

Standard 7.RP.2 (M)

**How to Find the Constant of Proportionality**

You have learned how to find the constant of proportionality ( $k$ ) using five different representations of proportional relationships: tables, graphs, equations, verbal descriptions, and given  $x$ - and  $y$ -values.

**Ways to Solve:** The table below shows the different ways to find the constant of proportionality in proportional relationships.







**How to Find  $k$** 

Representation	Method
Table	Divide a $y$ -value by its corresponding $x$ -value: $k = \frac{y}{x}$ $k$ equals $y$ when $x$ is 1: $k = y$ when $x = 1$
Graph	$k$ equals $y$ when $x$ is 1: $k = y$ when $x = 1$ Divide a $y$ -value by its corresponding $x$ -value: $k = \frac{y}{x}$
Equation	$k$ is the constant attached to the independent variable: $y = kx$
Verbal description	Write an equation in the form of $y = kx$ to find $k$
Given values	Divide a $y$ -value by its corresponding $x$ -value: $k = \frac{y}{x}$

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Let's look at another representation of a proportional relationship.

Mr. McCleary feeds his cows hay. The number of cows he has and the amount of hay he feeds them represent a proportional relationship. The diagram below shows the relationship.

Number of Cows	Bales of Hay
	
	
	

Based on the data in the diagram, what is the constant of proportionality?

**Talk About It**

- How is this problem different from other constant of proportionality problems you have solved?
- How can you find the constant of proportionality using the data in the diagram?

**On Your Own:** Using the data in the diagram shown above, find the constant of proportionality. Show all of your work in the box below.

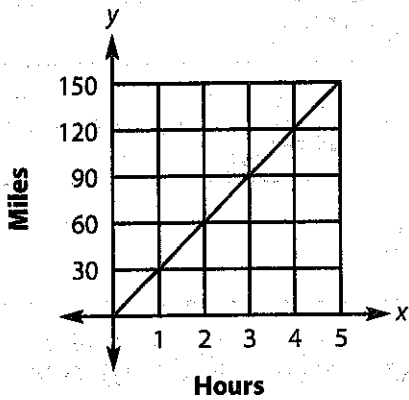
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### Finding the Constant of Proportionality

**Directions:** Each item below represents a proportional relationship. Read each item, and find the constant of proportionality ( $k$ ).







- The graph below shows the relationship between the number of hours and the number of miles the Carters drove during the family's summer vacation.

**Carters' Summer Vacation**



$k =$  \_\_\_\_\_

- The diagram below shows the relationship between the number of chickens on a farm and the scoops of seed a farmer feeds them.

Number of Chickens	Scoops of Seed
	
	
	

$k =$  \_\_\_\_\_

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3. The table below shows the relationship between the number of baskets of blueberries at a fruit stand and their total price.

**Blueberries at a Fruit Stand**

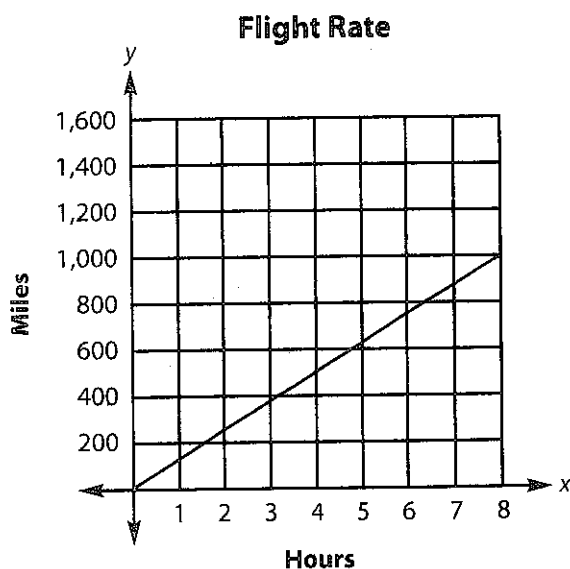
Baskets of Blueberries	Price
3	\$8.25
5	\$13.75
7	\$19.25
9	\$24.75

$k =$  \_\_\_\_\_

4. The value of  $y$  is 35 when the value of  $x$  is 5.

$k =$  \_\_\_\_\_

5. The graph below shows the relationship between the number of hours a plane flies and the number of miles it travels.



$k =$  \_\_\_\_\_

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6. The table below shows the relationship between the number of pounds of potatoes and the total price.

**Price of Potatoes**







Pounds of Potatoes	Price
5	\$9.95
8	\$15.92
11	\$21.89


$k =$  \_\_\_\_\_

7. At the art store, Marcus paid \$3.20 for 8 medium paintbrushes.

$k =$  \_\_\_\_\_

8. The diagram below shows the relationship between the number of horses a farmer owns and the number of bushels of apples he must feed them.

Number of Horses	Bushels of Apples
	
	
	

Note: One  equals one bushel of apples.

$k =$  \_\_\_\_\_

9. The relationship between the number of pallets of sod and the price of the sod is represented by the equation  $p = 30.25s$ , where  $s$  equals the number of pallets of sod and  $p$  equals the price of the sod.

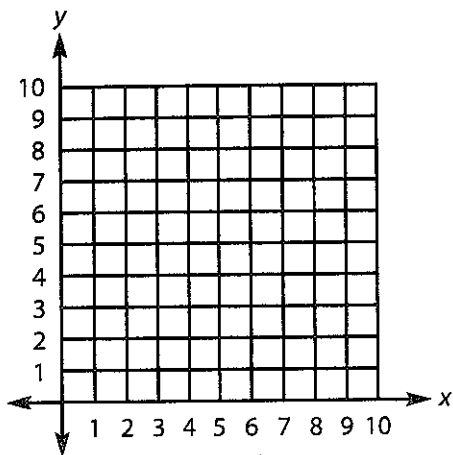
$k =$  \_\_\_\_\_

Standard 7.RP.2 (M–H)

### Interpreting Graphs

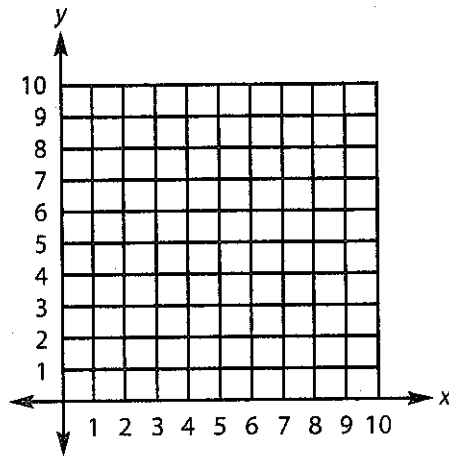
**A. Directions:** Plot the given points on the graph in each item below. If the points show a proportional relationship, write YES on the answer line. If the points do not show a proportional relationship, write NO on the answer line.

1.  $(1, 1.5)$   $(4, 6)$   $(6, 9)$



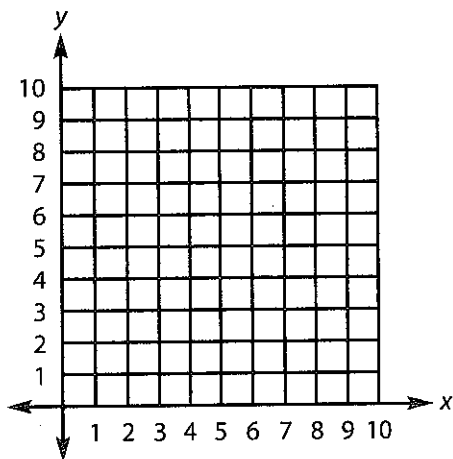
Answer: \_\_\_\_\_

3.  $(3, 2\frac{1}{2})$   $(5, 5)$   $(7, 7\frac{1}{2})$



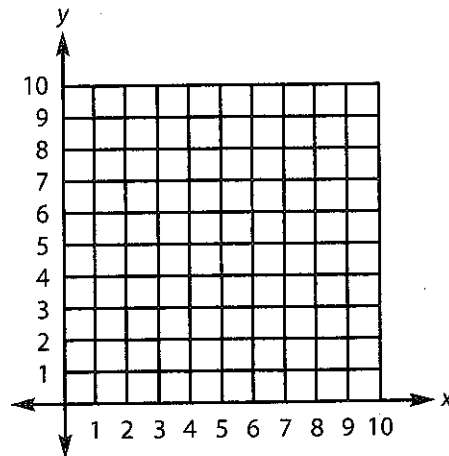
Answer: \_\_\_\_\_

2.  $(3, 2)$   $(6, 5)$   $(9, 6)$



Answer: \_\_\_\_\_

4.  $(2, 2.5)$   $(6, 7.5)$   $(8, 10)$

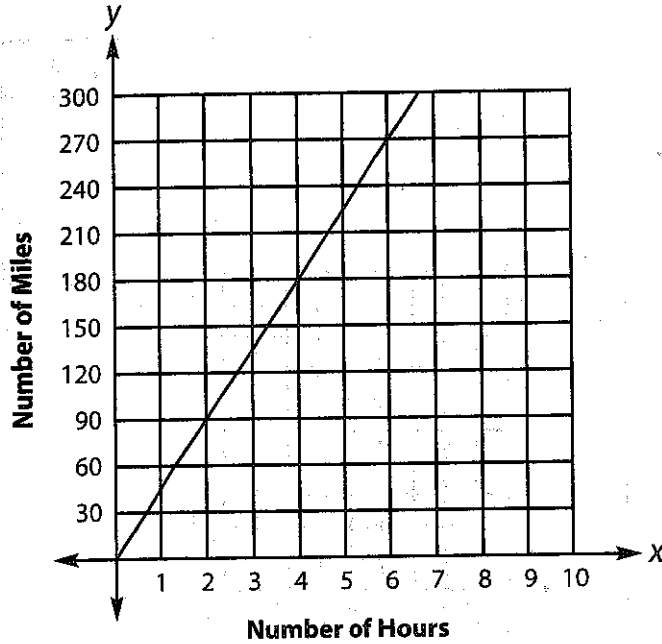


Answer: \_\_\_\_\_

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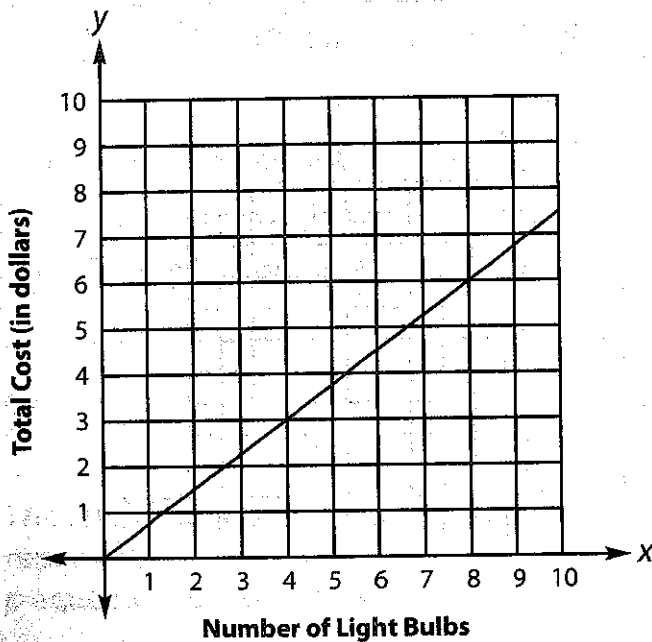
**B. Directions:** Interpret the ordered pair listed for each graph below. The first one is completed for you.

5.



(4, 180): The ordered pair (4, 180) means it takes 4 hours for someone to drive 180 miles.

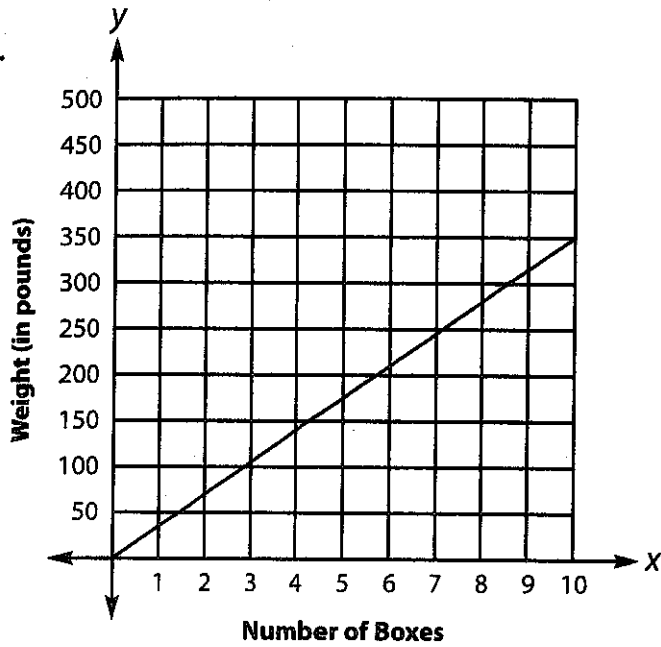
6.



(6, 4.5): \_\_\_\_\_

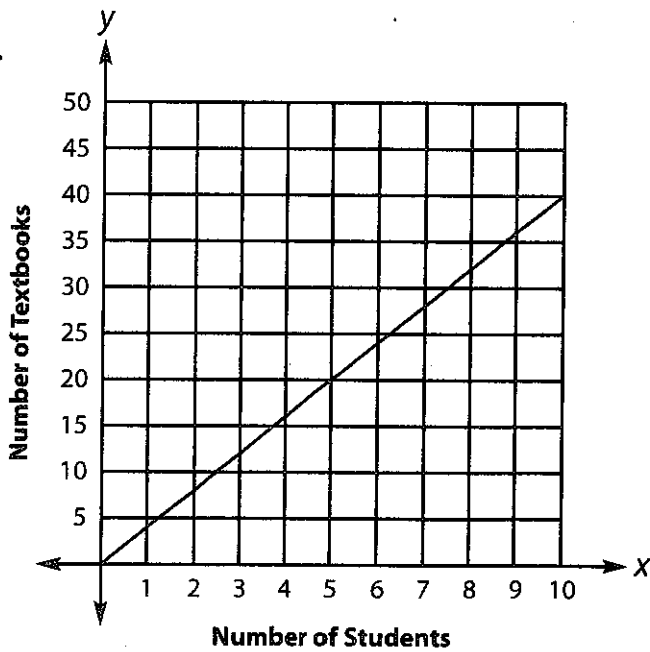
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7.



(7, 245): \_\_\_\_\_  
 \_\_\_\_\_

8.



(5, 20): \_\_\_\_\_  
 \_\_\_\_\_