Units 1–8 Cumulative Review

UNIT

1

1. a) Use algebra. Write a relation for this Input/Output table.

Input n	Output
1	6
2	10
3	14
4	18

b) Graph the relation.

c) Describe the graph.

d) Explain how the graph illustrates the relation.

e) Suggest a real-life situation this graph could represent.

2. The Grade 7 students are organizing an end-of-the-year dance. The disc jockey charges a flat rate of $85. The cost to attend the dance is $2 per student.

a) How much will the dance cost if 30 students attend? 50 students attend?

b) Write a relation for the cost of the dance when s students attend.

c) Suppose the cost of admission doubles. Write a relation for the total cost of the dance for s students.

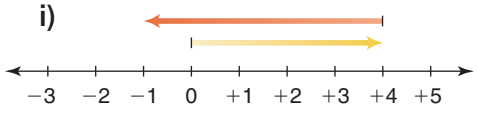
d) Suppose the cost of the disc jockey doubles. Write a relation for the total cost of the dance for s students.

2

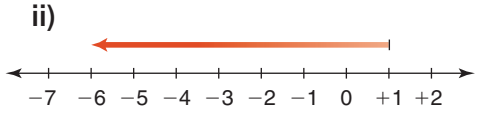
3. a) Write the addition equation modelled by each number line.

b) Describe a situation that each number line could represent.

i)



ii)



4. On January 11, the predicted high and low temperatures in Flin Flon, Manitoba were −4°C and −13°C.

a) Which is the high temperature and which is the low temperature?

b) What is the difference in temperatures?

3

5. Use front-end estimation to estimate each sum or difference.

a) 7.36 + 2.23 b) 4.255 − 1.386

c) 58.37 − 22.845 d) 217.53 + 32.47

6. A store has a sale. It will pay the tax if your purchase totals $25 or more. Justin buys a computer game for $14.95, some batteries for $7.99, and a gaming magazine for $5.95.

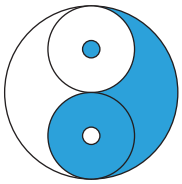
a) How much money did Justin spend, before taxes?

b) Did Justin spend enough money to avoid paying tax? If your answer is yes, how much more than $25 did Justin spend? If your answer is no, how much more would he need to spend and not pay the tax?

7. Write each fraction as a percent, then as a decimal.

a) $\frac{3}{4}$ **b)** $\frac{7}{25}$ **c)** $\frac{9}{10}$ **d)** $\frac{8}{200}$

4 **8.** This Chinese Yin Yang symbol is made from 5 circles. Suppose the radius of each medium-sized circle is 5 cm. What is the diameter of the largest circle? What assumptions did you make? Explain how you solved the problem.



9. A car tire has radius about 29 cm.

a) What is the diameter of the tire?

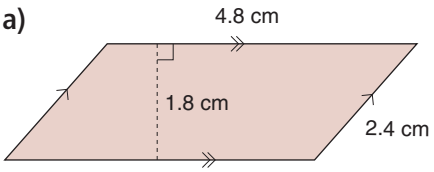
b) Calculate the circumference of the tire.

c) How far has the car tire moved after one complete rotation? Give your answer to the nearest whole number.

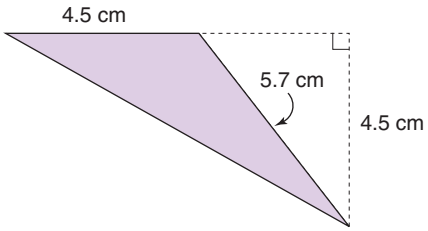
d) About how many rotations will the tire make when the car travels 10 m?

10. Find the area of each shape.

a)



b)



5 **11.** Use a model to show each sum. Sketch the model. Write an addition equation for each picture.

a) $\frac{3}{5} + \frac{2}{10}$ **b)** $\frac{1}{3} + \frac{1}{12}$

c) $\frac{1}{4} + \frac{7}{8}$ **d)** $\frac{1}{4} + \frac{5}{6}$

12. A baker's cookie recipe calls for $6\frac{1}{8}$ cups of white sugar and $4\frac{1}{3}$ cups of brown sugar.

a) Estimate how much more white sugar is called for.

b) Calculate how much more white sugar is called for.

c) Draw a diagram to model your calculations in part b.

6 **13.** In a coin toss game, heads score $+1$ and tails score -1.

a) Write an equation you can use to solve each problem.

b) Solve the equation using tiles.

c) Verify each solution. Show your work.

i) Meliq tossed a tail. He then had -2 points. How many points did Meliq have to begin with?

ii) Vera tossed a head. She then had -3 points. How many points did Vera have to begin with?

14. Write an equation you could use to solve each problem. Solve each equation by systematic trial or by inspection.

a) Camille bought 9 teen magazines for $63. She paid the same amount for each magazine. How much did each magazine cost?

b) Nicolas collects fishing lures. He lost 27 of his lures on a fishing trip. Nicolas has 61 lures left. How many lures did he have to begin with?

7

15. Mary is a real estate agent in Lethbridge. One month she sold 7 houses at these prices: $171 000, $165 000, $178 000, $161 000, $174 000, $168 000, $240 000

a) Find the median price.

b) Do you think the mean price is greater than or less than the median price? Explain. Calculate to check.

c) What is the range of these prices?

16. Use these data: 28, 30, 30, 31, 32, 33, 34, 35, 37, 38, 39, 41

a) Find the mean, median, and mode.

b) What happens to the mean, median, and mode in each case?

i) Each number is increased by 10.

ii) Each number is doubled.

Explain the results.

17. The masses, in tonnes, of household garbage collected in a municipality each weekday in April are: 285, 395, 270, 305, 320, 300, 290, 310, 315, 295, 310, 295, 305, 325, 315, 310, 305, 300, 325, 305, 305, 300

a) Calculate the mean, median, and mode for the data.

b) What are the outliers? Explain your choice. Calculate the mean without the outliers. What do you notice? Explain.

c) When might you want to include the outliers? Explain.

18. This table shows the hourly wages of the employees at *Tea Break for You*.

Hourly Wage	Number of Employees
$7.50	4
$7.75	6
$8.00	3
$8.50	3
$8.75	2
$10.00	1
$12.50	1

a) Find the mean, median, and mode for these hourly wages.

b) Which measure best represents the wages? Explain.

c) What are the outliers? How is each average affected when the outliers are not included? Explain.

d) Who might earn the wages that are outliers? Explain.

UNIT

19. Is this conclusion true or false? Explain.
The mean test score was 68%.
Therefore, one-half the class scored above 68%.

20. Write the probability of each event as many different ways as you can.
- **a)** Roll a 4 on a number cube labelled 1 to 6.
- **b)** December immediately follows November.
- **c)** Pick a red cube from a bag that contains 3 blue cubes, 4 green cubes, and 5 yellow cubes.

21. **a)** List the possible outcomes for rolling an octahedron labelled 1 to 8 and rolling a die labelled 1 to 6.
- **b)** Why are the events in part a independent?
- **c)** For how many outcomes are both numbers rolled less than 3?

8

22. Draw line segment MN.
Mark a point P not on MN.
Draw a line segment perpendicular to MN that passes through point P.

23. **a)** Draw line segment FG of length 7 cm. Use a ruler and compass to construct the perpendicular bisector of FG. Explain how you can check that the line you drew is the perpendicular bisector.
- **b)** Draw $\angle PQR = 140°$. Use any method to bisect the angle. Use another method to check that the bisector you have drawn is correct.

24. Suppose you are given the coordinates of a point. You do not plot the point. How can you tell which quadrant the point will be in?

25. **a)** Plot these points: A(5, 10), B(−5, 10), C(−5, 0), D(−15, 0), E(−15, 10), F(−25, 10), G(−25, −20), H(−15, −20), J(−15, −10), K(−5, −10), L(−5, −20), M(5, −20)
- **b)** Join the points in order. Then join M to A.
- **c)** Explain how you chose the scale.
- **d)** Describe the shape you have drawn.

26. A triangle has vertices C(−1, 5), D(3, 5), and E(3, −1).
- **a)** Plot, then join, the points to draw $\triangle CDE$.
- **b)** Translate $\triangle CDE$ 2 units left and 4 units up. Write the coordinates of each vertex of the image $\triangle C'D'E'$.
- **c)** Reflect $\triangle C'D'E'$ in the *x*-axis. Write the coordinates of each vertex of the image $\triangle C''D''E''$.
- **d)** Rotate $\triangle C''D''E''$ 90° counterclockwise about the origin. Write the coordinates of each vertex of the image $\triangle C'''D'''E'''$.