Units 1–8 Cumulative Review

UNIT 1

1. Jasmine and Logan are swimming in a rectangular pool. The pool has dimensions 23 m by 9 m. They decide to race from one corner of the pool to the opposite corner. Jasmine swims diagonally across the pool. Logan is not a good swimmer so he swims along two sides of the pool.

a) Who swims farther?

b) How much farther does that person swim?

2. Is each statement true or false? Justify your answers.

a) $\sqrt{5} + \sqrt{2} = \sqrt{7}$

b) $\sqrt{46}$ is between 6 and 7, and closer to 7.

c) $\sqrt{36} + \sqrt{64} = 14$

2

3. Vernon used his allowance to buy lunch at school each day. Suppose Vernon spent \$4 each day for one week. How much more allowance money did he have one week ago?

4. Evaluate. Show all steps.

a) $(-4) \times (-3) + 3(-6)$

b) $\frac{-18}{(-4) + (-25) \div 5}$

c) $\frac{[11-(-5)] \div [2 \times (-2)]}{4 \div (-2)}$

d) $-12 + (-21) \div 3 + 3 \times 6$

3

5. Shantel worked a $4\frac{1}{2}$-h shift at the coffee shop. She spent $\frac{5}{6}$ of this time cleaning tables. How many hours did Shantel spend cleaning tables during her shift?

6. Find each quotient. Use number lines to illustrate the answers.

a) Austin worked for $2\frac{1}{3}$ h at the pet store and cleaned 4 fish tanks. How long did Austin spend cleaning each tank?

b) Riley has $5\frac{1}{4}$ cups of chocolate chips. She needs $\frac{3}{4}$ cup of chocolate chips to make one batch of cookies. How many batches of chocolate-chip cookies can Riley make?

4

7. A rectangular prism has three equal dimensions. Sketch the prism. Show the equal dimensions. What is another name for this prism?

8. Identify each object from the description of its net.

a) 2 congruent triangles and 3 rectangles

b) 2 congruent circles and 1 rectangle

c) 2 congruent hexagons and 6 congruent rectangles

9. Use 60 linking cubes. Assume the face of each cube has an area of 1 square unit.

a) Use all the cubes. Create a rectangular prism with the greatest possible surface area.

b) Use all the cubes. Create a rectangular prism with the least possible surface area.

Explain the strategy you used each time.

UNIT 5

10. Write each percent as a fraction and as a decimal.

a) 63.25% **b)** $1\frac{1}{8}\%$

c) 0.28% **d)** 0.7%

11. The cost of an adult bus ticket in 2006 was $2.00. Because of the rising cost of fuel, the price was increased by $7\frac{1}{2}\%$ in 2007. The cost is expected to increase by about 12% in 2008.

a) Calculate the cost of a bus ticket in 2008. Describe the strategy you used.

b) Could you have found the cost by finding $119\frac{1}{2}\%$ of the cost of a ticket in 2006? Justify your answer.

12. There are 3 goldfish and 5 guppies in Tank A. There are 5 goldfish and 7 guppies in Tank B.

a) What is the ratio of goldfish to all the fish in each tank?

i) Tank A **ii)** Tank B

b) Write each ratio in part a as a fraction.

c) Suppose all the fish were moved into one large tank. What is the ratio of goldfish to all the fish in the large tank?

13. Scott delivers 14 newspapers in 10 min. This is 28% of his round.

a) How many more papers does Scott have to deliver?

b) Scott continues to deliver papers at the same rate. How long will it take him to deliver all his papers?

14. Express as a unit rate.

a) Paula picked 120 apples in 15 min.

b) Vince painted 6 fence posts in 30 min.

c) Jay ran 42 km in 3.5 h.

6

15. Expand.

a) $4(13 + 3d)$ **b)** $-7(5 - 6c)$

c) $8(-9d + 7)$ **d)** $6(8e - 1)$

16. Felix used algebra to solve this equation:

$3x + 5 = -7$

Look at Felix's work.

$$3x + 5 = -7$$
$$3x + 5 + 7 = -7 + 7$$
$$3x + 12 = 0$$
$$3x + 12 - 12 = 0 - 12$$
$$3x = -12$$
$$\frac{3x}{3} = \frac{-12}{3}$$
$$x = -4$$

a) Felix made an unnecessary step at the beginning of the solution. What was this step?

b) Did Felix get the correct solution? How can you find out?

c) Explain why the unnecessary step did or did not affect the solution.

17. Copy and complete each table of values.

a) $y = -3x$

x	-2	-1	0	1	2
y					

b) $y = -x + 3$

x	-2	-1	0	1	2
y					

UNIT

18. Troy is making baseball-cap organizers to sell at a craft sale. He needs 8 clothespins for each organizer. An equation for this relation is $c = 8n$, where n represents the number of organizers, and c represents the number of clothespins needed.

a) Use the equation to create a table of values.

b) Suppose Troy makes 12 organizers. How many clothespins does he need?

c) Suppose Troy has 144 clothespins. How many organizers can he make?

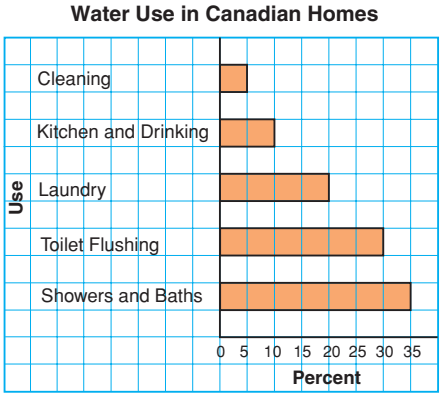
d) Construct a graph for the data in part a.

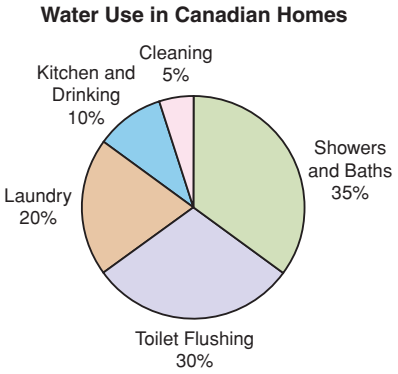
e) Describe the relationship between the variables in the graph.

f) Find the ordered pair on the graph that shows how many organizers can be made with 48 clothespins.

7

19. Each graph below shows how water is used in Canadian homes.





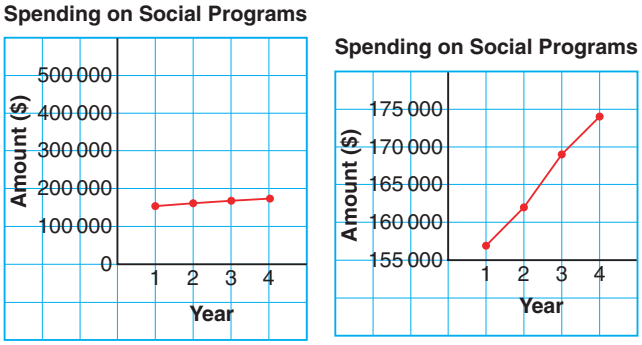
a) What are the advantages of each graph?

b) What are the disadvantages of each graph?

c) Which type of graph is more appropriate to display these data? Justify your choice.

d) Could you use a line graph to display these data? Why or why not?

20. Two groups debated how much money the government was spending on social programs. Each group used the same data to draw a graph.



a) What impression does each graph give?

b) Describe how the graphs create a false impression.

c) Who might use each graph? Justify your answer.

UNIT

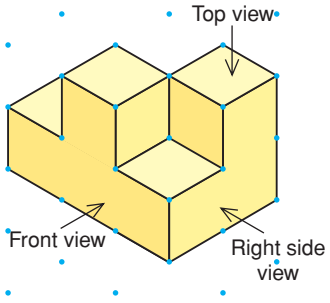
21. Gavin bought a bag of gift wrapping bows. The bag contains 4 red bows, 7 gold bows, 3 white bows, and 6 silver bows. Gavin takes one bow without looking, records the colour, then returns the bow to the bag.
The process is repeated.
Find the probability of each event:
a) 2 gold bows
b) a red bow, then a white bow
c) a gold bow, then a silver bow
d) not a gold bow, then a white bow

22. On a particular day in January, there is a 40% probability of snow in Whitehorse, a 55% probability of snow in Iqaluit, and a 35% probability of snow in Fort McMurray. What is the probability that it will snow in all 3 cities on that day?

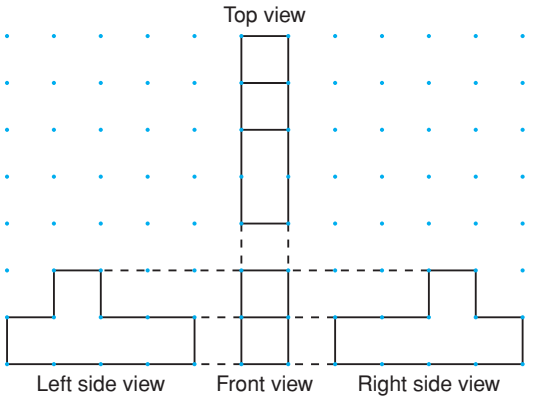
23. A true/false test has 6 questions. Jayla answered all the questions by guessing.
a) What is the probability that Jayla answered all the questions correctly?
b) Use a tree diagram to verify your answer in part a.

8

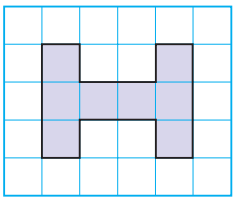
24. Sketch the top, front, and side views of this object.



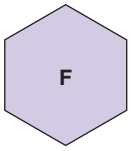
25. Use linking cubes. Use this set of views to build an object.
How can you check that your object is correct?



26. Copy this shape. Use transformations to create a tessellation on grid paper.
Describe the tessellation in terms of transformations and conservation of area.



27. Here is a regular hexagon.
Does this hexagon tessellate?
If your answer is yes, create the tessellation.
If your answer is no, explain how you know the shape does not tessellate. Then find a polygon that combines with the hexagon to make a composite shape that tessellates. Create the tessellation.



13.a) A and B
15. Translations and rotations

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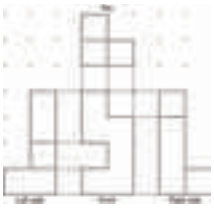
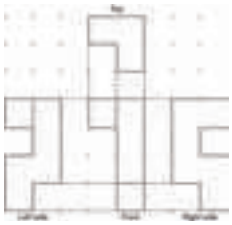
1.

2. a)

b)



c)

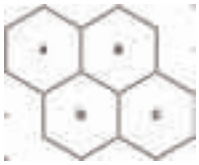


3.

4. A: Reflection across the red line
B: 180° rotation about P
C, D: Reflection across the blue line then the red line

5.a) No; 108° + 108° + 108° = 324° < 360°
b) Yes; 135° + 45° + 90° + 90° = 360°
c) Yes; 120° + 120° + 120° = 360°

6. Answers will vary. For example:
A and D can either be translated 2 units to the right or reflected across their right sides to obtain B and C. Since all shapes are congruent, area is conserved.



7. Answers may vary. For example:

8. Answers may vary.
For example:
Start from the shaded shape and rotate 60° clockwise to obtain the next shape. Rotate the new shape 60° clockwise. Repeat until tessellation is complete.
Translate shaded shape 2 units to the right to get the next shape over. Rotate the shaded shape 180° about P to get the shape below.

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1.a) Logan **b)** 7.3 m
2.a) False; $\sqrt{5}+\sqrt{2} \doteq 3.65 > 2.65 \doteq \sqrt{7}$
b) True; $\sqrt{46} \doteq 6.78$
c) True; $\sqrt{36}+\sqrt{64} = 6+8 = 14$
3. $20
4.a) –6 **b)** 2 **c)** 2 **d)** –1
5. $3\frac{3}{4}$
6.a) $\frac{7}{12}$ h **b)** 7 batches
7. Cube
8.a) Triangular prism **b)** Cylinder
c) Hexagonal prism
9.a) 1 unit by 1 unit by 60 units; least like cube, 242 square units
b) 3 units by 4 units by 5 units; most like cube, 94 square units
10.a) $\frac{253}{400}$, 0.6325 **b)** $\frac{9}{800}$, 0.01125
c) $\frac{7}{2500}$, 0.0028 **d)** $\frac{7}{1000}$, 0.007
11.a) $7\frac{1}{2}$% of $2.00 is $0.15; cost in 2007: $2.15
12% of $2.15 is $0.26; cost in 2008: $2.41
b) No; $119\frac{1}{2}$% of $2.00 is $2.39
12.a) i) 3 : 8 **ii)** 5 : 12
b) i) $\frac{3}{8}$ **ii)** $\frac{5}{12}$
c) 2 : 5
13.a) 36 **b)** About 36 min
14.a) 8 apples/min **b)** 12 fence posts/h
c) 12 km/h
15.a) $52 + 12d$ **b)** $-35 + 42c$
c) $-72d + 56$ **d)** $48e - 6$
16.a) Adding 7 to both sides of the equation, instead of subtracting 5 from both sides
b) Yes; Substitute –4 for x into the original equation.
c) It did not affect the solution because Felix always did the same operations on both sides of the equations.
17.a)

x	y
–2	6
–1	3
0	0
1	–3
2	–6

b)

x	y
–2	5
–1	4
0	3
1	2
2	1

18.a) Answers may vary. For example:

n	*c*
3	24
6	48
9	72

b) 96 **c)** 18

d) Answers may vary. For example:

e) Linear **f)** (6, 48)

19.a) Answers may vary. For example:
The bar graph allows you to determine easily the difference in percents among various uses of water.
The circle graph shows the different water uses as parts of a whole.

b) Answers may vary. For example: In both graphs, we cannot tell how many people were surveyed.

c) Circle graph; because various water uses are parts of a whole

d) No; because the data was not collected over a period of time

20.a) The first graph gives the impression that government funding has not increased much. The second graph gives the impression that government funding has increased dramatically.

b) The first graph uses a large scale on the vertical axis. The second graph starts its vertical axis at 155 000.

c) Groups advocating for more government funding would use the first graph to show the government is not giving enough money. The government would use the second graph to show it is providing a lot more money.

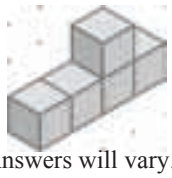
21.a) $\frac{49}{400}$ **b)** $\frac{3}{100}$ **c)** $\frac{21}{200}$ **d)** $\frac{39}{400}$

22. $\frac{77}{1000}$ or 7.7%

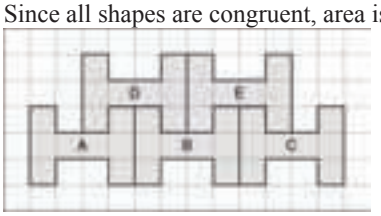
23.a) $\frac{1}{64}$

24.

25.



26. Answers will vary. For example:
From A to B, translate 4 units right.
From A to C, translate 8 units right.
From A to D, translate 2 units right and 2 units up.
From A to E, translate 6 units right and 2 units up.
Since all shapes are congruent, area is conserved.



27. Yes