

Homework

Unit 3 · Lesson 3: Unit Rates

Name: _____

Date: _____

Objective: I will work with partial numbers to find unit rates.

Vocabulary

Rate: a special ratio that compares two quantities that have different units of measure

Example:

Miguel types 160 words in 4 minutes.

$$\frac{W}{T} \text{ words : time} \quad \text{words to time}$$
$$\frac{160}{4} = 40 \text{ words per minute.}$$

Unit Rate: a ratio showing a comparison to one; a rate with a denominator of 1

$$70 \text{ miles per hour} = \frac{70}{1}$$

Cross Multiplication Method:

$$\frac{1}{2} = \frac{5}{10}$$

$$2 \cdot 5 = 10 \cdot 1$$
$$10 = 10$$

$$\frac{x}{9} = \frac{2}{3}$$

$$9 \cdot 2 = 3 \cdot x$$
$$18 = 3x$$
$$6 = x$$

Steps:

1. Identify the desired unit rate.
2. Write the ratio in fractional form.
3. Divide the numerator by the denominator to get a denominator of 1.
4. Solve for the variable.
5. Use the unit rate to solve for the given measurement.

Example # 1

Directions: Read and solve.

In a recipe, the ratio of sugar to flour is $\frac{2}{3}$ to $1\frac{1}{2}$. What is the unit rate of flour to sugar? How much flour will be needed if we have 5 cups of sugar?

Solution:

The unit rate for this recipe is for every unit of sugar, you will need $2\frac{1}{4}$ units of flour. If you have 5 cups of sugar, you will need $11\frac{1}{4}$ cups of flour for this recipe.

Example # 2

Kendra is a jogger. For every $12\frac{1}{2}$ steps, she takes 2 breaths.

What is the unit rate of steps per breath? How many steps does Kendra make if she takes 50 breaths?

Solution:

The unit rate is for every breath, Kendra runs $6\frac{1}{4}$ steps. At this current rate, if Kendra takes 50 breaths, she would run $312\frac{1}{2}$ steps.

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Directions: Read and solve.

<p>1. The cook peels $5\frac{1}{2}$ potatoes every $\frac{1}{10}$ of a minute. What is the unit rate of potatoes per minute?</p>	<p>2. A bee flutters its wings 160 times per second. What is the unit rate per minute?</p>
<p>3. A hamster eats $4\frac{1}{2}$ food pellets per $\frac{1}{5}$ of an hour. What is the unit rate of pellets per hour?</p>	<p>4. A man is mixing sugar and water for his birdfeeder. He uses $\frac{1}{3}$ of a teaspoon of sugar for $\frac{1}{2}$ cup of water. What is the unit rate of sugar per cup of water? How much sugar will he need to mix into 12 cups of water?</p>
<p>5. Barkley makes $13\frac{1}{3}$ free throws every $\frac{1}{6}$ of an hour he practices. What is the unit rate of free throws made per hour? How many free throws will Barkley make in 3 hours of practice?</p>	<p>6. Jeremiah pours $9\frac{1}{4}$ cups of coffee every $\frac{2}{5}$ of an hour. What is the unit rate of coffee cups poured per hour? How many cups will Jeremiah pour in an 8-hour shift?</p>

Explain the steps you used to solve problem number _____.
