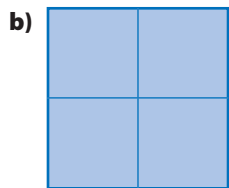


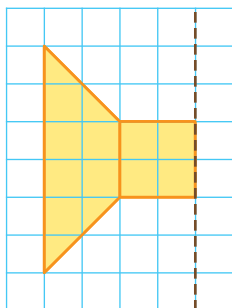
Chapters 1–4 Review

Chapter 1 Symmetry and Surface Area

1. Sketch each shape showing its line(s) of symmetry. Describe the lines of symmetry and the type of symmetry each shape has.



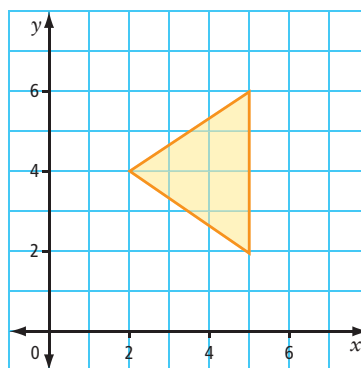
2. Describe two ways you could complete the drawing if the dashed line represents a line of symmetry. Complete the drawing.



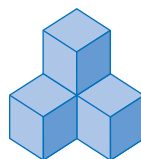
3. Create a design within a circle that shows both line and rotation symmetry.
- How many lines of symmetry are in your design? Describe them.
 - What is the order of rotation in your design?
 - Give the angle of rotation in both degrees and fractions of a revolution.
4. Draw a diagram of a square cake and a round cake. Select any dimensions you like as long as the side of the square cake is the same length as the diameter of the round cake.
- Find the surface area of each cake. Use all sides except the bottom.
 - Cut each cake into four equal pieces. If the pieces of cake are separated from each other, by what percent does the surface area of each cake increase? Again, do not consider the bottom.

5. Reproduce the triangle on a coordinate grid.

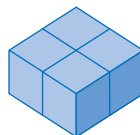
- Complete a diagram that has rotation symmetry of order 4 about the origin.
 - Label the vertices on the original triangle.
 - Show the coordinates of their images after each rotation.



- Start again, this time using line symmetry to make a new diagram. Use the y -axis and then the x -axis as lines of symmetry.
6. Four cubes, each with side lengths of 25 cm, are joined as shown.



- Find the surface area of the solid that is formed.
- If the four cubes are rearranged as shown, how does the surface area change?



Chapter 2 Rational Numbers

7. Write the following rational numbers in ascending order.
 $0.\overline{6}$ -0.9 $-\frac{4}{5}$ 2.7 $-2\frac{3}{4}$ $-\frac{2}{3}$
8. Identify a fraction between -6.3 and -6.4 .
9. Estimate, then calculate.
- a) $-2.52 + 1.84$
 - b) $-2.4 \times (-1.5)$
 - c) $-4.37 \div (-0.95)$
 - d) $0.76 + (-1.83)$
 - e) $8.48 - 10.51$
 - f) $-5.3(4.2)$
 - g) $-2.31 - (-5.72)$
 - h) $-5.5 \div (-5.5)$
10. Estimate, then calculate.
- a) $1\frac{1}{10} - (-1\frac{1}{10})$
 - b) $3\frac{3}{5} \div (-3\frac{3}{8})$
 - c) $-1\frac{1}{2} - \frac{1}{12}$
 - d) $-\frac{1}{6} + (-\frac{1}{8})$
 - e) $\frac{1}{10} \times (-\frac{3}{7})$
 - f) $\frac{2}{3} \div \frac{4}{5}$
 - g) $-4\frac{1}{2} + 2\frac{5}{9}$
 - h) $-2\frac{1}{2}(-2\frac{1}{2})$
11. Estimate and then calculate the side length of each square from its area. If necessary, round your answer to the nearest hundredth of a unit.
- a) 2.56 cm^2
 - b) 0.01 km^2
 - c) 0.048 mm^2
 - d) 1.02 km^2

12. Mary is sewing a square quilt. If the area of her quilt is 2.89 m^2 , what is its perimeter?

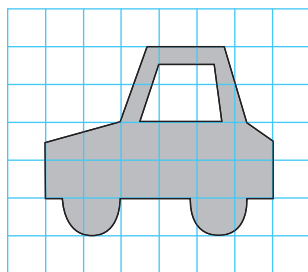


Chapter 3 Powers and Exponents

13. Write $4^2 \times (4^3)^5$ as a single power.
14. Evaluate the expression
 $(-6)^0 + 2^3 \div (7 - 5)^2$.
15. Write $\frac{(-4)^2(-4)^{10}}{(-4)^3}$ as a single power and then evaluate.
16. Write $(3 \times 7)^4$ as repeated multiplication without any exponents and as a product of two powers.
17. A population of 50 bacteria doubles in number every hour. The formula $N = 50(2)^t$ determines the number, N , of bacteria that are present after t hours. How many bacteria will there be after each number of hours?
- a) 5 h
 - b) 9 h

Chapter 4 Scale Factors and Similarity

18. Make an enlargement of the figure using a scale factor of 3.



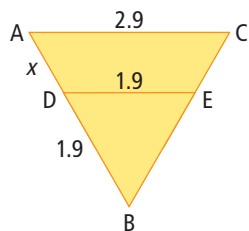
19. Determine the missing values.

a) $\frac{1}{3.5} = \frac{\blacksquare}{42}$

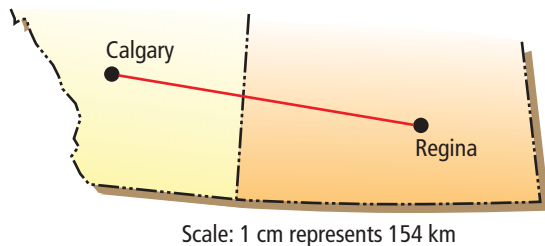
b) $\frac{1}{\blacksquare} = \frac{2.7}{49.95}$

c) $\frac{1}{0.09} = \frac{4.6}{\blacksquare}$

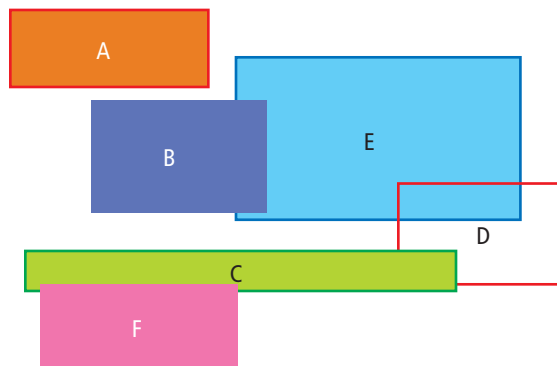
20. Determine the missing length.



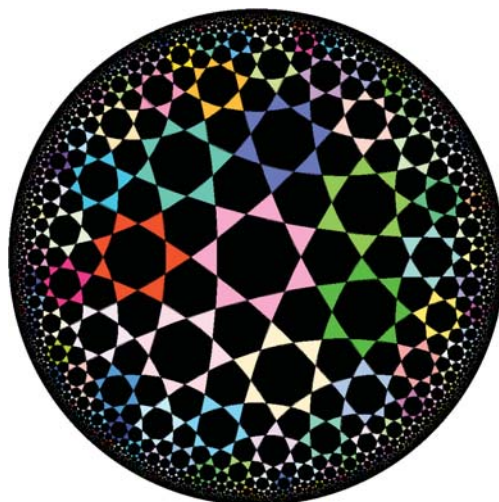
21. Use the scale to calculate the actual flying distance from Calgary to Regina. Express your answer to the nearest kilometre.



22. Are any of the rectangles similar? Justify your answer.



23. a) Identify the different types of polygons shown in the tessellation.



- b) Identify any similar polygons. Describe the pattern verbally.
- c) Create your own tessellation that features similar polygons.

Chapters 5–7 Review

Chapter 5 Introduction to Polynomials

1. The following diagram of algebra tiles models a backyard.



- What is an expression for the perimeter of the backyard?
- What is an expression for the area of the backyard?

2. Use materials or diagrams to show the collection of like terms in each expression.

- $8c + 3 - 5c + 1$
- $-1 + x - 1 - x + 1$
- $g^2 - g + 5 + 2g - 4g^2$

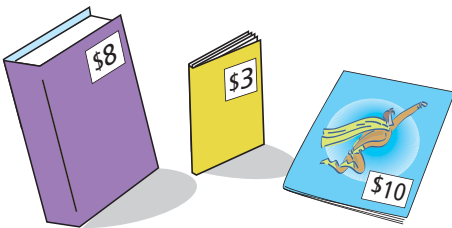
3. Write the following expressions in simplest form.

- $(2m - 3) + (5m + 1)$
- $(w^2 - 4w + 7) + (3w^2 + 5w - 3)$
- $(9y^2 - 6.8) + (4.3 - 9y - 2y^2)$

4. Write a simpler expression.

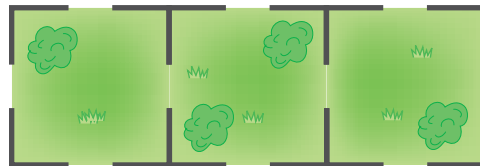
- $(-7z + 3) - (-4z + 5)$
- $(3d - 2d - 7) - (d^2 - 5d + 6cd - 2)$
- $(2x^2 + 3xy) - (-xy + 4x^2)$

5. The Better Buys antique shop sells comic books for \$10, hardcover books for \$8, and paperback novels for \$3.



- Write an algebraic expression for the antique shop's total income from the sale of comics, hardcover books, and paperbacks. Tell what each variable represents.
- Use your expression to show the total income after the sale of 15 comics, 7 hardcover books, and 5 paperbacks.
- One day, the store sold \$100 worth of comics, hardcovers, and paperbacks. What number of each item did the store sell? Show that more than one answer is possible.

6. A park is divided equally into three square sections. Each section will have a side measurement of $2n + 4$. The park will have fencing built as shown. Each opening has length n and does not need any fencing. What is the total length of fencing needed to complete the job?



Chapter 6 Linear Relations

7. a) Describe the relationship between the figure number and the number of tiles.

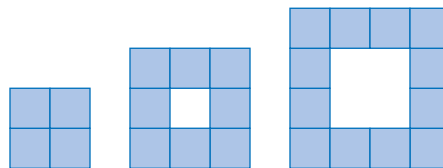


Figure 1

Figure 2

Figure 3

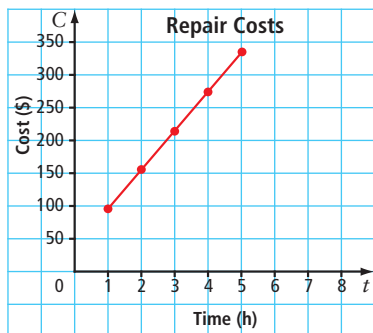
- Develop a linear equation to model the pattern.
- If the pattern were continued, how many squares would be in Figure 8?

8. Monika is saving money for a ski trip. She starts with \$112 in her bank account. She decides to deposit \$25 every week until she has enough money to pay for the trip.

- Create a table of values for the first five deposits.
- What linear equation models this situation?
- If Monika needs at least \$450 for her trip, for how many months does she need to deposit money into her bank account?



9. A car mechanic charges a \$35 base fee for labour plus an hourly rate of \$60. The graph shows this linear relation.



- Approximately how much would the mechanic charge after working on a vehicle for 8 h?
- Approximately how many hours would a mechanic work to charge \$225 in labour costs?
- Another mechanic charges at the same rate, but in half-hour increments. What would be the cost of a repair that took 9.5 h to complete?



10. A computer salesperson earns a monthly salary plus a 10% commission on each sale. The sales, commission, and earnings are shown in the table.

Sales (\$)	Commission (\$)	Earnings (\$)
0	0	2000
5 000	500	2500
10 000	1000	3000
15 000	1500	3500
20 000	2000	4000
25 000	2500	4500

- Draw a graph showing the linear relation between sales and earnings.
- The salesperson earns \$3750 in one month. What are the approximate total sales for that month?
- The salesperson earns \$5500 the next month. What are the approximate total sales for that month?
- Approximately how much would the salesperson have to sell in order to earn \$4250 in one month?

11. Draw the graph that represents this table of values.

Time (h)	0.25	0.50	0.75	1.00	1.25	1.50	1.75
Cost (\$)	0.5	1.0	1.5	2.0	2.5	3.0	3.5

- Describe a situation to represent the data on the graph.
- Write an equation to model the data.
- What is the cost for 3.25 h?

Chapter 7 Multiplying and Dividing Polynomials

12. Find the product of each pair of monomials.

- a) $(3x)(4x)$
- b) $(2.5y)(-4y)$
- c) $(s)(-0.5s)$
- d) $\left(\frac{t}{5}\right)(10t)$

13. Divide.

- a) $8.4x^2 \div x$
- b) $(-12h^2) \div 2h$
- c) $(-0.6n^2) \div (-0.2n)$
- d) $\frac{4.8p^2}{-1.2p}$

14. Use an area model to expand each expression.

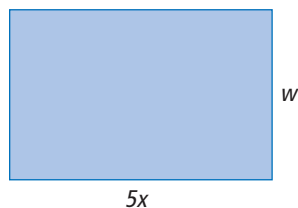
- a) $(3x)(2x + 1)$
- b) $(5w + 3)(1.5w)$

15. If a foosball table is 3 cm longer than twice its width, what is an expression for the area of the foosball table? Express your answer in expanded form.

16. Determine each quotient.

- a) $\frac{12g^2 + 8g}{4g}$
- b) $\frac{-6x^2 + 3xy}{3x}$
- c) $(9.3ef^2 - 62e) \div (-3.1e)$
- d) $(24n^2 + 8n) \div (0.5n)$

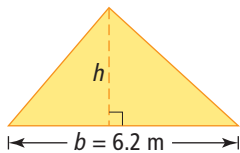
17. A rectangle has an area represented by the expression $10x^2 - 5x$. If the length of the rectangle is $5x$, what is an expression for the width, w , of the rectangle in terms of x ?



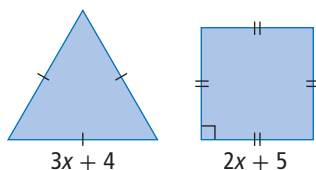
Chapters 8–11 Review

Chapter 8

- For each equation:
 - Without solving, predict whether the value of x is greater than 1 or less than 1. Explain your reasoning.
 - Solve to verify your prediction.
 - $8x = \frac{2}{5}$
 - $\frac{x}{9} = \frac{5}{6}$
 - $\frac{7}{x} = \frac{1}{4}$
 - $\frac{1}{x} = \frac{5}{2}$
- The formula for the area of a triangle is $A = \frac{1}{2}bh$, where b is the length of the base and h is the altitude. A triangle has an area of 10.54 m^2 and a base length of 6.2 m . What is the altitude of the triangle?

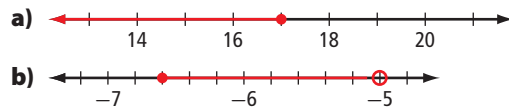


- Bruno bought four identical boxes of granola. He received $\$6.04$ in change from a $\$20.00$ bill. How much did he pay for each box of granola?
- Two electricians both charge a fee for a service call, plus an hourly rate for their work. Theo charges a $\$49.95$ fee plus $\$40.00$ per hour. Vita charges a $\$69.95$ fee plus $\$32.00$ per hour. For what length of service call do Theo and Vita charge the same amount?
- The equilateral triangle and the square have equal perimeters. What is the side length of the square?



Chapter 9

- What is the algebraic form of the inequality represented on each number line?



- Represent each inequality graphically.
 - $x < -6$
 - $2.4 \leq x$
- Write an inequality to represent each election promise that a politician made.
 - At least eight new highways projects will be started.
 - There will be a budget surplus of over 1.3 million this year.
 - Unemployment will be no more than 3.7%.
 - Taxes will be lowered by as much as 10%.
- Solve each inequality. Express the solution algebraically and graphically.
 - $15 > x + 6.2$
 - $-25x < 40$
 - $\frac{x}{5} \geq -10$
 - $20 - x \leq 8$
- Solve each inequality and verify the solution.
 - $4x + 17 \geq 35$
 - $8 < \frac{x}{4} + 3$
 - $5x + 30 > 8x - 9$
 - $2(3 - 4x) \leq 3(8 - 2x)$
- Linda needs to hire a rubbish removal service to clean up a construction site. The Junk King charges $\$325$ plus $\$110/\text{t}$. The Clean Queen charges $\$145/\text{t}$. How many tonnes of rubbish would make The Junk King the better option?

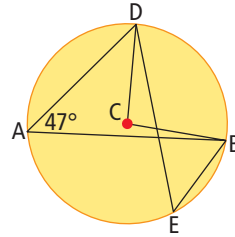
12. Lori is going to rent a climbing wall for a school fun night. The rental charge for the wall is \$145/h. She has at most \$800 to spend.
- What is an inequality that can be used to model the situation?
 - For how many hours could Lori rent the wall and stay within her spending limit?



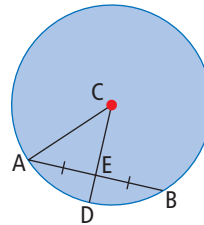
13. A company uses two different machines to make items they sell. The first machine has made 2000 items so far and produces new items at a rate of 25/h. The second machine has made 1200 items so far and produces new items at a rate of 45/h. When will the second machine have made more items than the first machine?

Chapter 10

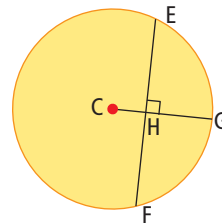
14. Point C is the centre of the circle. $\angle DAB = 47^\circ$. What are the measures of angles $\angle DEB$ and $\angle DCB$? Justify your answers.



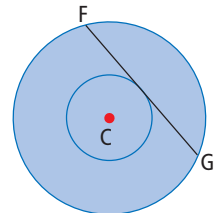
15. In the diagram, CD bisects chord AB. The radius of the circle is 7 cm, and chord $AB = 9$ cm. What is the length of CE? Express your answer to the nearest tenth of a centimetre.



16. The radius of the circle shown is 25 mm. The radius CG is perpendicular to the chord EF. Chord EF is 7 mm from the centre at C. What is the length of the chord EF?

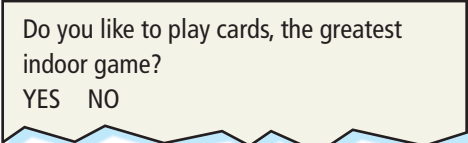


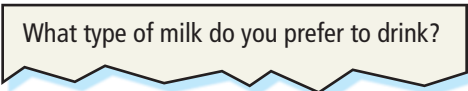
17. Point C is the centre of two concentric circles. The radius of the smaller circle is 9 cm. The length of chord FG is 40 cm and it is tangent to the smaller circle. What is the circumference of the larger circle? Express your answer to the nearest centimetre.



Chapter 11

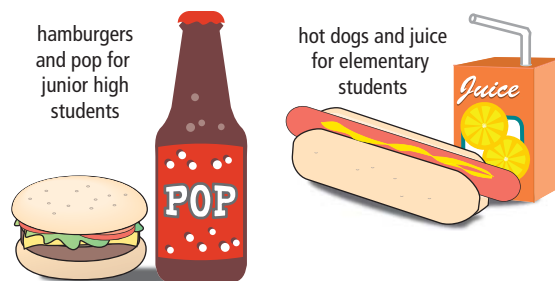
18. For each survey question:
- Describe any influencing factor(s).
 - Rewrite the question so it is clearly stated and free from influencing factors.

a)  Do you like to play cards, the greatest indoor game?
YES NO

b)  What type of milk do you prefer to drink?

19. You decide to survey students about their online activities.
- What is the population?
 - Describe two different sampling methods you could use.
20. Identify the population and describe a sample for each situation. Justify your choice.
- A television talk-show host asks the audience their views on a media story.
 - An author plans to survey people in a bookstore about whether they have read his book.
 - The sports coordinator at a school needs to find out how to improve services for students.
21. A marketer conducting a survey randomly selects 40 departments in 20 city stores in western Canada. From the 40 departments, she randomly selects 20 department managers and 6 sales associates.
- Describe the population.
 - Describe the sampling method.
 - Is there more than one possible sample? Explain your thinking.

22. The grade 9 students organized a barbecue for kindergarten to grade 9 students. All grade 9 students were surveyed about the menu. Based on the survey, the students decided on the following menu.



At the barbecue, the elementary students were served before the junior high students. By the time that the junior high students were served, there were no hamburgers or pop left. They had to eat hot dogs and drink juice.

- How did the sampling method used lead to a false prediction?
 - Describe a sampling method that would allow students to make an accurate prediction. Explain how you would conduct the survey.
23. A quiz has ten true/false questions.
- What is the theoretical probability of answering each question correctly by guessing?
 - What assumptions have you made?
 - Model an experiment of ten trials to represent the quiz. Describe your model and complete the trials. Record your data.
 - What is your experimental probability of getting five out of ten questions correct?
 - Can you use these results to predict how well a student who guesses will do on the quiz? Explain.