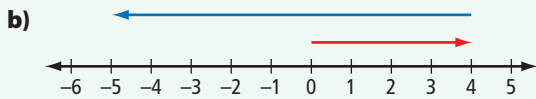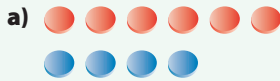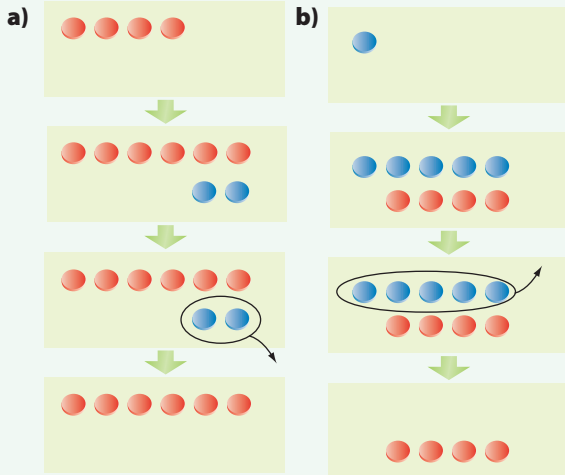# Chapters 9–12 Review

Chapter 9 Add and Subtract Integers

1. What addition statement does each diagram represent?

a)

b)

2. What subtraction statement does each diagram represent?

a) **b)**

3. What is each sum or difference?

a) $(+5) + (-5)$ **b)** $(+7) + (-4)$

c) $(-9) - (-7)$ **d)** $(+8) - (-8)$

e) $(+3) - (+7)$ **f)** $(-2) - (-9)$

4. One October morning in Prince Edward, Saskatchewan, the temperature was $-3°C$. In the late afternoon, the temperature was $12°C$ higher. What was the temperature in the late afternoon?

5. The surface of Great Bear Lake is 156 m above sea level. The bottom of the lake is 257 m below sea level. Estimate and calculate the depth of the lake.

Chapter 10 Patterns and Expressions

6. Describe each pattern. What are the next two numbers in each pattern?

a) 1, 4, 7, 10, …

b) 8, 13, 18, 23, 26 …

c) 17, 14, 11, 8, …

7. Look at the following number pattern.

$\frac{2}{30} = 0.0666..., \text{ or } 0.0\overline{6}$

$\frac{5}{30} = 0.1666..., \text{ or } 0.1\overline{6}$

$\frac{8}{30} = 0.2666..., \text{ or } 0.2\overline{6}$

a) Describe the pattern.

b) What is the next fraction in the pattern?

c) What is $\frac{17}{30}$ written as a repeating decimal using bar notation?

8. The tile pattern shown is being used to cover a bathroom floor.

Figure 1   Figure 2   Figure 3

a) Make a table showing the number of white and blue tiles in the first five designs.

b) Describe the pattern for the number of blue tiles in relation to the number of white tiles.

c) Choose a variable and tell what it represents. Then use the variable to write an algebraic expression for the number of blue tiles.

d) How many blue tiles will there be if there are 24 white tiles?

9. The expression $2n + 4$ represents the perimeter of any figure in this pattern, where n is the figure number.
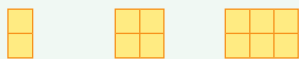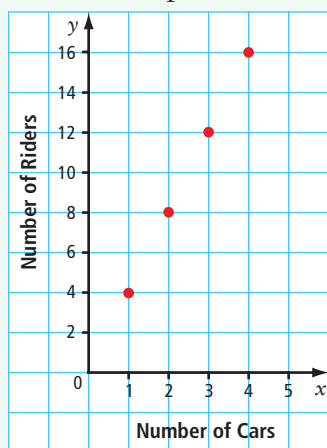

Figure 1   Figure 2   Figure 3

a) What would be the perimeter of Figure 12?

b) Make a table of values for the first six figures in the pattern.

10. The graph shows the number of roller coaster riders allowed on a roller coaster train, depending on the number of cars that make up the train.


a) Make a table of values for the first five values of x starting at $x = 1$.

b) What is an algebraic expression for the number of riders in relation to the number of cars?

c) Describe the pattern of points on the graph in two different ways.

d) If there are 10 cars in the roller coaster train, how many riders are allowed on the train?

Chapter 11 Solving Equations

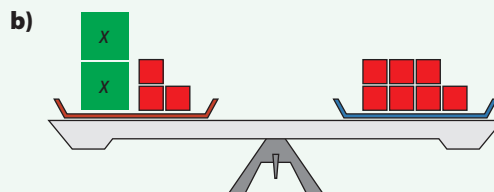**11.** The diagram represents an equation.
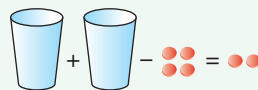
a) What are the two expressions that make up this equation?

b) What is the equation?

12. Solve by inspection. Verify your answer.

a) $k - 7 = 19$ **b)** $p + 12 = 12$

c) $2n = 18$ **d)** $\frac{c}{8} = 3$

13. Solve the equation modelled by each diagram. Check your solution.

a)

b)

14. The formula for the perimeter of an equilateral triangle is $P = 3s$. What side length is needed to make an equilateral triangle with a perimeter of 48 cm?

15. An adventure company charges $95 per day for canoeing equipment plus $10 per student for food. The total cost for one day can be modelled using the equation $C = 10n + 95$.

a) What do the variables C and n represent?

b) Students in one class raised $345 for a one-day trip. How many students can go?

16. The following numbers of haircuts were given at a salon in the last five days:

25, 29, 25, 26, 35.

a) What is the mode?

b) What is the median?

c) What is the mean?

17. The mode is 6 for the set of numbers 3, 4, 4, 5, 6, 6, 7, 8, 9, 10, x, and y. What are possible whole number values for x and y?

18. Robert takes his dog for a walk six days a week. The following times indicate how long they walked last week:

54 min, 56 min, 60 min, 58 min, 55 min, 28 min

a) What is the range?

b) Which time may be an outlier?

c) Why might this value be so different from the others?

d) If you remove the outlier, what is the new range?

19. Steven scored 338 points in 26 basketball games this fall. Micha played in 8 fewer games than Steven. Her mean score per game was 0.5 points higher than Steven's. How many total points did Micha score in her basketball season?

20. Thirty students wrote a science test. Twenty-five students achieved a mean mark of 74%. The other five students had a mean mark of 45%. What was the class mean mark? Express your answer as a percent.

21. Melissa found the following prices for five different brands of orange juice in the refrigerated section at the grocery store: $3.29, $2.99, $3.49, $6.98, and $3.79.

a) What is the range?

b) What are the median and the mean?

c) Which is the best measure of central tendency for the data?

d) Identify any possible outlier(s). Should the outlier(s) be removed from the data set? Explain why or why not.

e) How would removing the outlier(s) affect the median and the mean?

22. Roach-Away developed a new chemical to destroy cockroaches. Ten tests were performed. The percent of roaches destroyed were:

60, 99, 90, 99, 70, 91, 88, 71, 69, 99

If you were the owner of the company, which measure of central tendency would you use for advertising? Explain your choice.