

Objective Introduction to Unit Rates

Warm-Up



Determine each unknown quantity.

$$1. \frac{12 \text{ arrows}}{3 \text{ bows}} = \frac{108 \text{ arrows}}{? \text{ bows}}$$

$$2. \frac{3 \text{ shoes}}{32 \text{ socks}} = \frac{? \text{ shoes}}{160 \text{ socks}}$$

$$3. \frac{54 \text{ arrows}}{3 \text{ bows}} = \frac{? \text{ arrows}}{1 \text{ bows}}$$

$$4. \frac{9 \text{ shoes}}{82 \text{ socks}} = \frac{1 \text{ shoes}}{? \text{ socks}}$$



Unit rates are helpful when solving problems about constant speeds.

1. In the spring, the gym teachers at Stewart Middle School sponsor a bike-a-thon to raise money for new sporting equipment. Students seek sponsors to pledge a dollar amount for each mile they ride.



a. Nico can ride 12.5 miles per hour. At this rate, how far will he ride in 5 hours?

b. Grace can ride 14.75 miles per hour. At this rate, how far will she ride in 6 hours?

c. If Leticia rides 56.25 miles in 5 hours, how far will she ride in 7 hours?

2. Beth, Kelly, Andrea, and Amy are all training for the local marathon.



a. Beth can run 6.5 miles per hour. At this rate, how far will she run in the first 3 hours of the marathon?

b. Kelly runs 13.5 miles in 2 hours. What is her rate?

c. Andrea is the slowest runner in the group. She can run 5.5 miles per hour. At this rate, how many miles will she run in the first 3 hours of the marathon?

d. Amy wants to run the 26.2 miles of the marathon in 4.5 hours. At what rate will she have to run to reach this goal?

e. At a workout designed to increase speed, Beth runs 800 meters in $2\frac{1}{2}$ minutes. Kelly runs 1600 meters in $4\frac{1}{2}$ minutes. Who ran the fastest in this workout?

Unit rates are also useful when calculating the price of multiple items.

3. Copy and complete each table.

a. Carpet is sold by the square yard. Classroom carpet sells for \$10.50 per square yard.

1 yd ²	40 yd ²	50 yd ²	100 yd ²
\$10.50			

b. Pink Lady apples are sold by the pound. One pound of Pink Lady apples costs \$2.99.

1 lb	2 lbs	5 lbs	10 lbs	20 lbs
\$2.99				

c. Purchases in your county have a 7 percent sales tax added for every dollar of the purchase price.

\$1	\$5	\$10	\$20	\$50	\$100
\$0.07					

4. How did you use a unit rate to complete each table in Question 4?

Show You KNOW

Shopping for Cereal

Tim and Dan love cereal, but don't want spend a lot of money. After scanning the aisle in the grocery store for the lowest prices, the boys make the following statements.



- Tim says, "I found Sweetie Oat Puffs for \$0.14 per ounce. That's the cheapest cereal in the aisle!"

- Dan replies, "It's not cheaper than Sugar Hoops! The unit price for that is 6.25 oz per dollar." Who is correct? Explain your reasoning.

**LESSON 6.2c**
What is the Best Buy?

Objective

Introduction to Unit Rates

Practice

- Dean's car weighs $1\frac{1}{4}$ tons. How many pounds does his car weigh?
 - 2,000 lb
 - 2,125 lb
 - 2,375 lb
 - 2,500 lb
- A wooden board is 3 yards 1 foot long. Which shows an equivalent length?
 - 37 ft
 - 31 ft
 - 10 ft
 - 7 ft
- A bottle of water has a capacity of 750 milliliters. Which is an equivalent measure in liters?
 - 7,500 L
 - 75 L
 - 7.5 L
 - 0.75 L
- A package weighs 4.25 kilograms. How many grams does the package weigh?
 - 0.0425 g
 - 425 g
 - 4,250 g
 - 42,500 g
- Julie's cell phone is 9 centimeters long. How many millimeters long is her cell phone?
 - 0.9 millimeters
 - 90 millimeters
 - 900 millimeters
 - 9,000 millimeters
- Amy needs to fill a barrel with $4\frac{1}{4}$ gallons of water. She only has a quart container. How many times will she need to fill the quart container in order to get $4\frac{1}{4}$ gallons of water into the barrel?
 - 34
 - 20
 - 17
 - 16