



LESSON 3.4b
Minding Your Ps and Qs

7.RP.2

Objective **Constant of Proportionality in Multiple Representations**

Warm-Up



Solve each equation.

1. $6p = 4.2$

2. $\frac{1}{4}j = 12$

3. $0.16k = 15.36$

4. $4k = 0$



Analyze the given table.

Number of Windows	Amount of Windows Cleaner (ounces)
0	0
2	16
3	24
4	32
5	40
6	48

1. Describe one possible situation that could be represented by this table of values. Include how the quantities relate to each other.

2. What is the constant of proportionality and what does it represent in your situation?

3. If the table values were used to create a graph, how would the points appear?

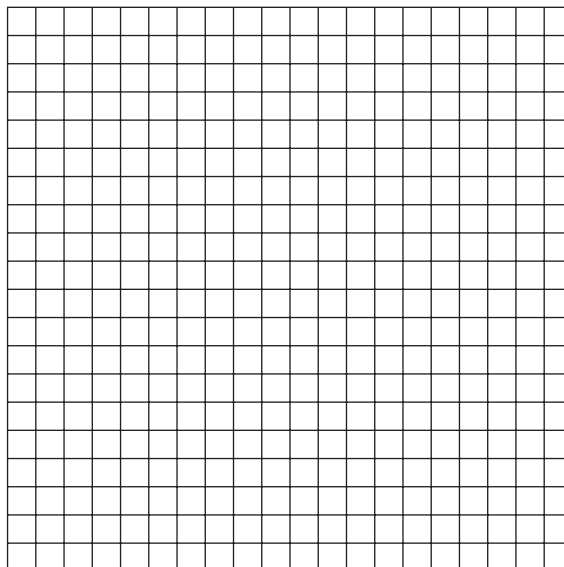


A baby elephant nurses for the first two years of its life. It drinks about 10 liters of milk every day.

1. Define variables and write an equation to represent the relationship between the amounts of milk the baby elephant consumes and the time it spends consuming the milk. Assume the elephant maintains the same rate of consumption.

2. Identify the constant of proportionality and describe what it means in this situation.

3. Create a graph to represent this situation.

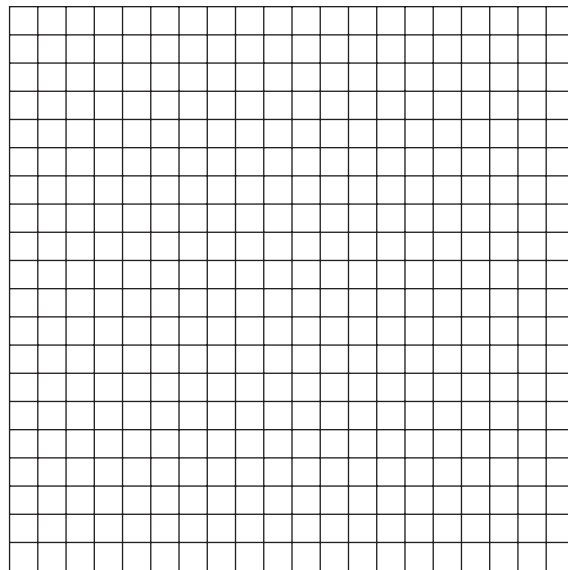


The weight of person on Earth varies directly as the weight of an object on the Moon. A 150-pound person would weigh approximately 25 pounds on the Moon.

4. Define variables and write an equation to represent the relationship between the weight of an object on Earth and the weight of an object on the Moon.

5. Identify the constant of proportionality and describe what it means in this situation.

6. Create a graph to represent this situation.





Suppose q varies directly as p .

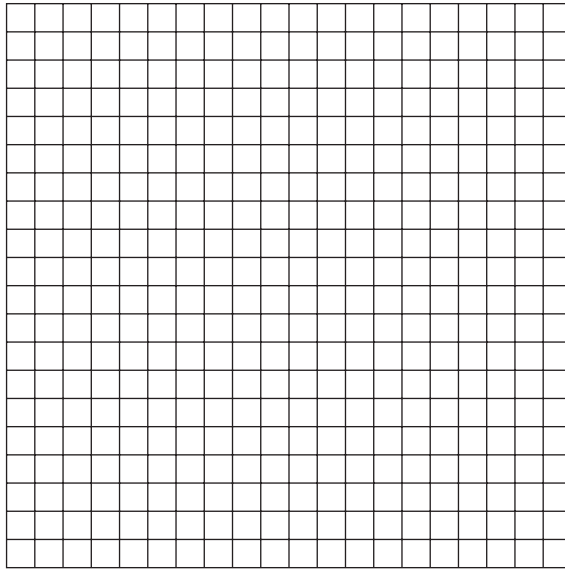
1. Complete the table for variables p and q .

p	q
0	
2	6
4	12
0.25	
	3
1.5	4.5

2. Write an equation that represents the relationship between p and q .

3. Summarize how you can write the equation that represents the relationship between two variables that vary directly if you are given a ratio table.

4. Graph your equation. Label your axes.



5. Summarize how to draw a graph from the equation representing the relationship between two quantities that vary directly.

6. Summarize how you can write the equation representing the relationship between two quantities that vary directly if you are given a graph.

Show You KNOW

Every Which Way

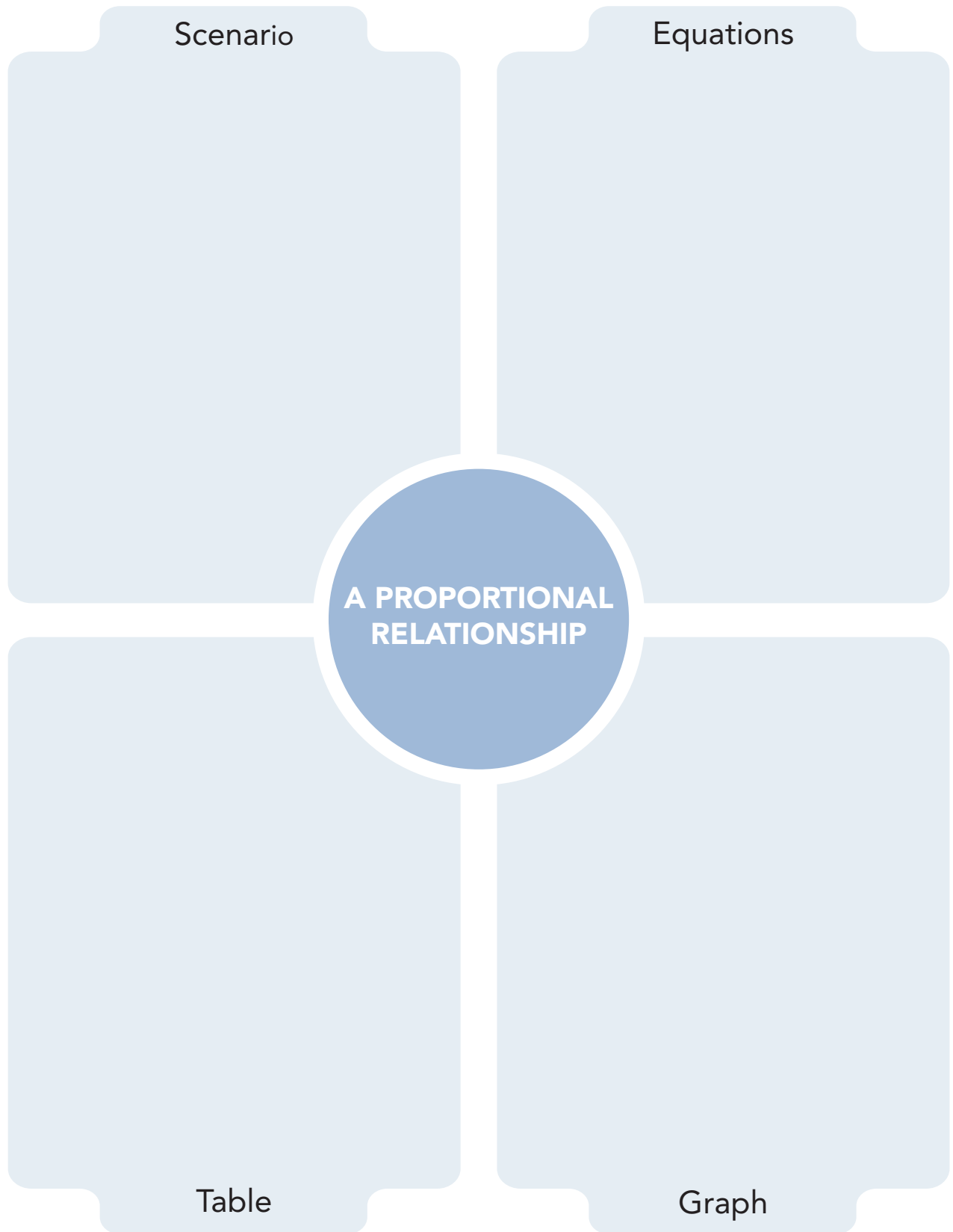
You have seen how to represent proportional relationships in scenarios, on graphs, in tables, and with equations.

1. Write an equation and sketch a graph to represent each relationship. Label your axes and identify the constant of proportionality on the graph.

a. Suppose the quantity c varies directly as the quantity d .

b. Suppose the quantity d varies directly as the quantity c .

2. Write a scenario which describes a proportional relationship between two quantities. Represent this relationship using an equation, a graph, and a table. For each model, identify the constant of proportionality and explain how the model shows that the relationship is proportional.



**LESSON 3.4b**
Minding Your Ps and Qs**Objective****Constant of Proportionality in Multiple Representations****Practice**

- The constant of proportionality between the number of children (c) on a field trip and the number of teachers (t) on the trip is $\frac{14}{3}$.
 - Write an equation to represent this situation.
 - Create a graph.
 - If there are 70 children on a field trip. How many teachers are on the trip?
- 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 $\frac{2}{5}$.
 - Write an equation to represent this situation.
 - Create a graph.
 - If there are 45 varsity players on the track team. How many junior varsity players are on the team?
- 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.
 - Write an equation to represent this situation.
 - Create a graph.
 - If there are 27 cats in the shelter. How many dogs are in the shelter?
- 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?
- 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?
- 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?

