

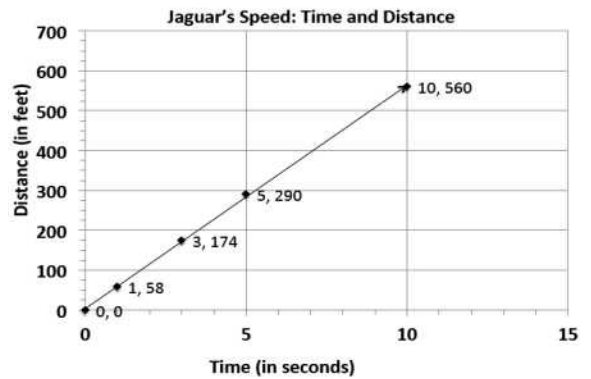
Name _____

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Interpreting Graphs of Proportional Relationships

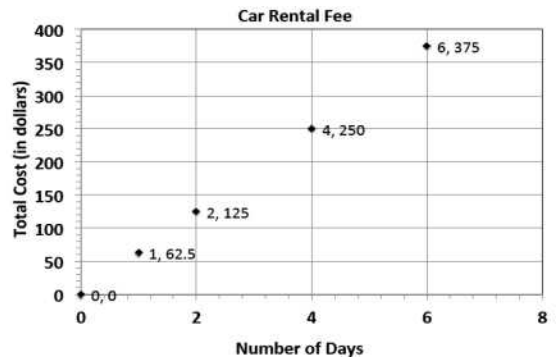
Great Rapids White Water Rafting Company rents rafts for \$125 per hour. Explain why the point $(0,0)$ and $(1,125)$ are on the graph of the relationship, and what these points mean in the context of the problem.

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?
 - c. Is the distance run by the jaguar proportional to the time? Explain why or why not.
 - d. Write an equation to represent the distance run by the jaguar. Explain or model your reasoning.



2. Championship t-shirts sell for \$22 each.
 - a. What point(s) must be on the graph for the quantities to be proportional to each other?
 - b. What does the ordered pair $(5, 110)$ represent in the context of this problem?
 - c. How many t-shirts were sold if you spent a total of \$88?

3. 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.



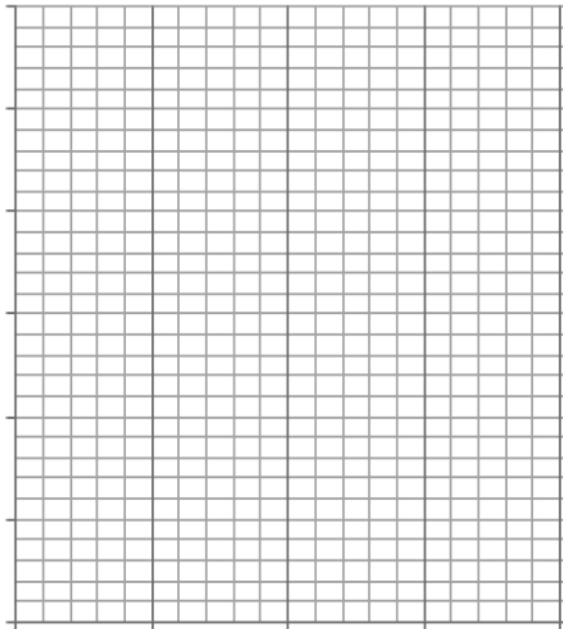
4. Jackie is making a snack mix for a party. She is using cashews and peanuts. The table below shows the relationship of the number of packages of cashews she needs to the number of cans of peanuts she needs to make the mix.

Packages of Cashews	Cans of Peanuts
0	0
1	2
2	4
3	6
4	8

- a. What points must be on the graph for the number of cans of peanuts to be proportional to the number of packages of cashews? Explain why.
- b. Write an equation to represent this relationship.
- c. Describe the ordered pair (12, 24) in the context of the problem.
5. The following table shows the amount of candy and price paid.

Amount of Candy (in pounds)	2	3	5
Cost (in dollars)	5	7.5	12.5

- a. Is the cost of the candy proportional to the amount of candy?
- b. Write an equation to illustrate the relationship between the amount of candy and the cost.
- c. Using the equation, predict how much it will cost for 12 pounds of candy.
- d. What is the maximum amount of candy you can buy with \$60?
- e. Graph the relationship.



Great Rapids White Water Rafting Company rents rafts for \$125 per hour. Explain why the point $(0, 0)$ and $(1, 125)$ are on the graph of the relationship, and what these points mean in the context of the problem.

Every graph of a proportional relationship must include the points $(0, 0)$ and $(1, r)$. The point $(0, 0)$ is on the graph because 0 can be multiplied by the constant to determine the corresponding value of 0. The point $(1, 125)$ is on the graph because it is the unit rate. On the graph, for every 1 unit change on the horizontal axis, the vertical axis will change by 125 units. The point $(0, 0)$ means 0 hours of renting a raft would cost \$0, and $(1, 125)$ means 1 hour of renting the raft would cost \$125.

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?

In 5 seconds, a jaguar can run 290 feet.

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

A jaguar can run 174 feet in 3 seconds.

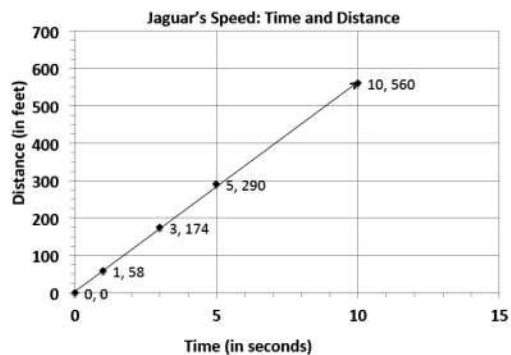
c. Is the distance run by the jaguar proportional to the time? Explain why or why not.

Yes, the distance run by the jaguar is proportional to the time spent running because the graph shows a line that passes through the origin $(0, 0)$.

d. Write an equation to represent the distance run by the jaguar. Explain or model your reasoning.

$$y = 58x$$

The constant of proportionality, or unit rate of $\frac{y}{x}$, is 58 and can be substituted into the equation $y = kx$ in place of k .



2. Championship t-shirts sell for \$22 each.

a. What point(s) must be on the graph for the quantities to be proportional to each other?

$(0, 0), (1, 22)$

b. What does the ordered pair $(5, 110)$ represent in the context of this problem?

5 t-shirts will cost \$110.

c. How many t-shirts were sold if you spent a total of \$88?

$$4; \frac{88}{22} = 4$$

3. 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?

It would cost \$250 to rent a car for 4 days.

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

Since the unit rate is 62.5, the cost for a week would be $62.5(7) = \$437.50$.

4. Jackie is making a snack mix for a party. She is using cashews and peanuts. The table below shows the relationship of the number of packages of cashews she needs to the number of cans of peanuts she needs to make the mix.

Packages of Cashews	Cans of Peanuts
0	0
1	2
2	4
3	6
4	8

- a. What points must be on the graph for the number of cans of peanuts to be proportional to the number of packages of cashews? Explain why.

$(0, 0)$ and $(1, 2)$. All graphs of proportional relationships are lines that pass through the origin $(0, 0)$ and the unit rate $(1, r)$.

- b. Write an equation to represent this relationship.

$y = 2x$, where x represents the number of packages of cashews and y represents the number of cans of peanuts.

- c. Describe the ordered pair $(12, 24)$ in the context of the problem.

In the mixture, you will need 12 packages of cashews and 24 cans of peanuts.

5. The following table shows the amount of candy and price paid.

Amount of Candy (in pounds)	2	3	5
Cost (in dollars)	5	7.5	12.5

- a. Is the cost of the candy proportional to the amount of candy?

Yes, because there exists a constant, 2.5, such that each measure of the amount of candy multiplied by the constant gives the corresponding measure of cost.

- b. Write an equation to illustrate the relationship between the amount of candy and the cost.

$$y = 2.5x$$

- c. Using the equation, predict how much it will cost for 12 pounds of candy.

$$2.5(12) = \$30$$

d. What is the maximum amount of candy you can buy with \$60?

$$\frac{60}{2.5} = 24 \text{ pounds}$$

e. Graph the relationship

