

**9. a)** Answers may vary. There are four 250 mL small jars in one 1000 mL jar. Since  $\$2.79 \times 4$  is greater than  $\$9.59$ , four smaller jars would be more expensive for the equivalent amount of honey. This means the bigger jar is the better buy. **b)** small size:  $\frac{\$2.79}{250 \text{ mL}} = \$0.01116/\text{mL}$ ;

large size:  $\frac{\$9.59}{1000 \text{ mL}} = \$0.00959/\text{mL}$ . Therefore, the large size is the better buy.

**10.** Trevor:  $\frac{84 \text{ km}}{3 \text{ h}} = 28 \text{ km/h}$ ; Jillian:  $\frac{70 \text{ km}}{2.5 \text{ h}} = 28 \text{ km/h}$ . They both rode at the same rate; therefore, neither is the fastest cyclist.

**11. a)**  $\frac{\$9.96}{12 \text{ bars}} = \$0.83/\text{bar}$  **b)** Answers may vary.

Example: The answer to part a) is a rate because it is a comparison of two quantities in different units. A ratio is a comparison of quantities in the same units.

**12.** Saskatchewan Glacier:  $\frac{1500 \text{ m}}{75 \text{ year}} = 20 \text{ m/year}$ ;

Peyto Glacier:  $\frac{1320 \text{ m}}{70 \text{ year}} = 18.86 \text{ m/year}$ . The

Saskatchewan Glacier has the greater annual rate of melting.

**13. a)**  $\frac{60 \text{ L}}{840 \text{ km}} = 0.0714 \text{ L/km}$  **b)** Answers may vary.

Example: Multiply the answer by 100. **c)** Joe's vehicle has the lowest fuel consumption.

**14. a)** 416.4 euros **b)** 332.14 US dollars

**c)** 518.72 Australian dollars

**15. a)** 1000 m race: 73.11 s; 1500 m race: 111.79 s;

3000 m race: 233.34 s **b)** 13.4 m/s **c)** 128.57 m

**16. a)** Daniel: 1.50 lawns/h; Grace: 1.33 lawns/h

**b)** The difference is 0.17 lawn/h

**17.**

Planet	Radius (km)	Circumference (km)	Length of Day (h)	Rotation Rate (km/h)
Venus	6051	38 000	2808	13.5
Earth	6378	40 054	24	1669.8
Saturn	60 268	378 483	10 233	37

**18. a)** 0.8823; It represents that one Canadian dollar is equivalent to 0.8823 US dollar. **b)**  $\$617.61$  **c)** 1.1158

**d)**  $\$627.35$  US

**19.** 16.67 m/s

### 2.3 Proportional Reasoning, pages 67–69

**4. a)** 33¢/roll **b)** 2 kg/object

**5. a)** 47¢/pen **b)** 6 cm/block

**6.**  $\$21.00$

**7.**  $\frac{\$35}{5 \text{ h}} = \frac{\$x}{3 \text{ h}}$  or  $\frac{\$7}{1 \text{ h}} = \frac{\$x}{3 \text{ h}}$ ;  $\$21.00$

**8. a)** 10 **b)** 2 **c)** 9 **d)** 9

**9. a)** 120 km **b)** 20 cans **c)** 89 beats **d)**  $\$64.00$

**10. a)**  $\frac{10 \text{ beans}}{17 \text{ g}} = \frac{30 \text{ beans}}{51 \text{ g}}$  **b)**  $\frac{13 \text{ boys}}{15 \text{ girls}} = \frac{65 \text{ boys}}{75 \text{ girls}}$

**c)**  $\frac{1 \text{ cm}}{25 \text{ km}} = \frac{6.4 \text{ cm}}{160 \text{ km}}$

**11.** Answers may vary. Example:



$\frac{18 \text{ small gear turns}}{4 \text{ large gear turns}} = \frac{54 \text{ turns}}{x \text{ turns}}$ ; 12 times or turns.

**12. a)**  $\frac{175 \text{ mL}}{50 \text{ mL}} = \frac{300 \text{ mL}}{x \text{ mL}}$  **b)**  $\frac{3 \text{ home runs}}{17 \text{ strikeouts}} = \frac{x \text{ home runs}}{187 \text{ strikeouts}}$

**13.** 25 nickels

**14.** Answers may vary. Example:

As a unit rate:  $\frac{30 \text{ cm}}{6 \text{ h}} = 5 \text{ cm/h}$ , so  $\frac{45}{5} = 9 \text{ h}$ .

As a proportion:  $\frac{30 \text{ cm}}{6 \text{ h}} = \frac{45 \text{ cm}}{x \text{ h}}$ , which results in  $x = 9 \text{ h}$ .

**15.** Answers may vary. Example:  $\frac{1 \text{ figure}}{2 \text{ squares}} = \frac{7 \text{ figures}}{x \text{ squares}}$

**16.**  $\$50.00$

**17. a)**  $\$52.80$  **b)**  $\frac{\$17.60}{2000 \text{ g}} = \frac{\$x}{1600 \text{ g}}$ ;  $x = \$14.08$

**18. a)**  $\$2.50/\text{ride}$  **b)**  $\$45.00$ ; Answers may vary.

Example: Using unit rate:  $\$2.50 \times 18 = \$45.00$ .

Using a proportion:  $\frac{\$2.50}{\text{ride}} = \frac{\$x}{18 \text{ rides}}$ , where  $x = \$45.00$ .

**19. a)** 4, 9 **b)**  $\$48$ , 192 km

**20.** 150 g of rice

**21.** 17.5 min

**22. a)** 1.8 m **b)** 48 cm or 0.48 m

**23.** 0.33 kg

**24. a)** Answers may vary. Example: The numerators consist of the whole numbers in consecutive order; the denominators consist of the even whole numbers in consecutive order. **b)** Answers may vary. Example: The numerators are multiples of 5 and the denominators are multiples of 6. **c)** Answers may vary. Example: The products are equal. **d)** Answers may vary. Example: The cross-products will be the same. Example: In the equivalent pair  $\frac{7}{8} = \frac{14}{16}$ , the cross-products are both 112.

**25. a)** Frog: 96 insects/day; dragonfly: 99 insects/day.

The dragon fly eats 3 more insects per day.

**b)** 693 insects **c)** 2976 insects

**26. a)** 1:2 **b)** 1:4

**27.** 20:35 or 4:7

**28.** 13.75 mL

### Chapter Review, pages 70–71

**1.** D **2.** B **3.** E **4.** A **5.** G

**6. a)** 6:6 **b)** 6:12 **c)**  $\frac{1}{2} = \frac{3}{6}$  **d)** 50%

**7. a)** 6:16 **b)**  $\frac{3}{8}$  **c)** 8:4

**8. a)** 1:2:5 **b)** 8 **c)** blue cars to total **d)** silver to (non-silver, non-blue, non-red, and non-yellow) **e)**  $\frac{1}{4}$ , 25%

**9. a)** 8 **b)** 10:8

**10. a)** 24:6 **b)** 48:12 **c)** 4