Math Virtual Learning

Math 7/Pre-Algebra
Interpreting Proportional Relationships

April 14, 2020

7th Grade/Interpreting Proportional Relationships
Lesson: April 14, 2020

Objective/Learning Target:
Students will explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation.

Background Information

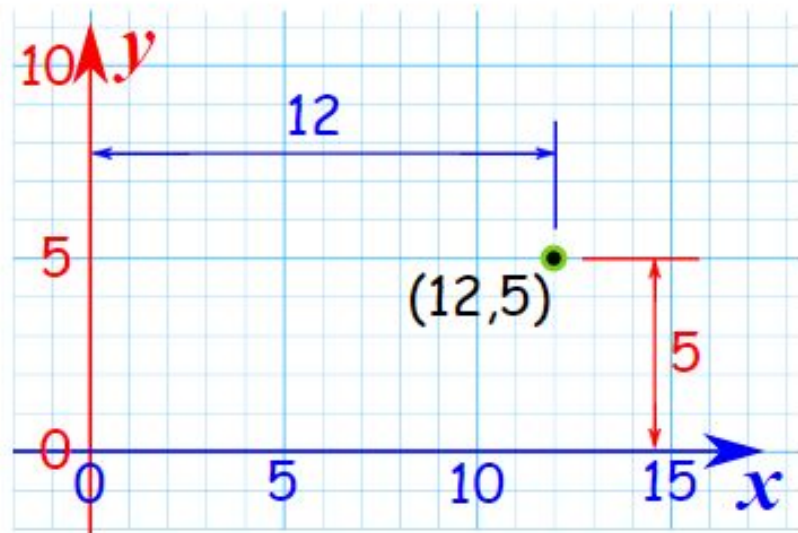Definition of

Ordered Pair

more ...

Two numbers written in a certain order.

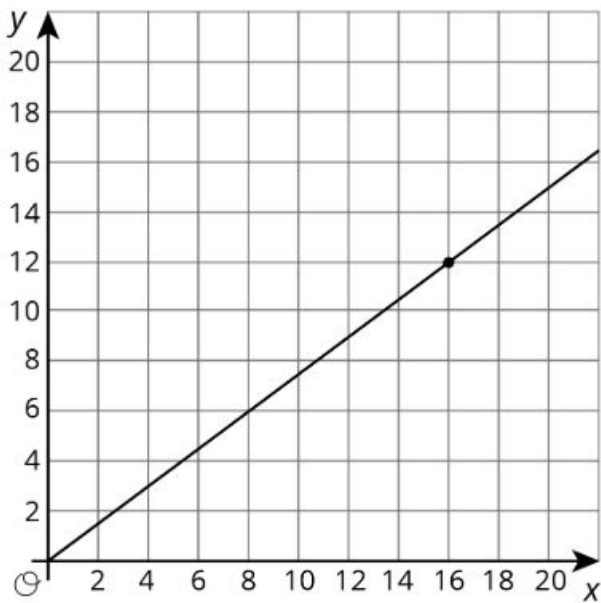Usually written in parentheses like this:

(12,5)

Which can be used to show the position on a graph, where the "x" (horizontal) value is first, and the "y" (vertical) value is second.

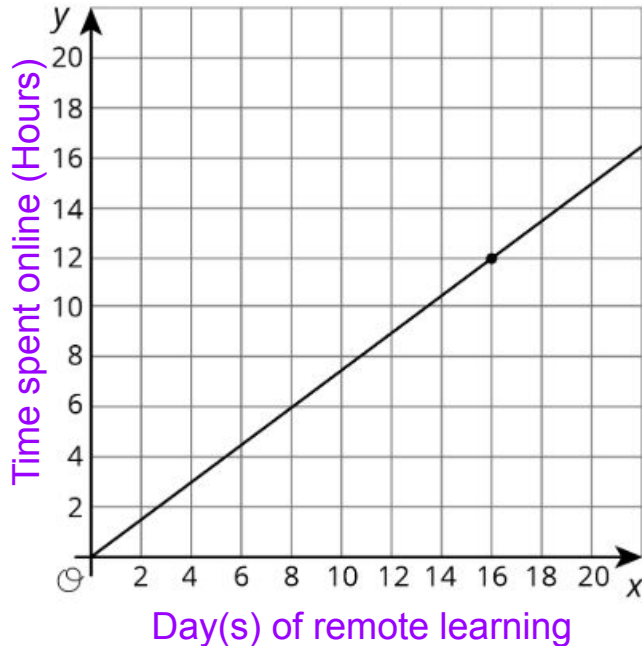So (12,5) is 12 units along, and 5 units up.

Warm-Up

1. Invent a situation that could be represented by this graph.

2. Label the axes with the quantities in your situation.

3. Give the graph a title.

4. There is a point on the graph. What are its coordinates? What does it represent in your situation?

Warm-Up

Time Spent on Remote Learning

Time spent online (Hours) (y-axis)

Day(s) of remote learning (x-axis)

1. Invent a situation that could be represented by this graph.

2. Label the axes with the quantities in your situation.

3. Give the graph a title.

4. There is a point on the graph. What are its coordinates? What does it represent in your situation?

Possible Answers

1. (example) For every 8 days of remote learning, Sam completed 6 hours of online activity.

2. See next to and below graph

3. See top of graph

4. (16,12) - After 16 days of remote learning, Sam completed 12 hours of online activity
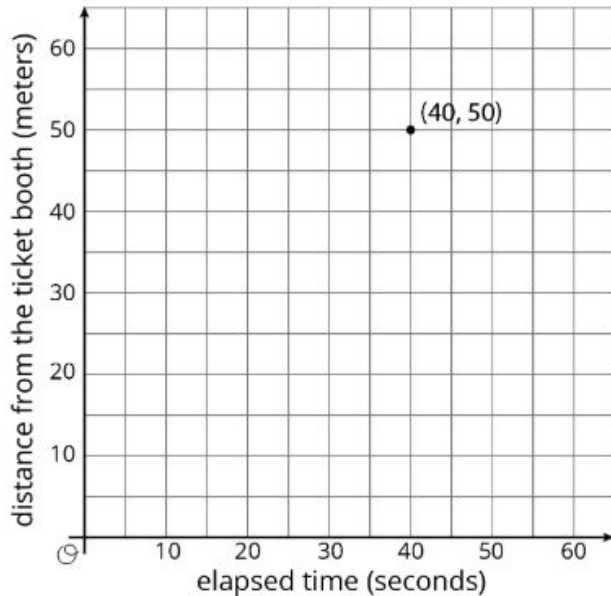
Click on the link to watch the video.
Khan Academy Video - Interpreting Graphs

Guided Practice #1

Tyler was at the amusement park. He walked at a steady pace from the ticket booth to the bumper cars.

- The point on the graph shows his arrival at the bumper cars. What do the coordinates of the point tell us about the situation?
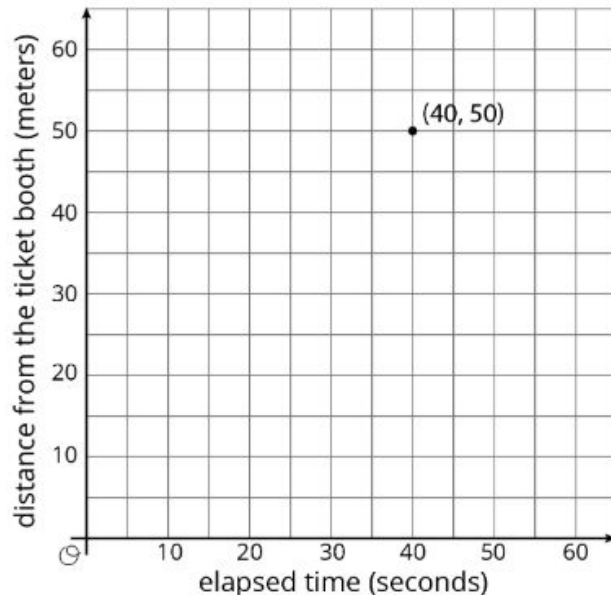

(40, 50)

distance from the ticket booth (meters)

elapsed time (seconds)

Tyler was at the amusement park. He walked at a steady pace from the ticket booth to the bumper cars.

Answers

- Point (40,50) tells us that after 40 seconds, he traveled 50 meters.

■ The point on the graph shows his arrival at the bumper cars. What do the coordinates of the point tell us about the situation?
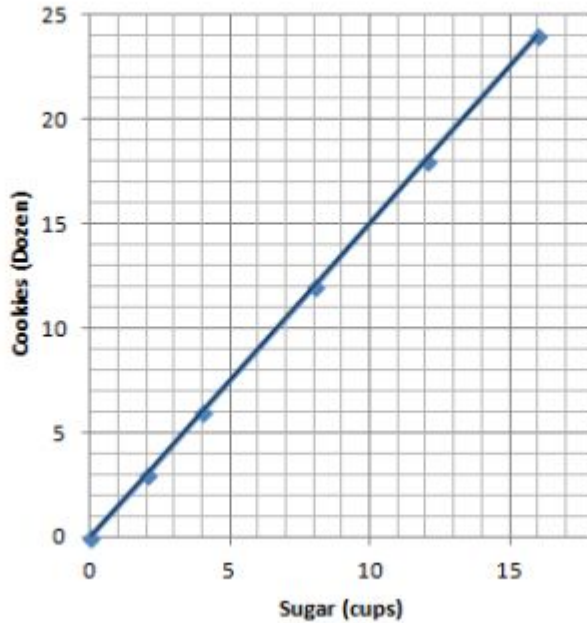
Below is a graph modeling the amount of sugar required to make Grandma's special chocolate chip cookies.

What do these ordered pairs represent?

(0,0)
(4,6)
(8,12)
(12,18)
(16,24)

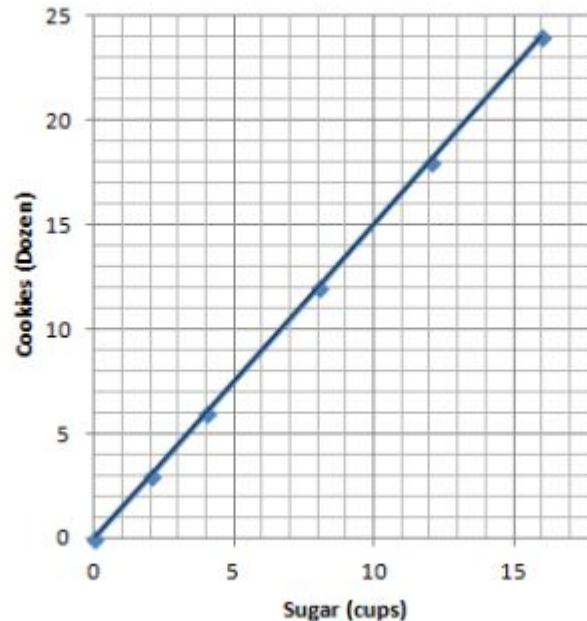Grandma has 1 cup of sugar left. How many dozen cookies can she make?

Guided Practice #2

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

What do these ordered pairs represent?

(0,0)   0 cups sugar make 0 dozen
(4,6)   4 cups sugar make 6 dozen
(8,12)   8 cups sugar make 12 dozen
(12,18) 12 cups sugar make 18 dozen
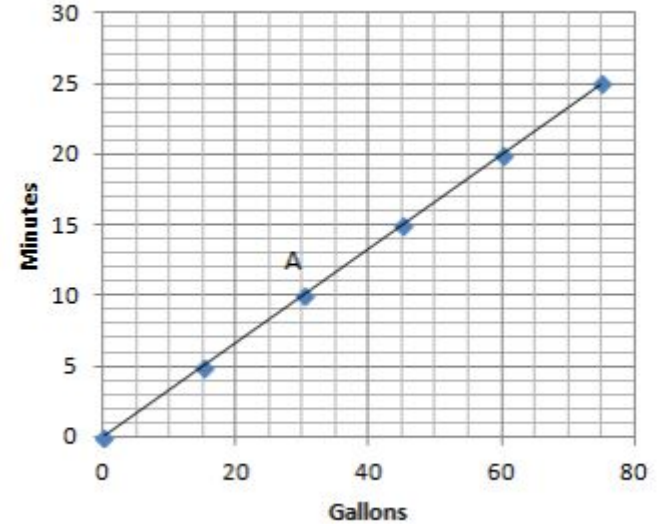(16,24) 16 cups sugar make 24 dozen

Grandma has 1 cup of sugar left. How many dozen cookies can she make? If 2 cups make 3 dozen cookies, then we can divide 2 by 2 (to get 1 cup) and 3 divided by 2 to get an answer of **1.5 dozen cookies!**
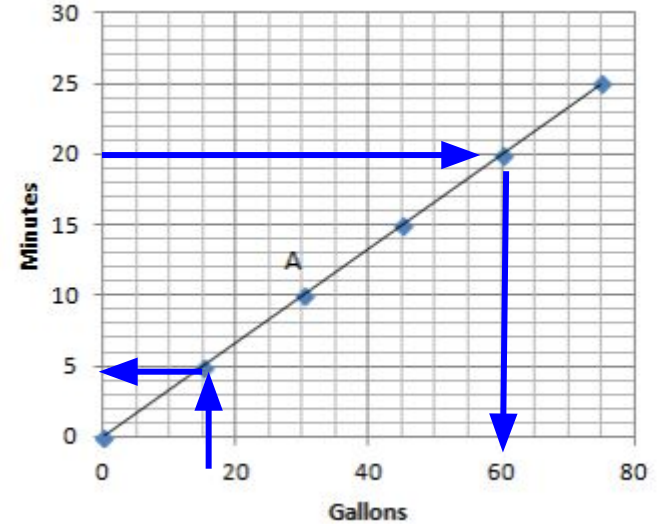
Guided Practice #3

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

2. How many gallons of water will a person use for a 20 minute shower?

Guided Practice #3

1. How long can a person shower with 15 gallons of water? 5 minutes

2. How many gallons of water will a person use for a 20 minute shower? 60 gallons
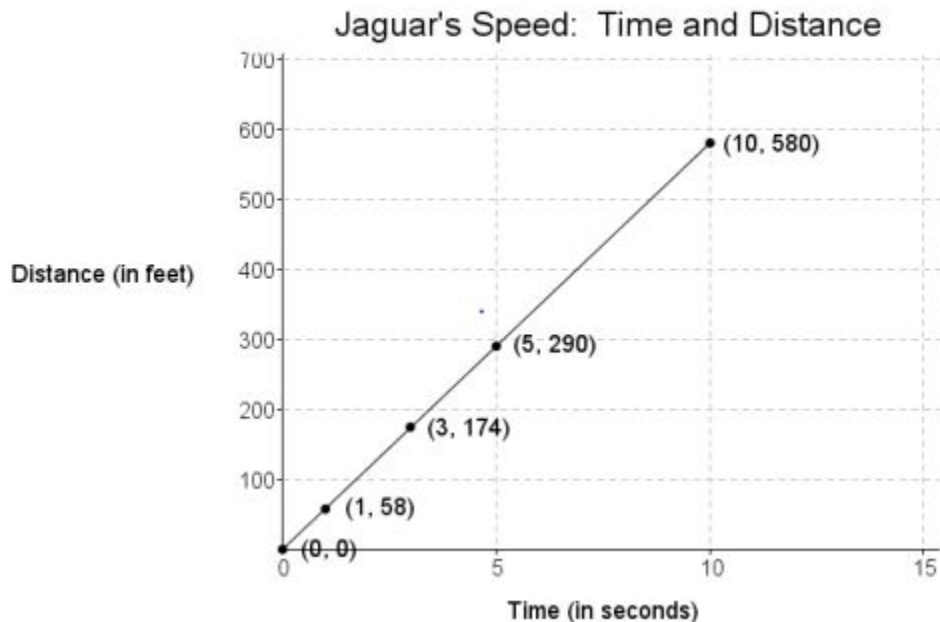
Individual Practice #1

The graph to the right shows the relationship of the amount of time (in seconds) to the distance (in feet) run by a jaguar.

a. What does the point $(5, 290)$ represent in the context of the situation?

b. What does the point $(3, 174)$ represent in the context of the situation?

Distance (in feet)

Jaguar's Speed: Time and Distance

(10, 580)

(5, 290)

(3, 174)

(1, 58)

(0, 0)

Time (in seconds)

The graph represents the total cost of renting a car. The cost of renting a car is a fixed amount each day, regardless of how many miles the car is driven.

a. What does the ordered pair $(4, 250)$ represent?

b. What would be the cost to rent the car for a week? Explain or model your reasoning.

Car Rental Fee

Total Cost (in dollars) vs Number of Days

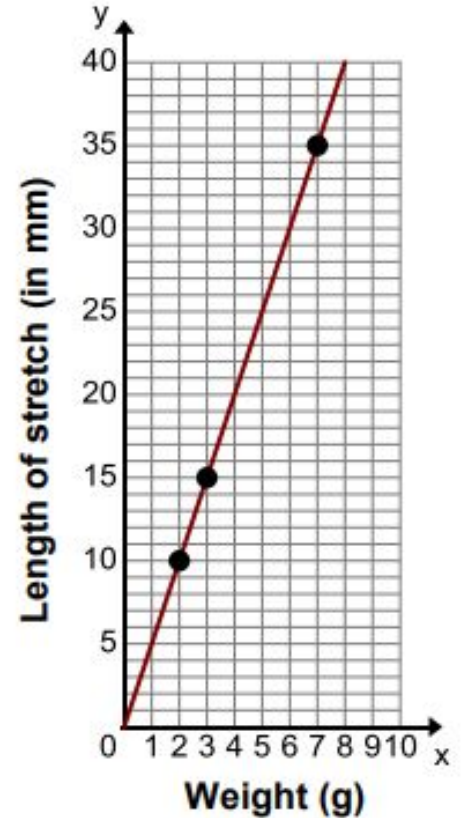Points: 0, 0; 1, 62.5; 2, 125; 4, 250; 6, 375

Individual Practice #3

The length of the stretch (in millimeters) of a spring is proportional to the weight (in grams) attached to the end of the spring as shown in the graph.

a. Label the ordered pairs (remember, right then up)

b. Explain what each ordered pair represents

c. How much is the weight attached to the end of a spring that has a length of stretch of 25 mm?

Individual Practice Answers

Question 1
A - (5, 290) tells us that in 5 seconds, the Jaguar goes 290 feet
B - (3,174) tells us that in 3 seconds, the Jaguar goes 174 feet

Question 2
a - (4,250) represents that 4 days costs $250
b - To rent a car for a week, it would cost $437.50. To rent a car for one day, it costs $62.50. Multiply this by 7 days to get the total of $437.50

Question 3
a - (2,10) (3,15) (7,35)
b - (2,10) - 10mm of stretch holds 2 grams of weight
    (3,15) - 15mm of stretch holds 3 grams of weight
    (7,35) - 35mm of stretch holds 7 grams of weight
c - A spring with a stretch length of 25mm will hold a weight of 5 grams.

Click the links for additional practice problems.
Khan Academy
IXL
Video with Practice Problems