LESSON 4: Minding Your Ps and Qs

Write

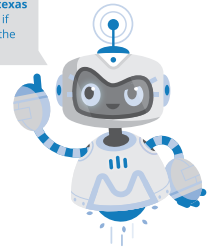Describe how a table, an equation, and a graph can each represent a direct variation.

Remember

Proportional relationships can be represented in many of different ways, including diagrams, tables, equations, graphs, and in scenarios.

Practice

1. The constant of proportionality between the number of children (*c*) on a field trip and the number of teachers (*t*) on the trip is $\frac{14}{3}$.
   a. Write an equation to represent this situation.
   b. Create a graph.
   c. If there are 70 children on a field trip. How many teachers are on the trip?

2. The constant of proportionality between the number of junior varsity players (*j*) on the track team and the number of varsity players (*v*) on the team is $\frac{2}{5}$.
   a. Write an equation to represent this situation.
   b. Create a graph.
   c. If there are 45 varsity players on the track team. How many junior varsity players are on the team?

3. The constant of proportionality between the number of cats (*c*) in a pet shelter and the number of dogs (*d*) in the shelter is 3.
   a. Write an equation to represent this situation.
   b. Create a graph.
   c. If there are 27 cats in the shelter. How many dogs are in the shelter?

4. The constant of proportionality between the height of the water in a sink (*h*) in centimeters and the number of minutes it has been filling (*m*) is 0.95. The sink has been filling for 40 minutes. What is the height of the water in the sink?

5. The constant of proportionality between the number of fiction books (*f*) and the number of nonfiction books (*n*) in a library is $\frac{15}{22}$. There are 3498 nonfiction books in the library. How many fiction books are in the library?

6. The constant of proportionality between the number of markers (*m*) and the number of pencils (*p*) in an art room is $\frac{8}{3}$. There are 304 markers in the art room. How many pencils are in the art room?
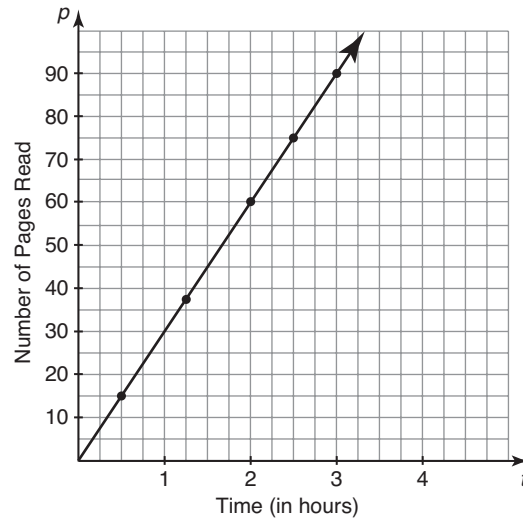
Stretch

A map of the United States is drawn such that 1 inch is equal to 600 miles. What is the approximate distance, on the map, between New York and Los Angeles?

Review

1. Suppose the number of pages (p) that Tony can read varies directly with the amount of time (t) in hours he spends reading. Determine the constant of proportionality and describe its meaning.

2. In the first quarter (3 months), a store sold 32 limited-edition action figures. If this quarter's sales represent a typical sales pattern, how many action figures should they expect to sell in a year?

3. A recipe calls for $3\frac{1}{2}$ cups of flour and $\frac{3}{4}$ cup of sugar. If you want to make the recipe with 6 cups of flour, how much sugar will you need?

4. Determine the area of each triangle.

a.

b.