Chapter 7 Review

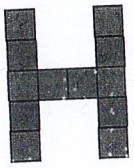
Learning Goals

Inquire and Explore: How can two quantities be compared, represented, and communicated?
How are fractions and ratios interrelated?
How does ratio use in mechanics differ from ratio use in architecture?

After this section, I can	
7.1	■ represent two-term and three-term ratios in a variety of ways ■ represent part-to-part and part-to-whole ratios in a variety of ways ■ identify and describe ratios used in real life ■ analyze situations and solve problems using ratios
7.2	■ represent rates in a variety of ways ■ identify, describe, and record rates used in real life ■ use rates to analyze situations and solve problems
7.3	■ represent proportional relationships in a variety of ways ■ use proportional reasoning to determine unknown values ■ analyze situations to determine whether a proportional relationship exists

7.1 Ratios, pages 222–231

1. Use the square tile pattern to find each of the following:



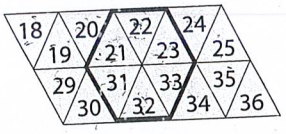
a) ratio of red squares to blue squares

b) ratio of blue squares to total squares

c) two equivalent ratios for the answer in part b)

d) percent of squares that are red

2. Look at the figure.



a) What is the ratio of two-digit numbers in the red hexagon compared to the total number of two-digit numbers?

b) Express the answer in part a) as a fraction in lowest terms.

c) What is the ratio of two-digit numbers containing a 2 compared to the number of two-digit numbers in the red hexagon that contain a 2?

3. In a class of 32 students, there are 24 girls.

a) What is the ratio of boys to total students?

b) What is the ratio of girls to boys?

4. Stephanie looks at the colour of cars in a parking lot. She finds that 8 are silver, 5 are blue, 3 are red, and 4 are black.

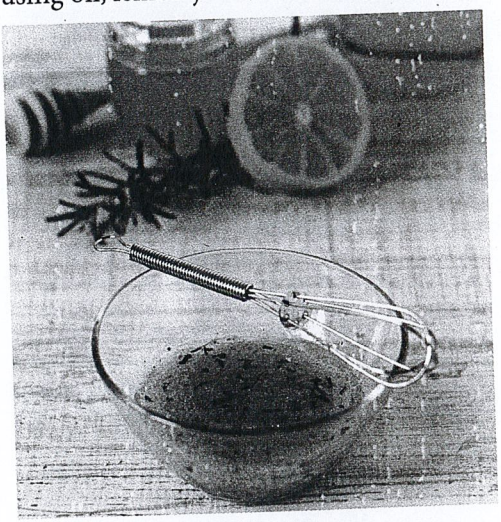
a) What ratio does 2 : 5 represent?

b) Earlier, Stephanie had predicted that at most 30% of the cars in the lot would be silver. Was she correct?

c) If another 120-car parking lot has cars in the same colour ratio, how many cars in that lot are blue?

7.2 Rates, pages 232–239

5. Kayla usually makes her own salad dressing using oil, lemon juice, and vinegar.



a) One evening she uses 100 mL of oil, 40 mL of lemon juice, and 60 mL of vinegar. Write this as a ratio in lowest terms.

b) Another day she needs to make 700 mL of the same dressing for a salad she is bringing to a party. How much of each ingredient will she need?

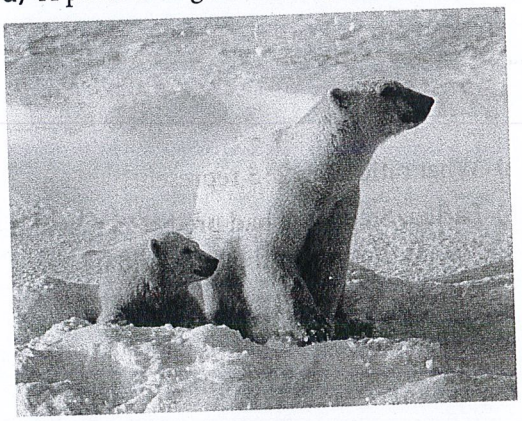
6. Determine a unit rate in each situation.

a) Steven runs up 300 steps in 6 min.

b) $3.60 is the price of 4 L of milk.

c) A jet travels 2184 km in 3.5 h.

d) A polar bear gains 450 kg in 9 years.



7. The table compares the typical monthly cost of the electricity for several appliances. Which appliance has the lowest unit cost of electricity consumption?

Appliance	Time On (h)	Monthly Cost ($)
Fridge	240	17.16
Computer and monitor	120	2.73
Television	180	2.86
Treadmill	15	3.99

8. Shannon buys 12 granola bars for $9.96.

a) Determine the price per bar.

b) Explain whether your answer in part a) is a ratio or a rate.

9. Shelly rides her mountain bike at a rate of 30 km/h for 2.5 h. Josh rides his mountain bike at a rate of 35 km/h for 1 h and then slows down to 25 km/h for 1.5 h.

a) Who travels farther in 2.5 h?

b) What is the difference in the distance travelled by the cyclists?

7.3 Using Proportional Reasoning, pages 240–247

10. Determine the missing value if each rate is equivalent. Give the unit for each.

a) $\frac{\blacksquare}{1 \text{ month}} = \frac{64 \text{ kg}}{4 \text{ months}}$

b) $\frac{\$84}{800 \text{ km}} = \frac{\blacksquare}{100 \text{ km}}$

c) $\frac{80 \text{ beats}}{2 \text{ min}} = \frac{720 \text{ beats}}{\blacksquare}$

11. a) Three bars of soap cost $2.94. What is the cost of 8 bars of soap?

b) On a map, 1 cm represents 150 km. How many centimetres represent a distance of 800 km?

12. One day Minji made 24 jars of jam in 5 hours. The next day she made 60 jars of jam in 12 hours. Does this situation represent a proportional relationship? Show how you know.

13. One night 30 cm of snow fell in 6 h. The next day 63 cm of snow fell in 12 hours. Does this represent a proportional relationship? Show how you know.

14. Shawn buys 2 kg of sockeye salmon at a local market for $44.60. Maria buys 850 g of the same type of salmon. How much can she expect to pay?

15. A gardener takes a half hour to mow and weed a lawn area that measures 20 m by 15 m. She charges $25 per hour. How much should the gardener receive for a lawn area that measures 40 m by 30 m?

Connect the Concepts

16. How is a proportion different from a ratio and a rate? Explain using your own examples.

17. The values in the table show the cost a company charges for printing custom T-shirts.

Number of Shirts	Cost ($)
10	200
15	250
20	300
25	350
30	400

a) Does the relationship of the cost to the number of shirts represent a ratio or a rate? Explain.

b) What is the unit cost if a customer places an order for 25 shirts?

c) Does this situation represent a proportional relationship? Justify your answer mathematically.

18. At the beginning of the season, a football team won 5 games and lost 3 games.

a) The coach had predicted that they would win 60% of their games. Have they done that so far?

b) They have scored 135 points so far. At what rate are they scoring, in points per game?

c) If they keep scoring at this same rate, how many points will they score in total over the 18-game season?

d) By the end of the season they had won 11 games. Does this represent a proportional relationship with their results from the first part of the season?

e) Was the coach's prediction accurate? Explain.