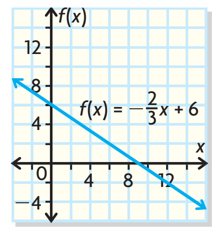
10. **a)**



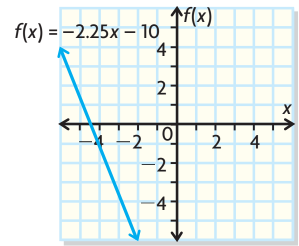
c)



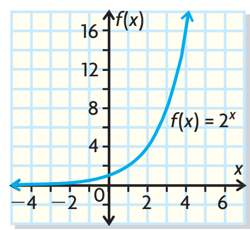
b)



d)



11. **a)**



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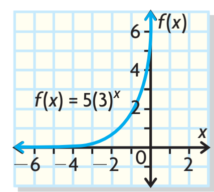

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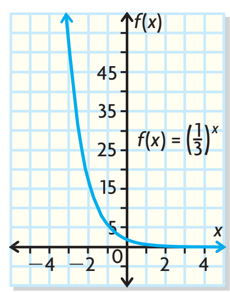
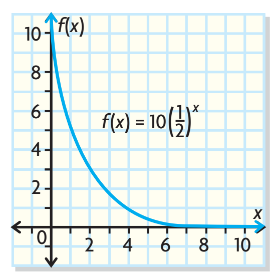


d)



12. \$13.83
13. \$10 462.10

Lesson 8.1, pp. 459–461

1. **a)** \$3.00 **b)** \$4.50
2. **a)** Interest: \$97.88, Amount: \$772.88
b) Interest: \$1171.78, Amount: \$5432.78
3. **a)** Interest: \$94.58, Amount: \$694.58
b) Interest: \$112.03, Amount: \$862.03
4. **a)** Interest: \$120.00, Amount: \$620.00
b) Interest: \$480.00, Amount: \$2480.00
c) Interest: \$56.25, Amount: \$1306.25
d) Interest: \$23.08, Amount: \$1023.08
e) Interest: \$30.14, Amount: \$5030.14

5.

	Regular-Interest CSB, $11\frac{1}{4}$%, 5 years, $500			Compound-Interest CSB, $11\frac{1}{4}$%, 5 years, $500		
Year	Interest Earned ($)	Accumulated Interest ($)	Amount at End of Year ($)	Interest Earned ($)	Accumulated Interest ($)	Amount at End of Year ($)
1	56.25	56.25	556.25	56.25	56.25	556.25
2	56.25	112.50	612.50	62.58	118.83	618.83
3	56.25	168.75	668.75	69.62	188.45	688.45
4	56.25	225.00	725.00	77.45	265.90	765.90
5	56.25	281.25	781.25	86.16	352.06	852.06

6.

	Principal, *P* ($)	Interest Rate, *r* (%)	Time, *t*	Simple Interest, *I* ($)
a)	735.00	$5\frac{1}{2}$	27 days	2.99
b)	2548.55	8.25	240 days	138.25
c)	182.65	6.75	689 days	23.28
d)	260.00	38.08	2 months	16.50

7. 156 days
8. 19.7%
9. $3157.89
10. **a)** $1152.00 **b)** $1297.76
11. **a)** Compound interest earned is $740.17. Simple interest earned is $700. Therefore, the GIC that earns compound interest earns more.
b) $40.17
12. Simple interest is calculated on the original principal. Compound interest is calculated on the principal plus interest earned so far.
13. **a)** $750.00 **b)** $795.80
14. $12 104.00
15. $5619.87

Lesson 8.2, pp. 468–470

1. **a)** $i = 0.09$, $n = 4$
b) $i = 0.045$, $n = 12$
c) $i = 0.0225$, $n = 8$
d) $i = 0.0075$, $n = 36$

2.

	Principal ($)	Annual Interest Rate (%)	Time (years)	Compounding Frequency	Rate for the Compounding Period, *i* (%)	Number of Compounding Periods, *n*	Amount ($)	Interest Earned ($)
a)	400	5	15	annually	0.05	15	831.57	431.57
b)	750	13	5	semi-annually	0.065	10	1407.85	657.85
c)	350	2.45	8	monthly	0.002	96	424.00	74.00
d)	150	7.6	3	quarterly	0.019	12	188.01	38.01
e)	1000	4.75	4	daily	0.0001	1460	1157.19	157.19

3. **a)** $i = 0.0575$, $n = 3$
b) $i = 0.02875$, $n = 10$
c) $i = 0.014\ 375$, $n = 12$
d) $i = 0.004\ 792$, $n = 24$

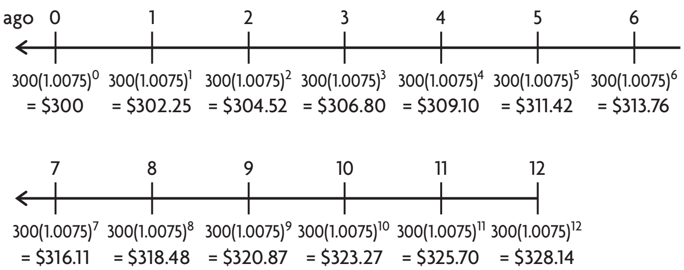
4.

	Principal ($)	Interest Rate (%)	Years	Compounding Frequency	*i*	*n*	Amount ($)	Interest Earned ($)
a)	800	8	10	annually	0.08	10	1727.14	927.14
b)	1500	9.6	3	semi-annually	0.048	6	1987.28	487.28
c)	700	$3\frac{1}{2}$	5	monthly	0.002 92	60	833.83	133.83
d)	300	7.25	2	quarterly	0.018 125	8	346.36	46.36
e)	2000	$4\frac{1}{4}$	$\frac{1}{2}$	daily	0.000 116 4	183	1157.19	157.19

5. $19 535.12

6. $1560.14

7.



Interest earned = $328.14 − $300 = $28.14

8. 0.126 24 or 12.625%

9. 0.06 or 6%

10. $n = 6.637$ or about 7 years

11. $13 040.38

12. **a)** Bank: A = $5255.80; Dealer: A = $5265.95

b) Take the dealer loan because the effective annual interest rate is lower.

13. $500 invested at 1%/a compounded annually for x years.

14. **a)**

Compounding Frequency	Number of Compounding Periods per Year	Formula	Amount ($)
annually	1	$1000(1 + 0.1)$	1100.00
semi-annually	2	$1000(1 + 0.05)^2$	1102.50
quarterly	4	$1000\left(1 + \frac{0.1}{4}\right)^4$	1103.81
monthly	12	$1000\left(1 + \frac{0.1}{12}\right)12$	1104.71
weekly	52	$1000\left(1 + \frac{0.1}{52}\right)^{52}$	1105.06
daily	365	$1000\left(1 + \frac{0.1}{365}\right)^{365}$	1105.16
hourly	8760	$1000\left(1 + \frac{0.1}{8760}\right)^{8760}$	1105.17

b) The largest increase in amount occurs when the compounding frequency is changed from annual to semi-annual. After the frequency change from annual to semi-annual, the amount increases minimally.

c) It appears that $1105.17 is a maximum amount. It would not be feasible to compound interest by the minute.

d) Banks have many accounts and investment vehicles. Computers are used to process the financial information. Hourly compounding frequencies would require too much computer time. The amount of increase in amount from daily to hourly would not be considered a significant benefit by bank customers.

15.

	Formula	P (\$)	Compounding Frequency	i (%)	n	Annual Interest Rate (%)	Number of Years	A (\$)	I (\$)
a)	$145(1 + 0.0475)^{12}$	145	annually	0.047 5	12	4.75	12	253.06	108.06
b)	$850(1 + 0.195)^{5}$	850	annually	0.195	5	19.5	5	2 071.37	1221.37
c)	$4500\left(1 + \frac{0.0525}{365}\right)^{1095}$	4500	daily	0.000 144	1095	5.25	3	5 267.55	767.55
d)	$4500\left(1 + \frac{0.15}{12}\right)^{78}$	4500	monthly	0.012 5	78	15	6.5	11 858.37	7358.37
e)	$4500\left(1 + \frac{0.03}{4}\right)^{20}$	4500	quarterly	0.007 5	20	3	5	5 225.33	725.33

16. Answers may vary. E.g., larger terms offer the best rate of interest, but customers may prefer smaller terms if they want access to their money earlier.

17. 10.4%

18. \$7472.58

19. $n = 9.75$ or about 10 years

Lesson 8.3, pp. 476–479

1. **a)** $P = \$86.38$ **b)** $P = \$417.78$

2.

	Future Value (\$)	Annual Interest Rate (%)	Time Invested (years)	Compounding Frequency	i (%)	n	Present Value (\$)	Interest Earned $I = A - P$ (\$)
a)	4 000	5	15	annually	0.05	15	1924.07	2075.93
b)	3 500	2.45	8	monthly	$\frac{2.45}{1200}$	96	2877.62	622.38
c)	10 000	4.75	4	daily	$\frac{4.75}{36\,500}$	1460	8269.69	1730.31

3. Years ago: 0, 1, 2, 3, 4

$\frac{150}{(1.05)^0} = \$150$ $\quad \frac{150}{(1.05)^1} = \$142.86$ $\quad \frac{150}{(1.05)^2} = \$136.05$ $\quad \frac{150}{(1.05)^3} = \$129.58$ $\quad \frac{150}{(1.05)^4} = \$123.41$

4.

	Future Value (\$)	Annual Interest Rate (%)	Time Invested (years)	Compounding Frequency	i (%)	n	Present Value (\$)	Interest Earned $I = A - P$ (\$)
a)	8000	10	7	annually	0.1	7	4105.26	3894.74
b)	7500	13	5	semi-annually	0.065	10	3995.45	3504.55
c)	1500	7.6	3	quarterly	0.019	12	1196.74	303.26

5. Years ago: 0, 0.5, 1, 1.5

$\frac{5750}{(1.06)^0} = \$5750$ $\quad \frac{5750}{(1.06)^1} = \$5424.53$ $\quad \frac{5750}{(1.06)^2} = \$5117.48$ $\quad \frac{5750}{(1.06)^3} = \$4827.81$

2, 2.5, 3

$\frac{5750}{(1.06)^4} = \$4554.54$ $\quad \frac{5750}{(1.06)^5} = \$4296.73$ $\quad \frac{5750}{(1.06)^6} = \$4053.52$

Answers

6. $8609.76
7. $4444.74
8. a) $1717.85, $8282.15 b) $1655.57, $8344.43
9. $74.35
10. $2862.81
11. $2768.38
12. a) $98 737.24 b) $151 262.76 c) $129 795.92
13. a) i) $21 500 ii) $13 081.40
    b) i) $100 000 ii) $28 008.45
14.

	Future-Value Formula	A ($)	Compounding Frequency	i (%)	n	Annual Interest Rate (%)	Number of Years	Present Value ($)
a)	$280\ 000 = P(1 + 0.0575)^{24}$	280 000	annually	0.057 5	24	5.75	24	73 186.17
b)	$16\ 000 = P(1 + 0.20)^{5}$	16 000	annually	0.20	5	20	5	6 430.04
c)	$10\ 000 = P\left(1 + \frac{0.0425}{365}\right)^{1460}$	10 000	daily	0.000 12	1460	4.25	4	8 436.73
d)	$9500 = P\left(1 + \frac{0.15}{12}\right)^{50}$	9500	monthly	0.012 5	50	15	4 years 2 months	5 104.72
e)	$1500 = P\left(1 + \frac{0.03}{4}\right)^{24}$	1500	quarterly	0.007 5	24	3	6	1 253.75

15. Savings account: $4347.68 must be invested now; GIC: $4369.20 must be invested now. Marshall should invest in the savings account since the present value required is less.
16. $2000
17. $911.39
18. $75 305.12

Lesson 8.4, pp. 486–488

1. Solutions are **in bold**.

	N	I%	PV	PMT	FV	P/Y	C/Y
a)	8	4.5	−600	0	**858.27**	1	4
b)	**11.6**	2.5	−6 000	0	8000	1	2
c)	5	**14.1**	−20 000	0	40 000	1	4
d)	1	0.6	**−847.62**	0	900	1	52

2. $54 059.13
3. Plan A
4. a) $16 288.95 b) $26 532.98 c) $43 219.42
5. a) present value: $4444.98, interest: $555.02
   b) present value: $10 625.83, interest: $2874.17
   c) present value: $8991.83, interest: $2208.17
   d) present value: $77 030.40, interest: $51 469.60
   e) present value: $797.31, interest: $52.69
   f) present value: $4849.55, interest: $1375.45
6. 5.95%
7. 11.032 years
8. 4.25%
9. 2 years
10. $4758.14
11. $5200.00
12. $4514.38
13. $3427.08
14.

	Month	0	1	2	3
a)	**A ($)**	465	471.98	479.05	486.24
b)	**I ($)**	0	6.98	14.05	21.24

15. Answers will depend on online calculators chosen. Similarities should include basic variables such as present value, future value, payments, i, n; differences in format, and so on.
16. Between 321.7% and 357.3%
17. Dealer: $P = 32\ 000$, $i = 0.002$, $n = 60$, $R = \$566.51$; Bank: $P = 29\ 000$, $i = 0.0045$, $n = 60$, $R = \$552.60$; The monthly payments for the loan to the bank are less than those to the dealer.
18. $16 637.84

Mid-Chapter Review, pp. 491–492

1.

	Principal ($)	Annual Interest Rate (%)	Time	Simple Interest Paid ($)	Amount ($)
a)	250	2	3 years	**15.00**	**265.00**
b)	**399.98**	2.5	200 weeks	38.46	**438.44**
c)	1000	3.1	18 months	46.50	**1046.50**
d)	5000	5	30 weeks	**144.23**	**5144.23**
e)	**750**	4.2	5 years	157.50	**907.50**
f)	**1500**	3	54 months	202.50	**1702.50**

2. 3 years

3.

	Your Investment (10% Simple Interest)		Friend's Investment (10% Compound Interest)	
Year	Interest Earned ($)	Accumulated Interest ($)	Interest Earned ($)	Accumulated Interest ($)
1	50.00	50.00	50.00	50.00
2	50.00	100.00	55.00	105.00
3	50.00	150.00	60.50	165.50
4	50.00	200.00	66.55	232.05
5	50.00	250.00	73.21	305.26
6	50.00	300.00	80.52	385.78
7	50.00	350.00	88.58	474.36
8	50.00	400.00	97.43	571.79
9	50.00	450.00	107.18	678.97
10	50.00	500.00	117.90	796.87

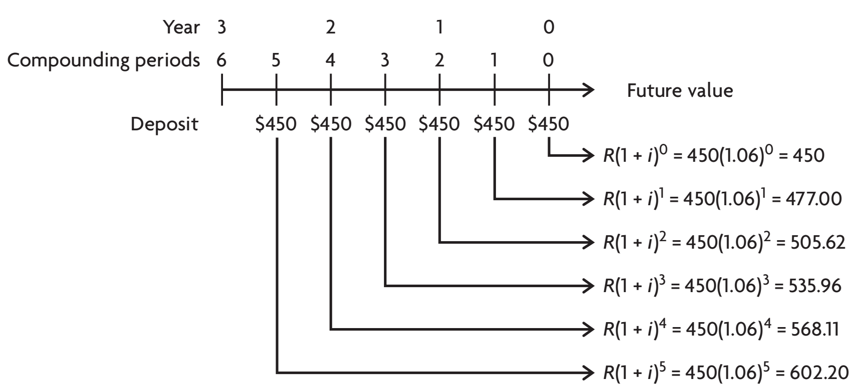
4.

	Principal ($)	Annual Interest Rate (%)	Years Invested	Compounding Frequency	Amount ($)	Interest Earned ($)
a)	400.00	5	15	annually	**831.57**	**431.57**
b)	350.00	2.45	8	monthly	**425.70**	**75.70**
c)	**420.05**	3.5	5	quarterly	500.00	**79.95**
d)	120.00	**3.2**	7	semi-annually	150.00	**30.00**
e)	2500.00	7.6	**1 yr 9 mths**	monthly	**2 850.00**	350.00
f)	10 000.00	7.5	3	quarterly	**12 497.16**	**2497.16**

5. $270.58
6. $1225.35
7. Option 1: A = $60 110.84; Option 2: A = $60 047.92; Option 1 is the better choice because it earns $62.92 more interest.
8. $7413.72
9. $752.31
10. $3233.46
11. 2.2 %
12. 14 years
13. 33 years
14. Bank A: $563.58, Bank B: $ 573.76; She should go with Bank B as it will provide Sarah with the most interest.

Lesson 8.5, pp. 498–500

1.



2. Geoff's investment earns $391.87 more than Marilyn's.

3. **a)** $4607.11 **b)** $29 236.22

4.

	Payment ($)	Interest Rate	Compounding Period	Term of Annuity	Amount ($)
a)	1000	8% per year	annually	3 years	**3 246.40**
b)	500	$7\frac{1}{2}$% per year	quarterly	8.5 years	**23 482.98**
c)	200	3.25% per year	monthly	5 years	**13 010.95**

5. $348.92

6. $51 960.58; $1960.58

7. **a)** $451 222.88 **b)** $416 222.88

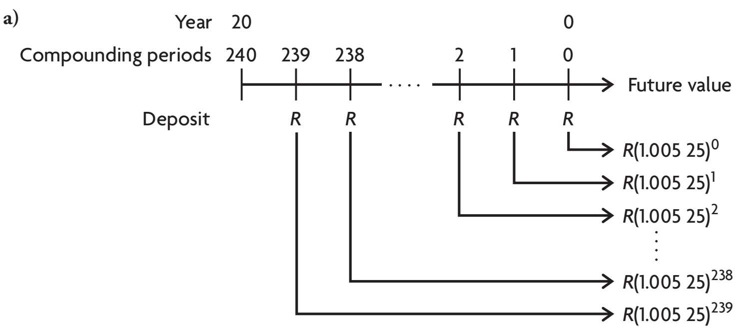
8. No; entertainment costs $2848.86, investment is worth $2743.74.

9. $7599.64

10. No. At the end of 8 months, he will have only $1601.57.

11. $3788.00

12. **a)**



b) $167.08 **c)** $268.12

13. Answers will vary; may include 8% compounded annually, annual payments of $400; 5% compounded monthly, monthly payments of $40.

14. **a)** $5466.13

b) $5330.00; Annuity (a) will earn the greater amount.

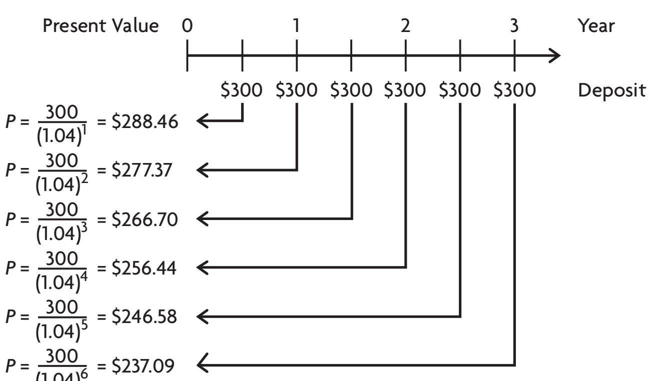
15. In the formula $A = \frac{R[(1 + i)^n - 1]}{i}$, n represents the number of compounding periods. If there were more payments than compounding periods, the formula would assume n payments and therefore miss out the extra payments. Similarly, if there were fewer payments, the formula would include payments that were not made.

16. $433.28

17. $556.05

Lesson 8.6, pp. 506–508

1.



$PV = \$1572.64$

2.

	Withdrawal ($)	Annual Interest Rate (%)	Compounding Period	Term of Annuity	*R* ($)	*i*	*n*	*PV* ($)
a)	750	8	annual	3 years	**750**	**0.08**	**3**	**1 932.82**
b)	450	7.5	quarterly	8.5 years	**450**	**0.018 75**	**34**	**11 238.20**
c)	225	3.25	monthly	5 years	**225**	$\frac{3.25}{1200}$	**60**	**12 444.69**

3. a) $2850.55 b) $3464.76
4. $721.37
5. $2081.32
6. $92.48
7. a) $2537.48 b) $128 747.84
8. $706.82
9. $783.49
10. $7770.40
11. a) $389.47
    b) $23 368.36
    c) Cash offer; payments to bank are $386.66, which is less than dealer's finance payments.
12. a) $961.63 b) $108.37
13. Answers may vary. E.g., If an annual rate of 5% is used, $R = \$1060.66$. For an annual rate of 7.5%, $R = \$1187.02$. For an annual rate of 10%, $R = \$1321.51$.
14. a) Answers may vary. E.g., Quarterly payments of $2500 for 9 years at 20%/a; annual payments of $2500 for 36 years at 5%/a
    b) $41 367.13 for all annuities matching the given information
15. Answers may vary. E.g.,
    a) Find quarterly payments at 8% for a 3-year annuity worth $2800 at maturity.
    b) Find amount of a 5-year loan annuity at 6% interest with monthly payments of $350.
16. a) Answers may vary. E.g., suppose that there is an annuity that has an annual interest rate of 12% compounded quarterly with quarterly payments of $400 paid out over 6 years.

$$A = \frac{400\left[\left(1 + \frac{0.12}{4}\right)^{24} - 1\right]}{\frac{0.12}{4}}$$
$$= \$13\ 770.59$$

Now suppose the duration of the annuity were doubled from 6 years to 12 years. The amount of the annuity would be

$$A = \frac{400\left[\left(1 + \frac{0.12}{4}\right)^{48} - 1\right]}{\frac{0.12}{4}}$$
$$= \$41\ 763.36$$

Therefore, doubling the duration of an annuity does not double the amount of the annuity at maturity. Rather, it more than doubles the amount of the annuity.

    b) Answers may vary. E.g., suppose that there is an annuity that has an annual interest rate of 12% compounded quarterly with quarterly payments of $400 paid out over 6 years.

$$A = \frac{400\left[\left(1 + \frac{0.12}{4}\right)^{24} - 1\right]}{\frac{0.12}{4}}$$
$$= \$13\ 770.59$$

Now suppose the payment amount were doubled from $400 to $800. The amount of the annuity would be

$$A = \frac{800\left[\left(1 + \frac{0.12}{4}\right)^{48} - 1\right]}{\frac{0.12}{4}}$$
$$= \$27\ 541.18$$

Therefore, doubling the payment amount does double the amount of the annuity at maturity.

17. a) $21 278.35 b) 8.17%
18. 5 years 3 months

Lesson 8.7, pp. 517–519

1. a) Interest = previous period's balance × interest rate per compounding period
   b) Annual contribution + interest
2. a) $997.48
   b) 19.41 periods or approximately 4 years 10 months; minimal impact on the duration of the loan
   c) a): $19 949.60; b): $19 361.09
3. Variables to be determined are **in bold**.

	N	I%	PV	PMT	FV	P/Y	C/Y
a)	156	**0**	10 000	–350	0	12	12
b)	**0**	7.5	15 000	–500	0	12	12

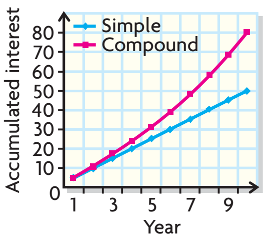
4. a) $216.25
   b) $653.23
   c) The payment in part (b) is about 3 times the payment in part (a) because payments are made $\frac{1}{3}$ as often. It is slightly more because payments earn interest on the interest, and with monthly payments there are more compounding periods for this to happen.
5. 4.96%
6. a) $597.58
   b) $24 834.63; $19 282.07; $13 313.30; $6897.12; $0
   c) $5854.85; $30 000
7. 10.33 years or 10 years 4 months
8. $18 649.01
9. $29 127.96
10. a) $307.75 b) $3464.88 c) $2286.34
11. Get low interest rate—reduces the amount of interest paid; Borrow as little as possible—just what you need—reduces the present value of the loan; Pay as much as possible each period—principal is paid down faster, interest amounts are reduced at a faster rate.
12. a) Answers will vary; for example, a car, a computer, a vacation
    b) Answers will depend on information available.
    c) Schedule should be calculated using similar formulas to those in Reflecting part F.
13. a) $459.35
    b) about 31 more payments
    c) $1603.20

Chapter Review, pp. 522–523

1.

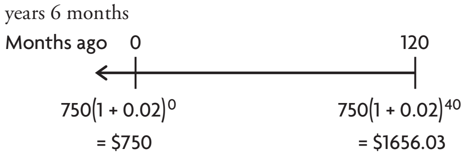
Principal ($)	Annual Interest Rate (%)	Years	Compounding Frequency	Amount ($)	Interest Earned ($)
a) 400.00	5	15	semi-annually	**839.03**	**439.03**
b) 450.00	4.5	10	monthly	**705.15**	**255.15**
c) **622.87**	3.4	10	weekly	875.00	**252.13**
d) 508.75	3.7	3	semi-annually	568.24	**59.49**
e) 10 000.00	2.34	**4**	quarterly	**11 000.00**	1000.00

2. Answers may vary; for example:



The relationship between accumulated interest and year is linear for simple interest and exponential for compound interest, because simple interest is earned on the principal only, while compound interest earns interest on the interest as well.

3. **a)** $6929.29 **b)** $9603.02
4. $7559.90
5. 8%/a
6. 17 years 6 months
7. **a)**



b) $45 301.49, $15 301.49

8. $11 000.73
9. **a)** 16 years old **b)** A little over 1 year less
10. **a)** 5-year term: $622.75; 8-year term: $439.51 **b)** $4827.96
11. $60 744.31
12. $9324.48
13.

	a)	b)	c)	d)
N	5	180	36	32
I	4.5	3.75	0	9
PV	0	0	10 000	0
PMT	−1500	0	−334.54	−2000
FV	0	200 000	0	0
P/Y	1	12	12	4
C/Y	1	12	12	4

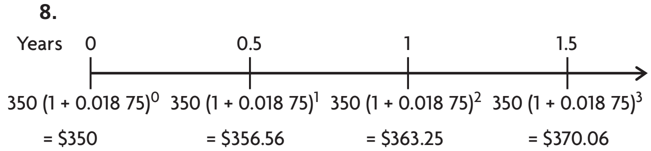
14. $8530.20
15. $358.22
16.

Loan $10 000 Annual Rate 0.08 Rate per Period 0.0067 Compounding Periods per Year 12		Start Year 0 End Year 5 Number of Payments 60 Contribution $202.76	
Payment Number	**Payment ($)**	**Interest**	**New Balance $**
0			10 000.00
1	202.76	66.67	9 863.91
2	202.76	66.09	9 727.24
3	202.76	65.17	9 589.65
4	202.76	64.25	9 451.14
5	202.76	63.32	9 311.70
6	202.76	62.39	9 171.33
7	202.76	61.45	9 030.02
8	202.76	60.50	8 887.76
9	202.76	59.55	8 744.55
10	202.76	58.59	8 600.38
11	202.76	57.62	8 455.24
12	202.76	56.65	8 309.13
13	202.76	55.67	8 162.13
14	202.76	54.69	8 014.06
15	202.76	53.69	7 864.99

17. $1548.95

Chapter Self-Test, p. 524

1. In simple interest, only the principal amount earns interest, whereas in compound interest, the interest earns interest as well.
2. $12 717.67, $2217.67
3. $13 367.01, $8132.99
4. $16 783.48
5. $15 169.64
6. 1.96%
7. 390 weeks or 7 years 6 months
8.



9. $148.90
10. $60 880.81
11. An amortization table is used to show the amount of a regular payment, how much of the payment is interest, how much is used to reduce the principal, and the outstanding balance after each payment. A spreadsheet is useful in creating amortization tables and for analyzing the effects of changing the parameters of a loan problem.

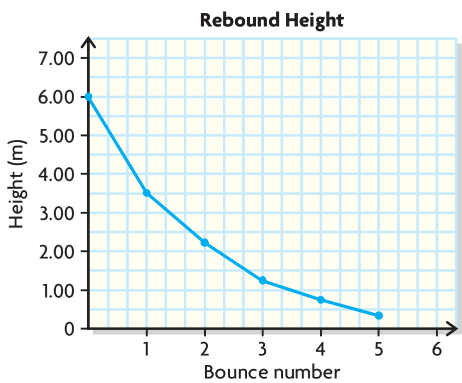
Cumulative Review Chapters 7–8, pp. 526–527

1. (a) **2.** (c) **3.** (b) **4.** (c) **5.** (c) **6.** (a) **7.** (d) **8.** (c) **9.** (a) **10.** (c) **11.** (c) **12.** (b)

13. a)

Bounce	Height (m)
0	6.00
1	3.60
2	2.16
3	1.30
4	0.78
5	0.47

b)



c) $f(n) = 0.6 \times f(n-1)$ or $f(n) = 6(0.60)^n$
d) $f(12) \doteq 0.013$
e) 6^{th} bounce

14. \$1028.24

15. Monthly payments: \$348.39; total interest: \$2722.72; value of car after four years: \$7912.13

Appendix A

A-1 Operations with Integers, p. 530

1. a) 3 **b)** 25 **c)** −24 **d)** −10 **e)** −6 **f)** 6

2. a) < **b)** > **c)** > **d)** =

3. a) 55 **b)** 60 **c)** −7 **d)** 8 **e)** $\frac{15}{7}$ **f)** $\frac{1}{49}$

4. a) 5 **b)** 3 **c)** −9 **d)** 76 **e)** −12 **f)** −1

5. a) 3 **b)** −1 **c)** −2 **d)** 1

A-2 Operations with Rational Numbers, pp. 531–532

1. a) $-\frac{1}{2}$ **b)** $\frac{7}{6}$ **c)** $-\frac{19}{12}$ **d)** $-8\frac{7}{12}$ **e)** $-\frac{41}{20}$ **f)** 1

2. a) $-\frac{16}{25}$ **b)** $-\frac{9}{5}$ **c)** $\frac{2}{15}$ **d)** $\frac{3}{2}$ **e)** $-3\frac{2}{5}$ **f)** $32\frac{7}{24}$

3. a) 2 **b)** $-4\frac{3}{4}$ **c)** $\frac{16}{9}$ **d)** $-\frac{9}{2}$ **e)** $\frac{15}{2}$ **f)** $\frac{2}{3}$

4. a) $\frac{1}{5}$ **b)** $\frac{3}{10}$ **c)** $\frac{1}{15}$ **d)** $-\frac{1}{18}$ **e)** $\frac{36}{5}$ **f)** $-\frac{3}{8}$

A-3 Exponent Laws, p. 533

1. a) 16 **b)** 1 **c)** 9 **d)** −9 **e)** −125 **f)** 0.125

2. a) 2 **b)** 31 **c)** 9 **d)** $\frac{1}{18}$ **e)** −16 **f)** $\frac{13}{36}$

3. a) 9 **b)** 50 **c)** 4 194 304 **d)** $\frac{1}{27}$

4. a) x^8 **b)** m^9 **c)** y^7 **d)** a^{bc} **e)** x^6 **f)** $\frac{x^{12}}{y^9}$

5. a) x^5y^6 **b)** $108m^{12}$ **c)** $25x^4$ **d)** $\frac{4u^2}{v^2}$

A-4 The Pythagorean Theorem, pp. 534–535

1. a) $x^2 = 6^2 + 8^2$ **b)** $c^2 = 13^2 + 6^2$ **c)** $9^2 = y^2 + 5^2$ **d)** $8.5^2 = a^2 + 3.2^2$

2. a) 10 cm **b)** 11.5 cm **c)** 7.5 cm **d)** 7.9 cm

3. a) 13.93 **b)** 6 **c)** 23.07 **d)** 5.23

4. a) 11.2 m **b)** 6.7 cm **c)** 7.4 cm **d)** 4.9 m

5. 10.6 cm

6. 69.4 m

A-5 Evaluating Algebraic Expressions and Formulas, p. 536

1. a) 28 **b)** −17 **c)** 1 **d)** $\frac{9}{20}$

2. a) $\frac{1}{6}$ **b)** $\frac{5}{6}$ **c)** $\frac{-17}{6}$ **d)** $\frac{-7}{12}$

3. a) 82.35 cm^2 **b)** 58.09 m^2 **c)** 10 m **d)** 4849.05 cm^3

A-6 Finding Intercepts of Linear Relations, p. 538

1. a) x-int: 3, y-int: 1
b) x-int: −7, y-int: 14
c) x-int: 6, y-int: −3
d) x-int: 3, y-int: 5
e) x-int: −10, y-int: 10
f) x-int: $-\frac{15}{2}$, y-int: 3

2. a) x-int: 7, y-int: −7
b) x-int: −3, y-int: 2
c) x-int: −3, y-int: 12
d) x-int: −10, y-int: 6
e) x-int: −7, y-int: $\frac{7}{2}$
f) x-int: 2, y-int: $-\frac{12}{5}$