Homework

Unit 3 · Lesson 12: Determine Proportional Relationships

Name: _____

Date: _____

Objective: *I will determine a proportional relationship using real world examples.*

Vocabulary

Constant of Proportionality: the factor multiplied by the *x*-value to get the corresponding *y*-value. The unit rate and constant of proportionality both represent the value of the ratio of *y : x*.

$$y = kx$$

k is the Constant of Proportionality

$$k = \frac{y}{x}$$

Proportional Equation:

$$y = kx$$

y is directly proportional to x
k is the Constant of Proportionality

Steps:

1. Analyze the problem and determine the beginning equation(s).
   - If there are two equations – isolate the variable for both. If both equations have the same solution, the quantities are likely proportional.
2. Decide if the relationship is proportional.
   - If yes, explain the relationship.
   - If not, explain why it is not.
3. If proportional, write the unit rate in *y = kx* form.

Example # 1	Example # 2
Directions: Determine if there is a proportional relationship. If proportional, write the unit rate in *y = kx* form.	
Marcela has $100 in her bank account. Every week, she adds $50 to her account. How much will she have in her account in *m* weeks?	Laylah had $175 in 7 months in her account. Eight months later, she had $375 in her account.
Solution: This is not a proportional relationship. If the number of weeks equals zero, the amount in Marcela's account is not zero, it's 100. Since she is adding an amount to her account, the situation can not be written in the form *y = kx.*	**Solution:** This is a proportional relationship because Laylah appears to be adding $25 per month to her account. If we work back to zero months, she would have zero dollars. Thus, graphing would allow the line to start at the origin.

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Directions: Determine if there is a proportional relationship. If so, write in $y = kx$ form.

1. When Mario starts to jog, his heart rate increases by 10 beats per minute every 20 steps.	2. A cola company makes $2.66 profit for every 7 cans they sell. They also profit $7.60 every 20 cans sold.
3. Mila is mixing red and white paint. She mixes $\frac{1}{5}$ a cup of red paint mixed with $\frac{3}{4}$ a cup of white paint. Then she mixes 8 cups of red paint with 30 cups of white paint.	4. An apple tree is 20 years old and 30 feet tall. A peach tree is 25 years old and 35 feet tall.
5. One smoothie brand contains 8 cups of fruit in their 30.4 ounces tropical smoothie. Another brand contains 4.5 cups of fruit in a 17.1 ounces tropical smoothie.	6. After sailing 3.5 hours, they are 5 miles from shore. After 10.5 hours sailing, they are 12 miles from shore.

Explain the steps you used to solve problem number _____.

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