

LESSON

Practice B

5-2 Ratios, Rates, and Unit Rates

1. Copper weighing 4480 kilograms has a volume of 0.5 cubic meters. What is the density of copper?

2. Yoshi's yogurt contains 15 calories per ounce. How many calories are in an 8-ounce container of Yoshi's yogurt?

3. Emily earns \$7.50 per hour. How much does she earn in 3 hours?

Estimate the unit rate.

4. 43 apples in 5 bags

5. \$71.00 for 8 hours

6. 146 students in 6 classes

7. \$52.00 for 5 hours

8. 7 miles in 64 minutes

9. \$3.55 for 4 pounds

Determine the better buy.

10. 8.2 oz of toothpaste for \$2.99 or 6.4 oz of toothpaste for \$2.49

11. a 3 lb bag of apples for \$2.99 or a 5 lb bag of apples for \$4.99

12. 16 oz bottle of soda for \$1.25 or 20 oz bottle of soda for \$1.55

13. Mavis rides the bus every day. She bought a bus pass good for the month of October for \$38.75. How much was Mavis charged per day for the bus pass?

LESSON Practice A
5-2 Ratios, Rates, and Unit Rates

1. Two cubic meters of olive oil have a mass of 1830 kilograms. What is the density of olive oil?

$$\frac{915 \text{ kg}}{\text{m}^3}$$

2. Fabiana hikes at a rate of 3 miles per hour. How far can she hike in 4 hours?

$$12 \text{ mi}$$

3. Cameron earns \$7 per hour. How much does he earn in 5 hours?

$$\text{\$35}$$

Estimate the unit rate.

4. 79 students in 4 classes

$$\text{about 20 students per class}$$

5. \$52.00 for 5 hours

$$\text{about \$10 per hour}$$

6. 208 heart beats in 3 minutes

$$\text{about 70 beats per minute}$$

7. 75 calories in 8 ounces

$$\text{about 9 calories per ounce}$$

8. 2 miles in 21 minutes

$$\text{about 10 minutes per mile}$$

9. 3 pounds for \$9.02

$$\text{about \$3 per pound}$$

Determine the better buy.

10. 12 oz container of juice for \$0.85 or 8 oz container of juice for \$0.50

$$8 \text{ oz for \$0.50}$$

11. \$9 to deliver a 2 lb package or \$14.25 to deliver a 3 lb package

$$\text{\$9 to deliver a 2 lb package}$$

12. 24 oz jar of cheese sauce for \$2.88 or 16 oz jar of cheese sauce for \$1.79

$$16 \text{ oz jar for \$1.79}$$

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LESSON Practice B
5-2 Ratios, Rates, and Unit Rates

1. Copper weighing 4480 kilograms has a volume of 0.5 cubic meters. What is the density of copper?

$$\frac{8960 \text{ kg}}{\text{m}^3}$$

2. Yoshi's yogurt contains 15 calories per ounce. How many calories are in an 8-ounce container of Yoshi's yogurt?

$$120 \text{ calories}$$

3. Emily earns \$7.50 per hour. How much does she earn in 3 hours?

$$\text{\$22.50}$$

Estimate the unit rate.

4. 43 apples in 5 bags

$$\text{about 9 apples per bag}$$

5. \$71.00 for 8 hours

$$\text{about \$9 per hour}$$

6. 146 students in 6 classes

$$\text{about 25 students per class}$$

7. \$52.00 for 5 hours

$$\text{about \$10 per hour}$$

8. 7 miles in 64 minutes

$$\text{about 9 minutes per mile}$$

9. \$3.55 for 4 pounds

$$\text{about \$0.90 per pound}$$

Determine the better buy.

10. 8.2 oz of toothpaste for \$2.99 or 6.4 oz of toothpaste for \$2.49

$$8.2 \text{ oz for \$2.99}$$

11. a 3 lb bag of apples for \$2.99 or a 5 lb bag of apples for \$4.99

$$3 \text{ lb bag for \$2.99}$$

12. 16 oz bottle of soda for \$1.25 or 20 oz bottle of soda for \$1.55

$$20 \text{ oz bottle for \$1.55}$$

13. Mavis rides the bus every day. She bought a bus pass good for the month of October for \$38.75. How much was Mavis charged per day for the bus pass?

$$\text{\$1.25}$$

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LESSON Practice C
5-2 Ratios, Rates, and Unit Rates

1. Two cubic meters of mercury have a mass of 27,190 kilograms. What is the density of mercury?

$$\frac{13,595 \text{ kg}}{\text{m}^3}$$

2. Lead weighing 1130 kilograms has a volume of 0.1 cubic meters. What is the density of lead?

$$\frac{11,300 \text{ kg}}{\text{m}^3}$$

3. Mr. Acito takes his students on a field trip to the theater. As the teacher, his ticket is free, but he is charged \$472 for his 32 students. What is the price per ticket for each student?

$$\text{\$14.75 a ticket}$$

Estimate the unit rate.

4. 4858 mi in 15 days

$$\text{about 300 mi per day}$$

5. \$16 for 3 hours

$$\text{about \$5 per hour}$$

6. 578 heartbeats in 8 min

$$\text{about 70 beats per minute}$$

7. 632 desks in 18 rooms

$$\text{about 35 desks per room}$$

8. 324 mi on 16 gal of gasoline

$$\text{about 20 mi per gallon}$$

9. \$3.95 for 10 lb of oranges

$$\text{about \$0.40 per pound}$$

10. 1168 mi in 18 hours

$$\text{about 60 mi per hour}$$

11. 286 students in 15 rooms

$$\text{about 20 students per room}$$

12. 2375 words in 37 min

$$\text{about 60 words per minute}$$

Find each unit price and tell which is the better buy.

13. 3 lb beef roast for \$8.97; 5 lb beef roast for \$14.85

$$3 \text{ lb unit price is \$2.99; 5 lb unit price is \$2.97; better buy is 5 lb for \$14.85}$$

14. 3 dozen binder clips for \$2.88; 72 binder clips for \$5.40

$$3 \text{ dozen clips unit price is \$0.08; 72 clips unit price is \$0.075; the better buy is 72 clips for \$5.40}$$

15. 14.5 gallons of gasoline for \$18.56; 18.6 gallons for \$23.25

$$14.5 \text{ gallons unit price is \$1.28; 18.6 gallons unit price is \$1.25; better buy is 18.6 gallons for \$23.25}$$

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LESSON Reteach
5-2 Ratios, Rates, and Unit Rates

A **rate** is a ratio that compares two *different kinds* of quantities.

2 aides for 18 students	135 words in 3 minutes	7 ads per 4 pages of copy
$\frac{2 \text{ aides}}{18 \text{ students}}$	$\frac{135 \text{ words}}{3 \text{ minutes}}$	$\frac{7 \text{ ads}}{4 \text{ pages of copy}}$

Express each comparison as a rate in ratio form.

1. 275 students per 11 teachers

$$\frac{275 \text{ students}}{11 \text{ teachers}}$$

2. 3 books in 2 months

$$\frac{3 \text{ books}}{2 \text{ months}}$$

3. 15 strike-outs in 6 innings

$$\frac{15 \text{ strike-outs}}{6 \text{ innings}}$$

In a **unit rate**, the second quantity is 1.

- 300 miles in 6 hours

$$\frac{300 \text{ miles}}{6 \text{ hours}} = \frac{300 \div 6}{6 \div 6} = \frac{50 \text{ miles}}{1 \text{ hour}}$$

- 81 entries in 4 minutes

$$\frac{81 \text{ entries}}{4 \text{ minutes}} = \frac{81 \div 4}{4 \div 4} = \frac{20.25 \text{ entries}}{1 \text{ minute}}$$

Express each comparison as a unit rate.

4. 28 patients for 2 nurses

$$\frac{28 \text{ patients}}{2 \text{ nurses}} = \frac{28 \div 2}{2 \div 2} = \frac{14 \text{ patients}}{1 \text{ nurse}}$$

5. 16 children in 7 families

$$\frac{16 \text{ children}}{7 \text{ families}} = \frac{16 \div 7}{7 \div 7} = \frac{2.3 \text{ children}}{1 \text{ family}}$$

A **unit price** tells the price per 1 unit.

- \$2.49 for 3 muffins

$$\frac{\$2.49}{3 \text{ muffins}} = \frac{2.49 \div 3}{3 \div 3} = \frac{\$0.83}{1 \text{ muffin}}$$

- \$1.67 for 10 pencils

$$\frac{\$1.67}{10 \text{ pencils}} = \frac{1.67 \div 10}{10 \div 10} = \frac{\$0.167}{1 \text{ pencil}}$$

- \$0.83 for 1 muffin

- \$0.17 for 1 pencil

Find each unit price.

6. \$10.74 for 3 reams of paper

$$\frac{\$10.74}{3 \text{ reams}} = \frac{10.74 \div 3}{3 \div 3} = \frac{\$3.58}{1 \text{ ream}}$$

7. \$9.99 for 6 blank jewel cased CDs

$$\frac{\$9.99}{6 \text{ CDs}} = \frac{9.99 \div 6}{6 \div 6} = \frac{\$1.665}{1 \text{ CD}}$$

8. \$8.99 for a 12-pack of gel pens

$$\frac{\$8.99}{12 \text{ pens}} = \frac{8.99 \div 12}{12 \div 12} = \frac{\$0.7492}{1 \text{ pen}}$$

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