

Name _____

Date _____

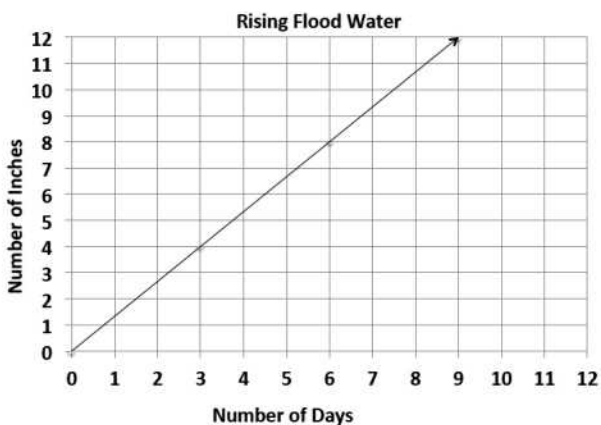
Equations of Graphs of Proportional Relationships

Involving Fractions

Exit Ticket

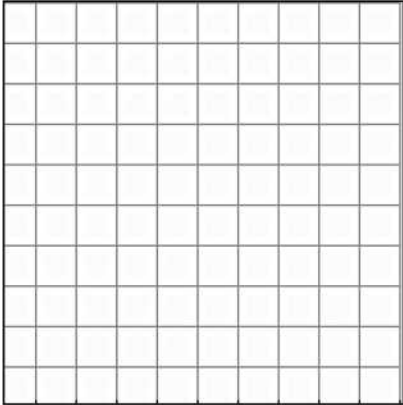
Using the graph and its title:

1. Describe the relationship that the graph depicts.
2. Identify two points on the line and explain what they mean in the context of the problem.
3. What is the unit rate?
4. What point represents the unit rate?



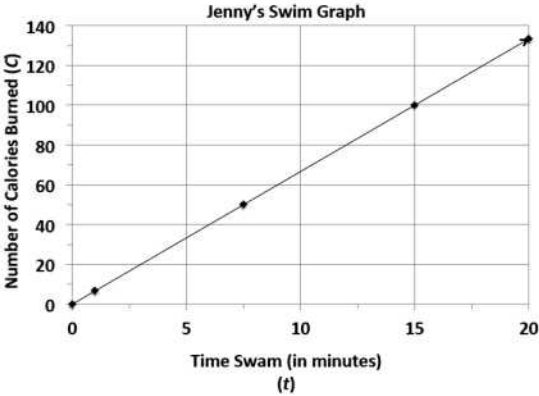
1. Students are responsible for providing snacks and drinks for the Junior Beta Club Induction Reception. Susan and Myra were asked to provide the punch for the 100 students and family members who will attend the event. The chart below will help Susan and Myra determine the proportion of cranberry juice to sparkling water that will be needed to make the punch. Complete the chart, graph the data, and write the equation that models this proportional relationship.

Sparkling Water (<i>S</i> , in cups)	Cranberry Juice (<i>C</i> , in cups)
1	$\frac{4}{5}$
5	4
8	
12	$9\frac{3}{5}$
	40
100	

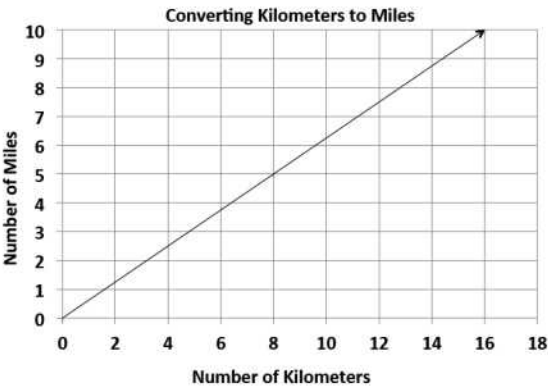


2. Jenny is a member of a summer swim team.

- Using the graph, determine how many calories she burns in one minute.
- Use the graph to determine the equation that models the number of calories Jenny burns within a certain number of minutes.
- How long will it take her to burn off a 480-calorie smoothie that she had for breakfast?



3. Students in a world geography class want to determine the distances between cities in Europe. The map gives all distances in kilometers. The students want to determine the number of miles between towns so that they can compare distances with a unit of measure with which they are already familiar. The graph below shows the relationship between a given number of kilometers and the corresponding number of miles.



- a. Find the constant of proportionality or the rate of miles per kilometer for this problem and write the equation that models this relationship.
- b. What is the distance in kilometers between towns that are 5 miles apart?
- c. Describe the steps you would take to determine the distance in miles between two towns that are 200 kilometers apart?

4. During summer vacation, Lydie spent time with her grandmother picking blackberries. They decided to make blackberry jam for their family. Her grandmother said that you must cook the berries until they become juice and then combine the juice with the other ingredients to make the jam.

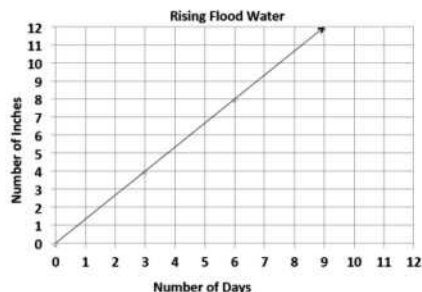
- a. Use the table below to determine the constant of proportionality of cups of juice to cups of blackberries.

Cups of Blackberries	Cups of Juice
0	0
4	$1\frac{1}{3}$
8	$2\frac{2}{3}$
12	
	8

- b. Write an equation that will model the relationship between the number of cups of blackberries and the number of cups of juice.
- c. How many cups of juice were made from 12 cups of berries? How many cups of berries are needed to make 8 cups of juice?

- Describe the relationship that the graph depicts.

The graph shows that in 3 days the water rose to 4 inches. The water has risen at a constant rate. Therefore, the water has risen $1\frac{1}{3}$ inches per day.



- Identify two points on the line and explain what they mean in the context of the problem.

(6, 8) means that by the 6th day, the water rose 8 inches; (9, 12) means that by the 9th day, the water rose 12 inches.

- What is the unit rate?

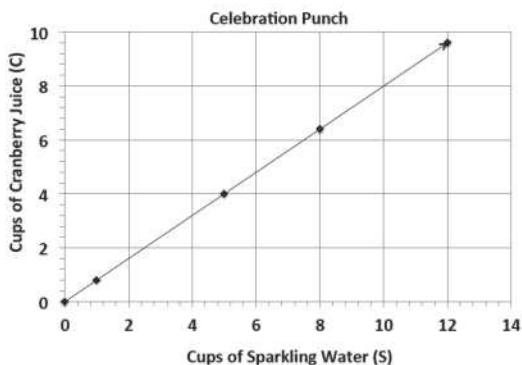
The unit rate in inches per day is $\frac{4}{3}$.

- What point represents the unit rate?

The point that shows the unit rate is $(1, 1\frac{1}{3})$

- Students are responsible for providing snacks and drinks for the Junior Beta Club Induction Reception. Susan and Myra were asked to provide the punch for the 100 students and family members who will attend the event. The chart below will help Susan and Myra determine the proportion of cranberry juice to sparkling water that will be needed to make the punch. Complete the chart, graph the data, and write the equation that models this proportional relationship.

Sparkling Water (S, in cups)	Cranberry Juice (C, in cups)
1	$\frac{4}{5}$
5	4
8	$6\frac{2}{5}$
12	$9\frac{3}{5}$
50	40
100	80



$C = \frac{4}{5}S$, where C represents the number of cups of cranberry juice and S represents the number of cups of sparkling water.

2. Jenny is a member of a summer swim team.

- a. Using the graph, determine how many calories she burns in one minute?

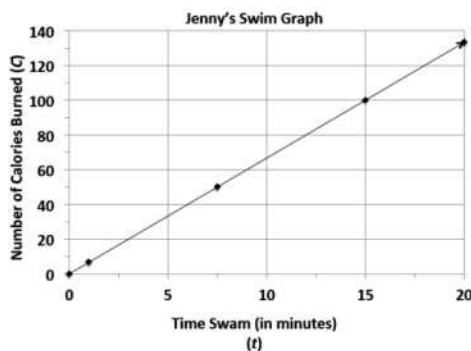
Jenny burns 100 calories every 15 minutes, so she burns $6\frac{2}{3}$ calories each minute.

- b. Use the graph to determine the equation that models the number of calories Jenny burns within a certain number of minutes.

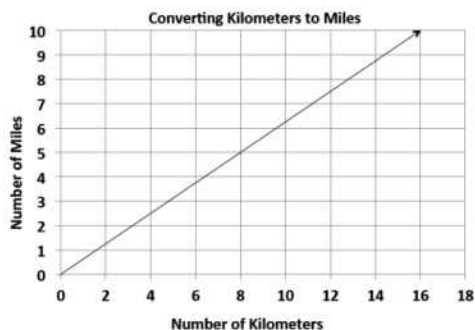
$C = 6\frac{2}{3}t$, where C represents the number of calories burned and t represents the time she swims in minutes.

- c. How long will it take her to burn off a 480-calorie smoothie that she had for breakfast?

It will take Jenny 72 minutes of swimming to burn off the smoothie she had for breakfast.



3. Students in a world geography class want to determine the distances between cities in Europe. The map gives all distances in kilometers. The students want to determine the number of miles between towns so they can compare distances with a unit of measure with which they are already familiar. The graph below shows the relationship between a given number of kilometers and the corresponding number of miles.



- a. Find the constant of proportionality, or the rate of miles per kilometer, for this problem and write the equation that models this relationship.

The constant of proportionality is $\frac{5}{8}$.

The equation that models this situation is $M = \frac{5}{8}K$, where M represents the number of miles, and K represents the number of kilometers.

- b. What is the distance in kilometers between towns that are 5 miles apart?

The distance between towns that are 5 miles apart is 8 km.

- c. Describe the steps you would take to determine the distance in miles between two towns that are 200 kilometers apart?

Solve the equation $M = \frac{5}{8}(200)$. To find the number of miles for 200 km, multiply 200 by $\frac{5}{8}$.

$200\left(\frac{5}{8}\right) = 125$ miles.

4. During summer vacation, Lydie spent time with her grandmother picking blackberries. They decided to make blackberry jam for their family. Her grandmother said that you must cook the berries until they become juice and then combine the juice with the other ingredients to make the jam.

a. Use the table below to determine the constant of proportionality of cups of juice to cups of blackberries.

Cups of Blackberries	Cups of Juice
0	0
4	$1\frac{1}{3}$
8	$2\frac{2}{3}$
12	4
24	8

$k = \frac{1}{3}$; One cup of juice is produced when 3 cups of blackberries are cooked.

- b. Write an equation that will model the relationship between the number of cups of blackberries and the number of cups of juice.

$j = \frac{1}{3}b$, where j represents the number of cups of juice and b represents the number of cups of blackberries.

- c. How many cups of juice were made from 12 cups of berries? How many cups of berries are needed to make 8 cups of juice?

4 cups of juice are made from 12 cups of berries.

24 cups of berries are needed to make 8 cups of juice.