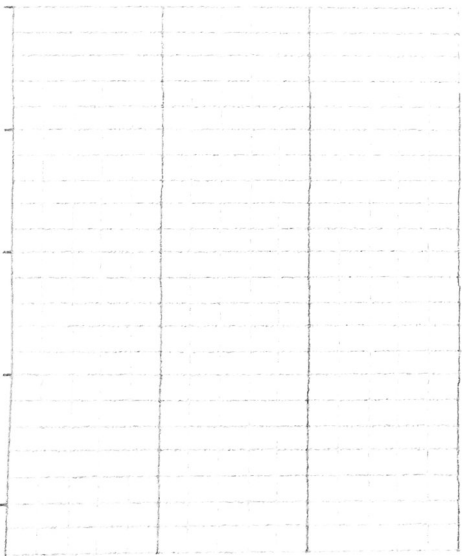# Lesson 10: Interpreting Graphs of Proportional Relationships

Example 1

Grandma's special chocolate chip cookie recipe, which yields 4 dozen cookies, calls for 3 cups of flour.

Using this information, complete the chart:

Create a table comparing the amount of flour used to the amount of cookies.	Is the number of cookies proportional to the amount of flour used? Explain why or why not.	What is the unit rate of cookie to flour $\left(\frac{y}{x}\right)$, and what is the meaning in the context of the problem?
Model the relationship on a graph.	Does the graph show the two quantities being proportional to each other? Explain.	Write an equation that can be used to represent the relationship.

Example 2

Below is a graph modeling the amount of sugar required to make Grandma's special chocolate chip cookies.
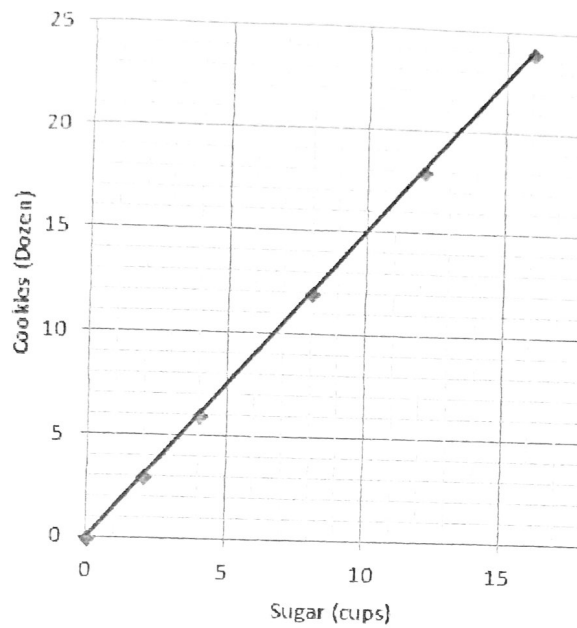

a. Record the coordinates from the graph. What do these ordered pairs represent?

b. Grandma has 1 remaining cup of sugar. How many dozen cookies will she be able to make? Plot the point on the graph above.

c. How many dozen cookies can Grandma make if she has no sugar? Can you graph this on the coordinate plane provided above? What do we call this point?

Exercises

1. The graph below shows the amount of time a person can shower with a certain amount of water.
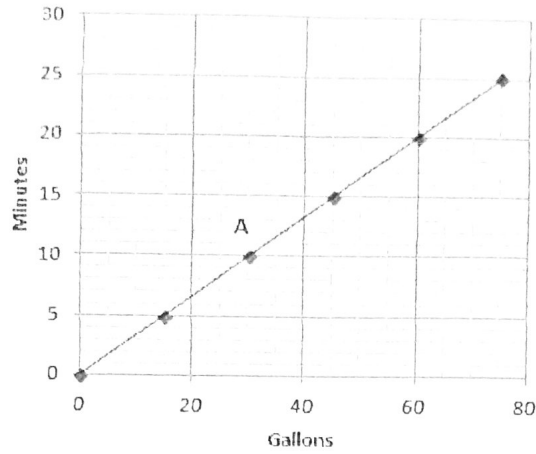
a. Can you determine by looking at the graph whether the length of the shower is proportional to the number of gallons of water? Explain how you know.

b. How long can a person shower with 15 gallons of water? How long can a person shower with 60 gallons of water?

c. What are the coordinates of point A? Describe point A in the context of the problem.

d. Can you use the graph to identify the unit rate?

e.   Write the equation to represent the relationship between the number of gallons of water used and the length of a shower.

2. Your friend uses the equation $C = 50P$ to find the total cost, C, for the number of people, P, entering a local amusement park.

a.   Create a table and record the cost of entering the amusement park for several different-sized groups of people.

b.   Is the cost of admission proportional to the amount of people entering the amusement park? Explain why or why not.

c.   What is the unit rate, and what does it represent in the context of the situation?