

Lesson Check

Do you know HOW?

- Which is the better buy, 6 bagels for \$3.29 or 8 bagels for \$4.15?
- What is 7 lb 4 oz converted to ounces?
- Which is longer, 12 m or 13 yd?
- A car is traveling at 55 mi/h. What is the car's speed in feet per second?

Do you UNDERSTAND?



Vocabulary Tell whether each rate is a unit rate.

5. 20 mi every 3 h 6. 2 dollars per day

7. Reasoning Does multiplying by a conversion factor change the amount of what is being measured? How do you know?

8. Reasoning If you convert pounds to ounces, will the number of ounces be greater or less than the number of pounds? Explain.

Practice and Problem-Solving Exercises



Practice

9. Running Trisha ran 10 km in 2.5 h. Jason ran 7.5 km in 2 h. Olga ran 9.5 km in 2.25 h. Who had the fastest average speed?

See Problem 1.

10. Population Bellingham, Washington, had an area of 25.4 mi² and a population of 74,547 during one year. Bakersfield, California, had an area of 113.1 mi² and a population of 295,536 during the same year. Which city had a greater number of people per square mile?

Convert the given amount to the given unit.

See Problems 2 and 3.

11. 63 yd; feet

12. 168 h; days

13. 2.5 lb; ounces

14. 200 cm; meters

15. 4 min; seconds

16. 1500 mL; liters

17. 9 yd; meters

18. 5 kg; pounds

19. 79 dollars; cents

20. 3 qt; liters

21. 89 cm; inches

22. 2 ft; centimeters

23. Maintenance The janitor at a school discovered a slow leak in a pipe. The janitor found that it was leaking at a rate of 4 fl oz per minute. How fast was the pipe leaking in gallons per hour?

See Problem 4.

24. Shopping Mr. Swanson bought a package of 10 disposable razors for \$6.30. He found that each razor lasted for 1 week. What was the cost per day?

Copy and complete each statement.

25. 7 ft 3 in. = ■ in.

26. 2.2 kg = ■ lb

27. 2.5 h = ■ min

28. 2 qt/min = ■ gal/s

29. 75 cents/h = ■ dollars/day

30. 60 ft/s = ■ km/h

- © Choose a Method** Choose paper and pencil, mental math, or a calculator to tell which measurement is greater.

31. 640 ft; 0.5 mi

32. 63 in.; 125 cm

33. 75 g; 5 oz

- © 34. Think About a Plan** A college student is considering a subscription to a social-networking Internet site that advertises its cost as “only 87 cents per day.” What is the cost of membership in dollars per year?
- How many conversion factors will you need to use to solve the problem?
 - How do you choose the appropriate conversion factors?
- 35. Recipes** Recipe A makes 5 dinner rolls using 1 c of flour. Recipe B makes 24 rolls using $\frac{1}{2}$ c of flour. Recipe C makes 45 rolls using 10 c of flour. Which recipe requires the most flour per roll?
- © 36. Error Analysis** Find the mistake in the conversion below. Explain the mistake and convert the units correctly.

~~$9 \text{ yd} = ? \text{ ft}$~~

~~$9 \text{ yd} \cdot \frac{3 \text{ yd}}{1 \text{ ft}} = 27 \text{ ft}$~~

- © 37. Writing** Suppose you want to convert kilometers to miles. Which unit should be in the numerator of the conversion factor? Which unit should be in the denominator? Explain how you know.
- © 38. Reasoning** Without performing the conversion, determine whether the number of new units will be greater or less than the number of original units.
- 3 min 20 s converted to seconds
 - 23 cm converted to inches
 - kilometers per hour converted to miles per hour
- 39. Exchange Rates** The table below shows some exchange rates on a particular day. If a sweater sells for \$39.95 in U.S. dollars, what should its price be in rupees and pounds?

U.S. DOLLARS	1.00
INDIAN RUPEES	39.57
ALGERIAN DINARS	64.15
BRITISH POUNDS	.50

- © 40. Estimation** Five mi is approximately equal to 8 km. Use mental math to estimate the distance in kilometers to a town that is 30 mi away.
- © 41. Reasoning** A carpenter is building an entertainment center. She is calculating the size of the space to leave for the television. She wants to leave about a foot of space on either side of the television. Would measuring the size of the television exactly or estimating the size to the nearest inch be more appropriate? Explain.

- 42. Reasoning** A traveler changed \$300 to euros for a trip to Germany, but the trip was canceled. Three months later, the traveler changed the euros back to dollars. Would you expect that the traveler got exactly \$300 back? Explain.

Challenge

- 43. Measurement** Dietrich draws a line on the blackboard whose length is given by the expression $1 \text{ mm} + 1 \text{ cm} + 1 \text{ in.} + 1 \text{ ft} + 1 \text{ yd} + 1 \text{ m}$. What is the length of the line in millimeters?
- 44. Square Measurements** There are 2.54 cm in 1 in.
- How many square centimeters are there in 1 in.^2 ? Give your answer to the nearest hundredth of a square centimeter.
 - How many square inches are there in 129 cm^2 ?

Standardized Test Prep

- 45.** Most mammals take 1 breath for every 4 heartbeats. The heart of a large dog beats about 180 times in 1 min. About how many times does the dog take a breath in 1 min?
- (A) 40 (B) 45 (C) 90 (D) 720
- 46.** Which equation best describes the relationship shown in the table?

x	-2	-1	0	1	2
y	-4	-2	0	2	4

- (F) $y = x - 2$ (G) $y = x - 1$ (H) $y = x$ (I) $y = 2x$
- 47.** Which expression is equivalent to $-2(3x - 4) - (-2x + 1)$?
- (A) $-4x - 7$ (B) $-4x - 5$ (C) $-4x + 7$ (D) $-4x + 9$

Mixed Review

- 48.** What is the height of a triangle with an area of 30 cm^2 and a base length of 12 cm? See Lesson 2-5.
- 49.** What is the diameter of a circle with a circumference of 47.1 in.? Use 3.14 for π .

Solve each equation. Check your answer.

- 50.** $2y + 0.5y + 4.5 = 17$ **51.** $-\frac{2}{3}x - 8 = -12$ See Lesson 2-3.
- 52.** $-4.8 = -4(2.4d)$ **53.** $\frac{3a + 1}{5} = 2$

Get Ready! To prepare for Lesson 2-7, do Exercises 54–57.

Simplify each expression. Justify each step.

- 54.** $\frac{27x}{x}$ **55.** $\frac{b}{112b}$ **56.** $\frac{20mn}{n}$ **57.** $\frac{2xy}{7x}$ See Lesson 1-4.