

**CHAPTER  
9****Personal Finance****Get Set**

Answer these questions to check your understanding of the Prerequisite Skills concepts on pages 460–461 of the *Foundations for College Mathematics 11* textbook.

**Decimals**

1. Use a calculator to evaluate.

a)  $3.4 \times 9.8$

b)  $5 \times 7.34$

c)  $730 \times 510(0.25)(0.55)$

d)  $412(0.5) + 3.08(0.25)$

**Percents**

2. Convert each percent to a decimal.

a) 70%

b) 45.5%

c) 32.8%

3. Evaluate without the aid of a calculator.

a) 20% of 4000

b) 10% of 1500

c) 25% of 1200

d) 2% of 230

**Exponents**

4. Use a calculator to evaluate.

a)  $(0.5)^4$

b)  $(0.25)^8$

c)  $(1.5)^7$

d)  $(0.03)^8$

**Compound Interest**

5. Determine  $n$ , the number of compounding periods, for each situation.

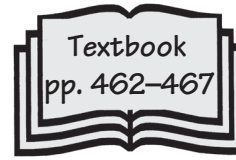
a) semi-annual compounding for 4 years

b) daily compounding for 2 years

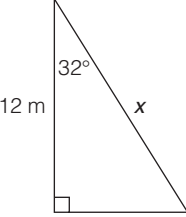
c) quarterly compounding for 3 years

d) monthly compounding for 5 years

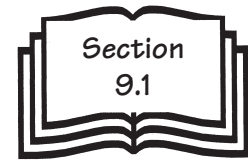
## 9.1 Savings Alternatives



### Warm-Up

<p><b>1. Number Skills</b></p> <p>Evaluate.</p> <p>a) <math>\frac{93 - 18}{25 \times 3} - 10</math>      b) <math>\frac{4 + 7}{4 \times 7}</math></p>	<p><b>2. Algebra</b></p> <p>Simplify.</p> <p>a) <math>2x + 2y + 3x + 3y</math></p> <p>b) <math>2x - 2y - 3x + 8y</math></p>
<p><b>3. Relations</b></p> <p>Determine the slope of the line segment joining the two points A(3, 5) and B(-2, 6).</p>	<p><b>4. Geometry/Measurement</b></p> <p>Solve for <math>x</math> to the nearest hundredth of a metre.</p> 
<p><b>5. Data/Probability</b></p> <p>Calculate the probability of rolling a die and getting</p> <p>a) a number greater than 2</p> <p>b) an even number greater than 2</p>	<p><b>6. Modelling</b></p> <p>Write an equation to model the following situation.</p> <p>Two cylinders have equal radius. The height of the first cylinder is twice the height of the second cylinder. How are the volumes of the cylinders related?</p>
<p><b>7. Math Literacy</b></p> <p>True or false?</p> <p>Two polygons are similar if their corresponding sides are proportional.</p>	<p><b>8. Previous Section</b></p> <p>Evaluate. Round your answers to two decimal places, if necessary.</p> <p>a) <math>401(3.6) + 2.4(4) - 3.2</math></p> <p>b) <math>32(0.5) + 3.6(0.25) - 1.8(4.2)</math></p>

## Practise



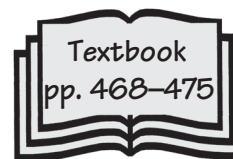
1. A bank charges \$4.95 for up to 5 transactions per month plus 50¢ for each additional transaction. Determine the fee for each number of transactions during the month of May.
- a) 7                                      b) 12                                      c) 15                                      d) 20

2. Johan is thinking about getting a new bank account. He usually makes two transactions per week. In addition, three bills are automatically debited from his account. The table shows some account options that he has found.

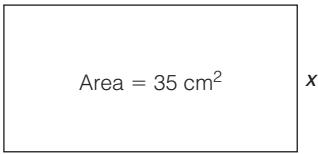
Banking Option 1	Banking Option 2	Banking Option 3
\$4.95 per month. Each transaction is \$1.00.	\$7.95 per month for 10 transactions. Each additional transaction is 75¢.	\$12.95 per month for 10 transactions. Each additional transaction is 50¢.

- a) About how many transactions does Johan make per month?
- b) Which banking option might be best for Johan? Explain.
- c) Calculate the total cost and the cost per transaction for each option.
- d) Suggest a way that Johan could reduce the banking fees that he pays each month.
3. Susan's bi-weekly paycheque from her part-time job averages \$325 after taxes. Her pay is directly deposited into a chequing account. Since the chequing account pays no interest, she usually transfers 25% of her pay to a savings account that has an annual interest rate of 4%, compounded monthly.
- a) About how much does Susan transfer to her savings account each month?
- b) How much remains in the chequing account?
- c) Determine about how much money Susan will have in her savings account after
- i) 2 months                                      ii) 7 months                                      iii) 1 year

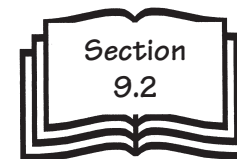
## 9.2 Investment Alternatives



### Warm-Up

<p><b>1. Number Skills</b></p> <p>Evaluate. Round your answer to two decimal places, if necessary.</p> <p>a) <math>4^2</math>                      b) <math>\sqrt{81}</math></p> <p>c) <math>\sqrt{6}</math>                        d) <math>(7.2)^2</math></p>	<p><b>2. Algebra</b></p> <p>Expand and simplify.</p> <p>a) <math>3(2x + 3) - 2(x - 1)</math></p> <p>b) <math>4(x + 2y + z) - (x - y)</math></p>
<p><b>3. Relations</b></p> <p>What is the slope of a horizontal line?</p> <p>What is the slope of a vertical line?</p>	<p><b>4. Geometry/Measurement</b></p> <p>Tim has a round platter with a diameter of 36 cm. What is the area of this platter?</p> <p>A 56.52 cm<sup>2</sup>  B 254.34 cm<sup>2</sup>  C 508.68 cm<sup>2</sup>  D 1017.36 cm<sup>2</sup></p>
<p><b>5. Data/Probability</b></p> <p>Find the mean, the median, and the mode of the set of data.</p> <p>5, 12, 7, 11, 14, 10, 9, 8, 10, 8</p>	<p><b>6. Modelling</b></p> <p>Write an equation to solve for <math>x</math>.</p> <div style="text-align: center;">  </div>
<p><b>7. Math Literacy</b></p> <p>A set of data is arranged in order, least to greatest. What is the name of the middle value?</p>	<p><b>8. Previous Section</b></p> <p>A bank charges \$7.95 for up to 10 transactions per month plus 75¢ for each additional transaction. Determine the fee for 15 transactions during one month.</p>

## Practise

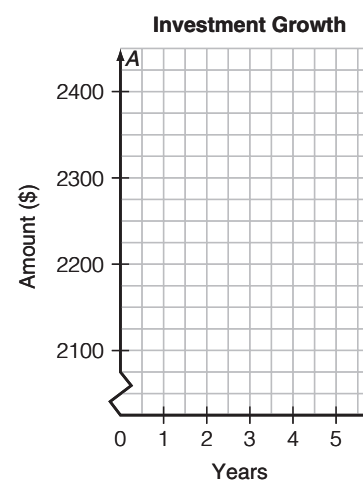


1. Express each percent as a decimal.
- a) 7%      b) 4.25%      c) 6.5%      d) 3.91%

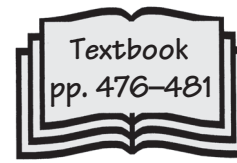
2. Complete the table.

	$r$ (%)	Compounding Frequency	$i$
a)	8.0		0.04
b)		daily	0.000 11
c)	4.4	quarterly	
d)		monthly	0.005

3. Determine the future value of each 5-year investment. Assume interest is compounded annually and each investment has a 1.5% management fee.
- a) \$2000 in an investment that averages 6.92% growth per year.
- b) \$3500 in a fund that averages 11.04% growth per year.
- c) \$12 500 in a mutual fund that averages 9.67% growth per year.
4. One year ago, Melodi invested \$1500 in a mutual fund that increased in value by 3.65%. The fund has a 2% management fee. Determine the value of Melodi's investment at the end of one year.
5. Kenneth invested \$2100 in a 5-year GIC that pays 2.70% annual interest compounded semi-annually.
- a) Determine the value of the GIC after 1 year.
- b) Determine the value of the GIC after 2 years.
- c) Express the future value of this investment as an exponential relation.
- d) Use the relation in part c) to determine the value of the GIC at the end of 5 years.
- e) Graph the relation for the five years.



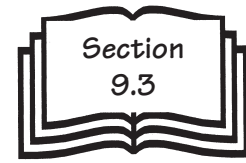
## 9.3 Manage Credit Cards



### Warm-Up

<p><b>1. Number Skills</b></p> <p>Evaluate.</p> <p>a) <math>4^2 + 3 \times 2(5)</math></p> <p>b) <math>9 - 3(4) + 2^6</math></p>	<p><b>2. Algebra</b></p> <p>Factor.</p> <p>a) <math>3x + 3</math></p> <p>b) <math>2x^2 - 4x</math></p> <p>c) <math>x^2 + 5x + 4</math></p>
<p><b>3. Relations</b></p> <p>Find the <math>x</math>-intercepts of the quadratic relation <math>y = x^2 + x - 6</math>.</p>	<p><b>4. Geometry/Masurement</b></p> <p>From the top of a 112-m cliff, the angle of depression to a boat is <math>42^\circ</math>. How far is the boat from the base of the cliff?</p>
<p><b>5. Data/Probability</b></p> <p>A card is drawn from a deck of 52 cards. What is the theoretical probability that a red card is drawn?</p>	<p><b>6. Problem Solving</b></p> <p>The side length of a square is <math>x</math>. The length of a rectangle is 3 cm more than the side length of the square. The width of the rectangle is 3 cm less than the side length of the square. Which figure has the greater area and by how much?</p>
<p><b>7. Math Literacy</b></p> <p>What is the name of the point in a line segment that divides the line segment into two equal parts?</p>	<p><b>8. Previous Section</b></p> <p>Iana invested \$5570 in a mutual fund that increased in value by 8.36%. The fund has a 1.5% management fee. Determine the value of Iana's investment at the end of 1 year.</p>

## Practise

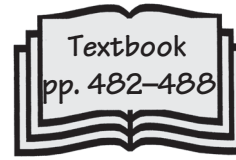


- Calculate the daily interest rate for each credit card annual interest rate. Express each answer as a percent rounded to 4 decimal places.
  - 18.2%
  - 29.9%
  - 4.9%
- Use each of the daily interest rates from question 1. Determine the future value of an overdue credit card balance of \$725 if interest is charged for 30 days.
  - 
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  -
- Part of Lex's latest credit card statement is shown.

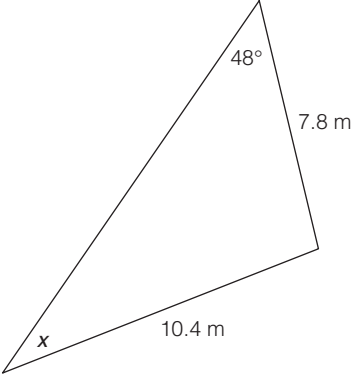
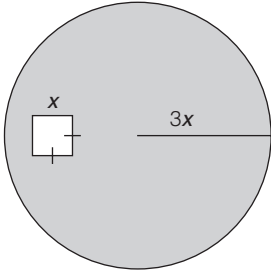
Credit Card Statement			
<i>Statement from: December 15 to January 14</i>			
12/17		The Christmas Shoppe	\$21.39
12/22		Toys for You	\$92.18
12/24		Simpson's Bakery	\$15.79
Previous Balance	\$282.94	New Balance	
Payments	\$282.94	Minimum Payment	
Interest Charged	0	Annual Interest Rate	12.9%
New Purchases		Available Credit	

- Calculate the amount of new purchases made this month.
- What is Lex's new balance?
- The minimum payment is the greater of 3% or \$20. Determine Lex's minimum payment for this month.
- If Lex's credit limit is \$1500, what is her available credit?
- Calculate the daily interest rate. Express the answer as a percent and as a decimal rounded to four decimal places

## 9.4 Obtain a Vehicle



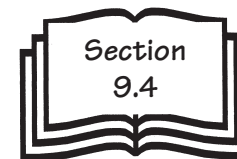
### Warm-Up

<p><b>1. Number Skills</b></p> <p>Order from least to greatest.</p> <p>a) <math>\frac{1}{3}, \frac{2}{5}, \frac{7}{8}, \frac{1}{4}, \frac{4}{7}</math></p> <p>b) 3.11, -3.02, 3.01, -3.91, 3.13</p>	<p><b>2. Algebra</b></p> <p>Factor.</p> <p>a) <math>x^2 + 10x + 9</math></p> <p>b) <math>6x^2 + 54</math></p>
<p><b>3. Relations</b></p> <p>What are the coordinates of the vertex of the quadratic relation <math>y = x^2</math>?</p>	<p><b>4. Geometry/Measurement</b></p> <p>Solve for <math>x</math>.</p> 
<p><b>5. Data/Probability</b></p> <p>Determine the standard deviation for the set of data.</p> <p>54, 33, 78, 42, 99, 61, 82, 87, 77</p>	<p><b>6. Modelling</b></p> <p>Write an expression for the area of the shaded region.</p> 
<p><b>7. Math Literacy</b></p> <p>Lines in the same plane that never meet are</p> <p>A perpendicular</p> <p>B obtuse</p> <p>C parallel</p> <p>D the same length</p>	<p><b>8. Previous Section</b></p> <p>A credit card company charges a minimum monthly payment of the greater of 3% or \$15. Last month, Zach had a balance of \$976. What is Zach's minimum payment?</p>



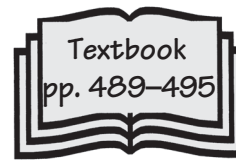
Date: \_\_\_\_\_

## Practise

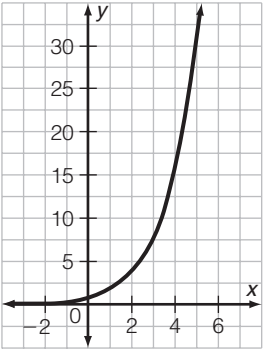
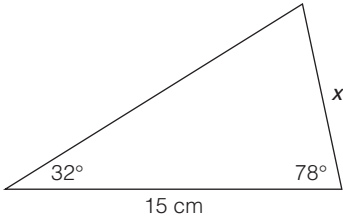


1. Calculate the after-tax cost of these vehicles available at a car dealership.
  - a) a new hybrid car selling for \$28 995
  
  - b) a three-year-old compact car selling for \$11 995
  
  - c) a new mid-size car selling for \$32 995
  
2. Calculate the total cost for the used vehicles available from private sellers. Remember, only PST is charged on a private sale.
  - a) a three-year-old 5-door selling for \$17 000
  
  - b) an eight-year-old compact selling for \$8400
  
3. The car that Marie likes is \$14 995 plus taxes. The dealer's financing rate is 3.9% per year, compounded monthly for 5 years. She has a \$2500 down payment and will finance the rest.
  - a) Use a TVM Solver to determine the monthly payments.
  
  - b) What is the total amount paid for the vehicle?
  
  - c) Calculate the total interest paid.
  
4. To lease a new car worth \$19 995, a customer agrees to pay a \$3000 down payment and 48 monthly payments of \$295.
  - a) Calculate the total cost of leasing the vehicle.
  
  - b) Calculate the average cost per month over the life of the lease.
  
5. To buy a used car, Doug borrowed \$12 000 for 5 years at 7.9%.
  - a) Use a TVM Solver to determine the monthly payment.
  
  - b) Calculate the total amount paid for this loan.
  
  - c) How much interest does Doug pay over the life of the loan?

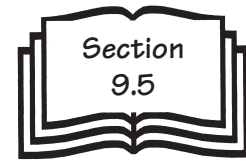
## 9.5 Operate a Vehicle



### Warm-Up

<p><b>1. Number Skills</b></p> <p>Round each number to two decimal places.</p> <p>a) 2.3462</p> <p>b) -100.5414</p> <p>c) 93.997 82</p>	<p><b>2. Algebra</b></p> <p>Evaluate, if <math>x = 2</math> and <math>y = 3</math>.</p> <p>a) <math>2x + y - 4</math></p> <p>b) <math>2(y + 3) + 3(x - 1)</math></p> <p>c) <math>10(2x - 7) - 3(y + 2) + 20x - 70</math></p>
<p><b>3. Relations</b></p> <p>What type of relation is shown in the graph?</p> 	<p><b>4. Geometry/Measurement</b></p> <p>Solve for <math>x</math>.</p> 
<p><b>5. Data/Probability</b></p> <p>When is the median a better measure of central tendency than the mean?</p>	<p><b>6. Problem Solving</b></p> <p>If <math>x</math> and <math>y</math> are integers, find values of <math>x</math> and <math>y</math> such that <math>x^2 - y^2 = 21</math>.</p>
<p><b>7. Math Literacy</b></p> <p>What is the name for the distance from the centre of a circle to point on the circle?</p>	<p><b>8. Previous Section</b></p> <p>A new car at a dealership costs \$17 995. Calculate the total cost of the vehicle with taxes.</p>

## Practise

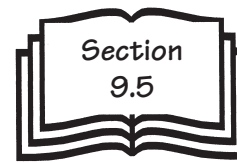


Use this information for questions 1 and 2.

	Vehicle	Tank Size (L)	Fuel Efficiency (L/100 km)
a)	scooter	9.5	1.2
b)	compact car	45	5.3
c)	truck	83	12

- Suppose the current price of 1 L of regular gasoline is \$1.18. Calculate the cost to fill the tank of each vehicle.
  - 
  - 
  -
- Determine the distance that each vehicle can travel on one full tank of gas.
  - 
  - 
  -
- Lisa's compact car has a 50-L fuel tank and a fuel efficiency rating of 6.7 L/100 km.
  - Explain what the fuel efficiency rating on Lisa's car means.
  - How far can Lisa travel on one tank of fuel?
  - How much fuel would her car use on a 600-km trip?
- Leah plans to buy a compact car. She called an insurance company and received a quote of \$3250 per year. She can pay the premium in one lump sum or make monthly payments of \$275.
  - Calculate the total cost of the monthly payments.
  - Calculate the difference between the two payment plans.

Date: \_\_\_\_\_



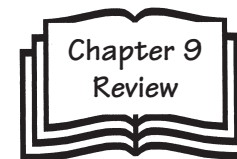
5. A new sub-compact car sells for \$16 795. Anika researched cars of the same model and found this information.

Age of Vehicle (years)	Average Selling Price (\$)
1	13 775
2	11 300
3	9200
4	7500

- a) Calculate the depreciation of the vehicle during the first year, in dollars.
  - b) Calculate the depreciation after one year, as a percent of the new vehicle price.
  - c) Calculate the depreciation after four years, as a percent of the new vehicle price.
6. Calculate the fuel consumption, in kilometres per litre, in each case. Round your answers to one decimal place.
- a) Marc filled his car’s tank with 51.4 L. He was able to drive 638 km before he needed more gas.
  - b) On a trip to her cottage, Jillian used 12.8 L to travel 254 km.
  - c) Elenor’s motorcycle can travel 1070 km on 24.5 L of fuel.
7. The value of a luxury sedan worth \$54 000 depreciates by 21% each year.
- a) Determine the value of the sedan after 3 years.
  - b) Express the depreciated value of the vehicle as an exponential relation.
  - c) Use the relation from part b) to determine the value of the sedan when it is
    - i) 6 years old
    - ii) 12 years old.

Date: \_\_\_\_\_

## Chapter 9 Review



### 9.1 Savings Alternatives, textbook pages 462–467

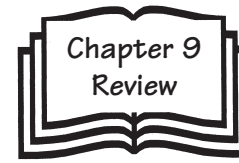
1. A bank charges \$3.95 for 5 transactions per month plus \$1.00 for each additional transaction. Determine the fee for each number of transactions.
  - a) 4
  - b) 10
  - c) 13
  
2. Use a TVM Solver to determine the future value of each amount deposited into a daily interest savings account.
  - a) \$2200 in an account that pays 4% interest per year for the month of January.
  
  - b) \$1300 in an account that pays 3.75% interest per year for the month of October.
  
  - c) \$15 000 in an account that pays 5.25% interest per year for the months of August and September.
  
  - d) \$1600 in an account that pays 3.25% interest per year for 1 year.

### 9.2 Investment Alternatives, textbook pages 468–475

3. Use the compound interest formula to determine the future value of each 3-year investment. Assume interest is compounded annually and each investment has a 2% management fee.
  - a) \$5600 in an investment that averages 5.75% growth per year.
  
  - b) \$12 500 in a fund that averages 7.92% growth per year.
  
  - c) \$940 in a mutual fund that averages 6.15% growth per year.
  
4. One year ago, Peter invested \$9400 in a mutual fund that increased in value by 7.82%. The fund has a 3% management fee. Determine the value of Peter's investment at the end of one year.

Date: \_\_\_\_\_

### 9.3 Manage Credit Cards, textbook pages 476–481



5. Calculate the daily interest rate for each credit card annual interest rate. Express each answer as a percent rounded to four decimal places.
- a) 7.9%      b) 13.1%      c) 32.5%      d) 12.65%
6. Use each of the daily interest rates from question 5 and the compound interest formula to determine the future value of an overdue credit card balance of \$1200 if interest is charged for 45 days.
- a)              b)              c)              d)

### 9.4 Obtain a Vehicle, textbook pages 482–488

7. To lease a car worth \$23 795, a customer agrees to pay a \$4500 down payment and 48 monthly payments of \$459.
- a) Calculate the total cost of leasing the vehicle.
- b) Calculate the average cost per month over the life of the lease.
8. Ross purchases a used car worth \$11 700 from a local dealer. The finance rate is 4.9% per year, compounded monthly over 5 years. He makes a \$2800 down payment.
- a) Calculate the total cost of the vehicle.
- b) How much of the cost will Ross finance?
- c) Determine Ross's monthly payment.

### 9.5 Operate a Vehicle, textbook pages 489–495

9. Calculate the fuel consumption, in kilometres per litre, in each case. Round your answers to one decimal place.
- a) Aidan uses 4.7 L to travel 225 km.
- b) On a weekend trip, the Eriksons use 52.6 L to travel 560 km.