NAME _____

Lesson 4.4 Using Equations to Represent Proportions

Sometimes words are used to describe the proportional relationship in a problem. The words can tell how to write an equation to represent a proportional relationship.

A handicapped-access ramp starts at ground level and rises to 27 inches over a distance of 30 feet. What is the equation to find the height of the ramp based on how far along the ramp you have traveled?

1. Use the equation to find the constant of proportionality: $k = \frac{y}{x}$. For simplicity, use the known value (27) of the variable you will be solving for (height) as y when setting up the proportion.
2. In this problem, $k = \frac{27}{30}$, where 27 is the height of the ramp (y) and 30 is the distance it covers (x).
3. Simplify to $k = \frac{9}{10}$. This is the constant of proportionality for this problem, so you can plug this value into the equation in step 1 to get $\frac{9}{10} = \frac{y}{x}$.
4. With this proportion, you can find the height at any point along the ramp. Just isolate the variable you are solving for (x, or height) on one side of the equation. So, $y = \frac{9}{10} \times x$.

SHOW YOUR WORK

Write the equation to solve each problem. Use y as the variable you solve for.

1. A recipe to make 4 pancakes calls for 6 tablespoons of flour. Tracy wants to make 10 pancakes using this recipe. What equation will she need to use to find out how many tablespoons of flour to use?

   Equation: _____

   1. _____

2. A picture measures 11 inches tall by 14 inches wide. Nathan wants to enlarge the picture to fit in a frame that is 16 inches wide. What equation will he need to use to find out how tall the picture should be after it is enlarged?

   Equation: _____

   2. _____

3. A car uses 8 gallons of gasoline to travel 290 miles. Juanita wants to take a trip that is 400 miles. What equation will she need to use to find out how much gas the trip will use?

   Equation: _____

   3. _____

4. After Marco has worked for 5 hours, he has earned $29.00. He is planning to work 30 hours this week. What equation will he need to use to find out how much he will be paid?

   Equation: _____

   4. _____