Chapters 1–4 Review

Chapter 1 Representing Data

1. What kinds of information does each graph best represent?

a) bar graph **b)** double bar graph

c) circle graph **d)** line graph

2. Five hundred people were asked what types of food they liked. They were allowed to give more than one answer.

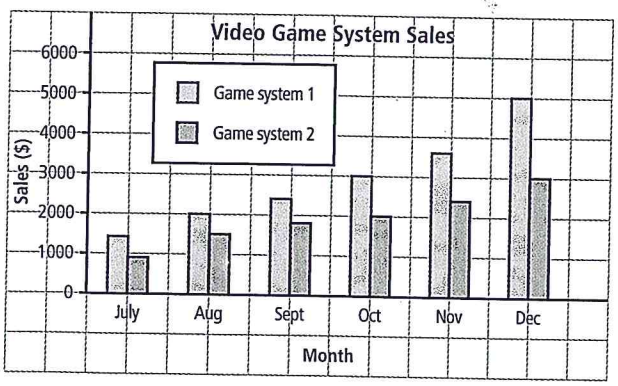
Type of Food	Preference
Aboriginal	325
Chinese	400
French	250
East Indian	275
Italian	450
Mexican	350

a) State one advantage of using a pictograph to display the data.

b) Use a pictograph to represent the data.

c) Explain why you should not use a line graph to display the data.

3. The double bar graph shows the monthly sales for two video game systems.



a) List three things the double bar graph tells you.

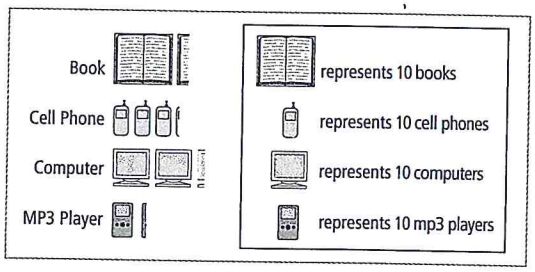
b) Use the data from the double bar graph to make a double line graph.

c) List two things the double line graph tells you.

d) Which graph more clearly shows the month with the biggest increase in game system 1 sales and the month with the biggest increase in game system 2 sales? Explain your reasoning.

e) Describe one strength and one limitation of each graph for comparing sales.

4. Eighty grade 8 students were asked to name one item they would want to have with them on a long car trip. The results are displayed in a pictograph.



a) Describe how this graph is misleading.

b) Redraw the pictograph so it is not misleading.

c) Display the data in a circle graph.

d) What is one advantage of using a circle graph to display the data?

5. Calvin recorded his pulse rate for 5 min while he was riding his bike.

Time (min)	0	1	2	3	4	5
Pulse Rate (beats per min)	65	78	92	110	110	112

a) Create a graph to display the data. You may wish to use a spreadsheet to create your graph.

b) What conclusions can you make based on your graph?

c) What is an advantage of using the type of graph you made?

d) Exchange graphs with a classmate and critique each other's graph. What improvements can you make to your graph?

Chapter 2 Ratios, Rates, and Proportional Reasoning

6. Three eighths of the students in a class of 32 students are boys.

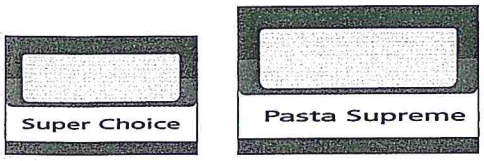
a) How many students are boys?

b) What is the ratio of girls to total students? Express the ratio as a fraction and a percent.

c) What is the ratio of girls to boys? Use ratio notation to express your answer.

7. The makers of Purr 'n' Chew cat food want to price their cat food so that it costs just less than their main competitor, Happy Kitty. A 5-kg bag of Happy Kitty cat food costs $12.99. What is the maximum price that Purr 'n' Chew should charge for their 4-kg bag of cat food? Explain how you found this price.

8. Two brands of noodles are shown. The noodles are of the same quality.



700 g
99¢

1.25 kg
$1.29

a) Without calculating, which do you think is the better buy? Explain.

b) Calculate the unit price per 100 g for each brand.

c) Which is the better buy? Explain your choice. Compare it with your prediction.

d) Explain why estimating unit costs is useful when grocery shopping.

9. Use the information in the chart to help answer the questions.

Vehicle	Distance (km)	Fuel Used (L)
1	190	20.2
2	460	44.7
3	800	85

a) What is the fuel consumption for each vehicle in L/100 km? Give your answers to the nearest hundredth.

b) Which vehicle has the lowest fuel consumption? How do you know?

10. Use a proportion to solve each question. Use a variable for the unknown quantity.

a) Three lemons cost 96¢. What is the cost of eight lemons?

b) On a map, 1 cm represents 125 km. How many centimetres represent a distance of 550 km?

11. Four quarters has the same value as 20 nickels. How many nickels equals the value of five quarters?

Chapter 3 Pythagorean Relationship

12. Determine the squares of the following numbers.

a) 8 b) 13 c) 17 d) 80

13. Determine the square root of each perfect square.

a) 121 b) 900 c) 49 d) 256

14. Identify the perfect square that lies on either side of each value.

a) 42 **b)** 139 **c)** 200

15. Estimate the square root of each number. Give your answer to one decimal place.

a) 58 **b)** 140 **c)** 6 **d)** 29

16. Which value is the closest approximation to $\sqrt{90}$? Show how you know.

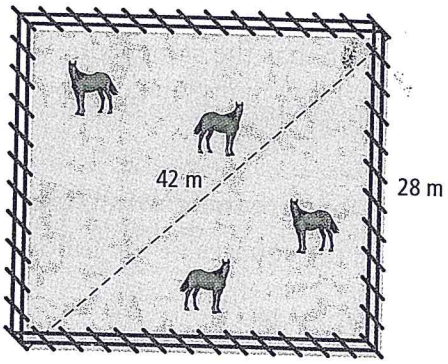
9, 10, 9.2, 9.5, 9.8

17. Show whether 11 cm, 60 cm, and 61 cm can be the measurements for the sides of a right triangle.

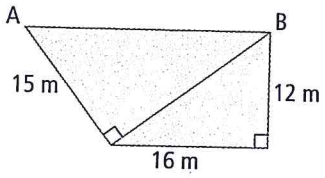
18. Sarah has a rectangular corral for her horses. She wants to put new rail fencing all around the corral.

a) What total length of fencing will she need? Give your answer to one decimal place.

b) If rail fencing costs \$15/m, what will be the total cost of the fencing before tax? Give your answer to the nearest dollar.



19. What is the distance from A to B?



Chapter 4 Understanding Percent

20. The front sprocket of a mountain bike is 155% as large as one of the rear sprockets. Use hundred grids to show how the front sprocket compares to the rear sprocket.

21. A 1-kg ore sample contains 9 g of copper. Use a hundred grid to show the percent of copper in the ore sample.

22. In a recent survey, $66\frac{2}{3}\%$ of people liked ice cream.

a) Express this percent as a decimal and as a fraction.

b) If 900 people were surveyed, how many do not like ice cream?

23. A credit card charges 18.9% simple interest per year. How much interest is charged on an outstanding balance of \$150 for one year?

24. The number of caribou in a particular herd was monitored over a two-year period. The first year, the size of the herd was estimated at 20 000. The second year, the herd was estimated to be 90% of its original size. What was the approximate size of the herd in the second year?

25. The cost of a downloaded album is \$10.99. Added to this cost is a 10% before-tax processing fee, 5% GST, and 7% PST. What is the total cost of the album?

26. The number of bacteria in a colony grows 200% every 20 min.

a) If a cut on a finger contains 100 bacteria, how many bacteria are present after 1 h?

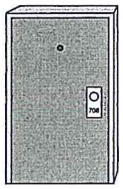
b) A new antibiotic is applied 1 h after the cut. The antibiotic kills $75\frac{1}{2}\%$ of the bacteria every second. How many bacteria are left after the first second?

Chapters 5–8 Review

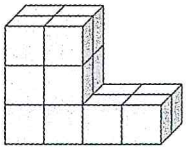
Chapter 5 Surface Area

1. Sketch the front, top, and side views.

a)



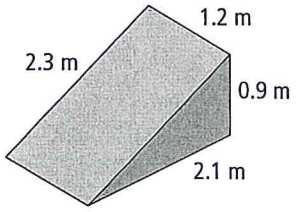
b)



2. Draw a net on grid paper for a right rectangular prism with the following measurements: length is 6 units, width is 3 units, and height is 4 units.

3. An official hockey puck has a diameter of 7.6 cm and is 2.5 cm high. Find the surface area of the puck.

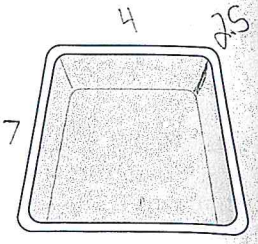
4. Cho and her dad are building a skateboard launch ramp. They decide on the following measurements: the base of the ramp will be 1.2 m wide and 2.1 m long; the ramp will be 2.3 m long and 0.9 m high. They are undecided about building the base of the ramp.



a) How much plywood will they need to make the entire ramp?

b) Calculate the amount of plywood needed without the base of the ramp.

5. Determine the number of square metres of vinyl needed to line the inside of a right rectangular swimming pool. The pool is 7 m long, 4 m wide, and has a uniform depth of 2.5 m.



6. Each side of a wooden cube is 5 cm long. Riley drills a cylindrical hole with a diameter of 4 cm through the cube. What is the total surface area of the remaining part if Riley wants to spray paint all the surfaces including inside the hole?

7. The radius of cylinder A is 30 cm. The radius of cylinder B is 60 cm. Both cylinders have a height of 45 cm. Determine the surface area of each cylinder.

Chapter 6 Fraction Operations

8. The time from when a bird lays an egg to when the egg hatches is called the incubation time. For a pigeon egg, the incubation time is 18 days.

a) For a chicken egg, the incubation time is $\frac{7}{6}$ of the incubation time for a pigeon egg. Determine the incubation time for a chicken egg.

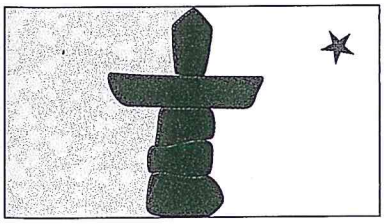
b) For a warbler egg, the incubation time is $\frac{7}{9}$ of the incubation time for a pigeon egg. Determine the incubation time for a warbler egg.

9. At the end of a party, half of a cake is left over. Five people decide to share the leftover cake equally and take their share home. What fraction of a cake does each person take home? Show your solution using a diagram and using fraction operations.

10. The maximum lifespan of a moose is $\frac{2}{3}$ of the maximum lifespan of a bison. The maximum lifespan of a white-tailed deer is $\frac{3}{4}$ of the maximum lifespan of a moose. What fraction is the maximum lifespan of a white-tailed deer of the maximum lifespan of a bison?

11. The Indian Ocean covers about $\frac{1}{7}$ of Earth's surface. The area of the Pacific Ocean is about $2\frac{1}{3}$ times the area of the Indian Ocean. What fraction of Earth's surface does the Pacific Ocean cover?

12. The length of a flag of Nunavut Territory is $1\frac{7}{9}$ times the width. If a flag of Nunavut is 96 cm long, how wide is it?



13. In Saskatoon, it snowed for $3\frac{1}{2}$ h on Wednesday and $2\frac{1}{2}$ h on Thursday.
    a) How many times as long did it snow on Wednesday as on Thursday?
    b) How many times as long did it snow on Thursday as on Wednesday?

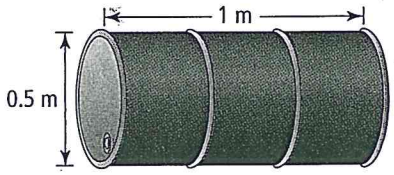
14. In a writing competition run by a local newspaper, the three prize winners shared a total of \$900. The winner got $\frac{1}{2}$ of the total, the runner-up got $\frac{1}{3}$ of the total, and the third-place finisher got $\frac{1}{6}$ of the total. How much money did each prize winner win?

15. Mei can usually drive home at an average speed of 60 km/h. One day, a winter storm caused Mei to reduce her speed so that her average speed was two thirds her normal speed. What was her average speed on her drive home that day?

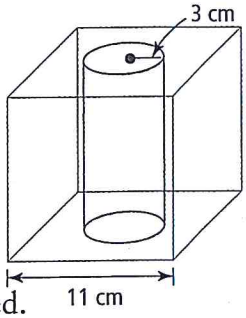
16. A flagpole is installed so that $\frac{1}{5}$ of its height is below the ground. If 2 m of the flagpole is below the ground, what is the height of the flagpole above the ground? Solve the problem in two different ways.

Chapter 7 Volume

17. Find the total volume of oil in the cylindrical drum.

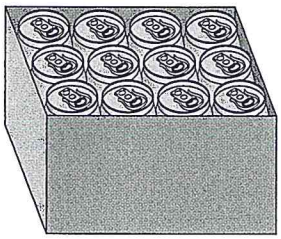


18. A solid cube has a side length of 11 cm. A cylindrical section with a radius of 3 cm is removed from the cube.
    a) Calculate the volume of the cube before the cylinder is removed.
    b) What is the total remaining volume of the cube?



19. Jojo's waterbed is 2.15 m long, 1.53 m wide, and 0.23 m thick. If water has a mass of 1000 kg per cubic metre, what is the mass of water in Jojo's bed when it is filled?

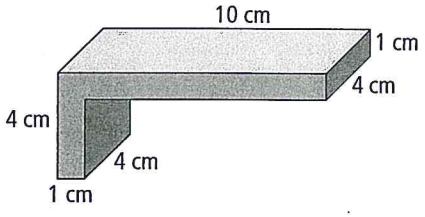
20. Pop cans are often sold in paperboard boxes of 12 cans as shown. A pop can has a radius of approximately 3.2 cm and a height of approximately 12 cm.



a) What is the volume of 12 pop cans?

b) What is the minimum volume of the box?

21. Find the volume of the L-shaped metal bracket.



Chapter 8 Integers

22. Copy and complete each statement.

a) $(+5) \times (\blacksquare) = +15$

b) $(\blacksquare) \times (-2) = +28$

c) $(\blacksquare) \times (+8) = -32$

d) $(-6) \times (\blacksquare) = -24$

23. Estimate and then calculate.

a) $(+22) \times (-14)$

b) $(-46) \times (-13)$

24. List the pairs of integers that have a product of -20.

25. Copy and complete each statement.

a) $(+20) \div (\blacksquare) = +5$

b) $(\blacksquare) \div (-11) = +2$

c) $(\blacksquare) \div (+8) = -3$

d) $(-21) \div (\blacksquare) = +7$

26. What is the quotient of two opposite integers? Explain.

27. a) Does the multiplication of two integers always result in an integer? Explain.

b) Does the division of two integers always result in an integer? Explain.

28. Dave is paying off a \$350 loan at \$25/month. After paying for six months, how much does he still owe?

29. The temperature in Inuvik, Northwest Territories, increased at the same rate from -22 °C at 9:00 a.m. to -8 °C at 4:00 p.m. one day. What was the temperature at 2:00 p.m.?

30. Len's car uses 11 L of gasoline per 100 km of city driving and 8 L of gasoline per 100 km of highway driving. One month, he drove 600 km in the city and 1500 km on highways. How much gasoline did he use that month?

31. Calculate.

a) $-2 \times [-6 - (-12)] + 10$

b) $14 \div (5 - 7) - 3 \times (-4)$

32. If you divide an integer by 4, then add 14, and then multiply by 5, your result is 45. What is the integer?

Chapters 9–12 Review

Chapter 9 Linear Relations

1. The table of values shows the number of triangles in an increasing pattern.

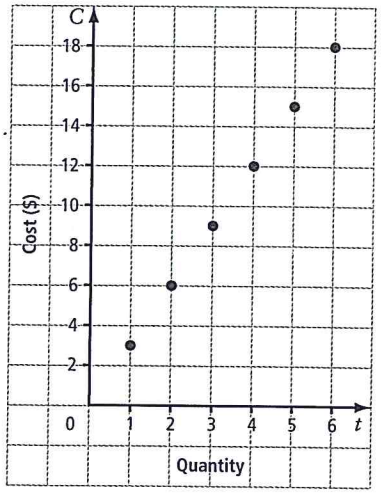
Figure Number	1	2	3	4
Number of Triangles	3	5	7	

a) How many triangles are in Figure 4?

b) Graph the table of values. Label your axes.

c) Does your graph represent a linear relation? Explain.

2. You buy a quantity of something according to the linear relation shown on the graph.



a) Describe what you might have purchased. What is the cost if you purchase one item?

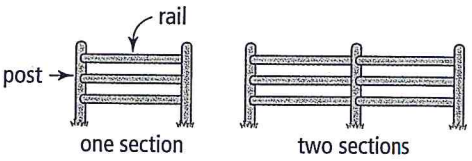
b) Describe patterns you see in the graph.

c) Make a table of values for the data on the graph. What variables might you use to label your table? Explain what the variables represent.

d) What is an expression for the cost in terms of the quantity?

e) If the quantity is eight, what is the cost?

3. A farmer is building a post-and-rail fence around his yard. The number of rails in relation to the number of posts can be represented by $r = 3p - 3$ where r is the number of rails and p is the number of posts.



a) Copy and complete the table of values.

Number of Posts, p	2	3	4	5	6	7
Number of Rails, r						

b) Draw a labelled graph. Does the relationship appear to be linear? Explain.

4. Each of the following represents a linear relation.

$y = 2x - 3$

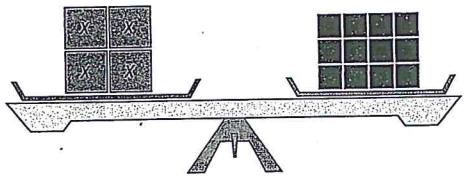
$y = 2x + 1$

a) Make a table of values for each equation. Use at least five positive and five negative integer values for x. Why did you choose those x-values?

b) Graph both linear relations on the same grid.

c) What is similar about the graphs? What is different?

5. The diagram represents an equation.



a) What equation does this diagram represent?

b) What is the solution to the equation?

6. Use models or diagrams to solve each equation.

a) $\frac{s}{2} = -5$

b) $-3x + 6 = -3$

c) $10 = 6 + \frac{v}{4}$

d) $2(x - 5) = -4$

7. Solve each equation. Check your answers.

a) $\frac{x}{7} = -4$

b) $14 = -26 + 5x$

c) $11 - \frac{x}{3} = 17$

d) $4(x - 9) = -16$

8. Jason's age is three years fewer than $\frac{1}{3}$ his father's age. Jason is ten years old.

a) What equation models this situation?

b) How old is Jason's father?

9. Elijah works in a diamond mine. When he works the late shift, \$2/h is added to his regular hourly wage. Last week, he worked the late shift for a total of 40 h and made \$960. Write and solve an equation to determine Elijah's regular hourly wage.