Lesson 1-1 Rates

A ratio that compares two quantities with different kinds of units is called a **rate**. When a rate is simplified so that it has a denominator of 1 unit, it is called a **unit rate.**

Example 1

DRIVING Alita drove her car 78 miles and used 3 gallons of gas. What is the car's gas mileage in miles per gallon?

Write the rate as a fraction. Then find an equivalent rate with a denominator of 1.

$$78 \text{ miles using 3 gallons} = \frac{78 \text{ mi}}{3 \text{ gal}} \qquad \text{Write the rate as a fraction.}$$

$$= \frac{78 \text{ mi} \div 3}{3 \text{ gal} \div 3} \qquad \text{Divide the numerator and the denominator by 3.}$$

$$= \frac{26 \text{ mi}}{1 \text{ gal}} \qquad \text{Simplify.}$$

The car's gas mileage, or unit rate, is 26 miles per gallon.

Example 2

SHOPPING Joe has two different sizes of boxes of cereal from which to choose. The 12-ounce box costs $2.54, and the 18-ounce box costs $3.50. Which box costs less per ounce?

Find the unit price, or the cost per ounce, of each box. Divide the price by the number of ounces.

12-ounce box $2.54 ÷ 12 ounces ≈ $0.21 per ounce
18-ounce box $3.50 ÷ 18 ounces ≈ $0.19 per ounce

The 18-ounce box costs less per ounce.

Exercises

Find each unit rate. Round to the nearest hundredth if necessary.

1. 18 people in 3 vans

2. $156 for 3 books

3. 115 miles in 2 hours

4. 8 hits in 22 games

5. 65 miles in 2.7 gallons

6. 2,500 Calories in 24 hours

Choose the lower unit price.

7. $12.95 for 3 pounds of nuts or $21.45 for 5 pounds of nuts

8. A 32-ounce bottle of apple juice for $2.50 or a 48-ounce bottle for $3.84.

Lesson 1-1 Rates **Skills Practice**

<u>SHOW YOUR WORK!</u>

Find each unit rate. Round to the nearest hundredth if necessary.

1. $112 in 8 hours

3. 49 points in 7 games

5. 120 problems in 5 hours

7. 6 eggs in 7 days

9. 122 patients in 4 weeks

11. $8.43 for 3 pounds

13. 25 letters in 4 days

15. 5 breaks in 8 hours

17. 2 pay raises in 3 years

19. 15 pounds in 6 weeks

21. 8 glasses every 24 hours

Choose the lower unit price.

23. $4.99 for 6 cans or $7.99 for 10 cans

24. $21.50 for 4 pounds of lunch meat or $15.10 for 3 pounds of lunch meat