

## CONSTANT OF PROPORTIONALITY

Liam is making breakfast for dinner using a pancake mix.

- How many cups of mix will he use for 12 pancakes? \_\_\_\_\_
- How many cups of mix will he use for 24 pancakes? \_\_\_\_\_
- What is the ratio of cups of mix to servings? \_\_\_\_\_

CUPS OF MIX	# OF PANCAKES
1	12
2	24

### PROPORTIONAL RELATIONSHIPS

### CONSTANT OF PROPORTIONALITY

- A relationship is proportional when the ratio of y over x is \_\_\_\_\_.
- The \_\_\_\_\_ of the ratio of two proportional quantities.
- It is represented by the equation \_\_\_\_\_, where:
  - y represents: \_\_\_\_\_
  - x represents: \_\_\_\_\_
- Use the equation \_\_\_\_\_ to represent proportional relationships.

For 1-3, find the ratio of  $\frac{y}{x}$  to determine if each table represents a proportional relationship.

1.

x	y	$\frac{y}{x}$
1	6	
2	12	
3	18	
4	24	

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

2.

x	y	$\frac{y}{x}$
2	10	
3	15	
4	20	
5	25	

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

3.

x	y	$\frac{y}{x}$
8	4	
10	5	
12	6	
14	7	

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

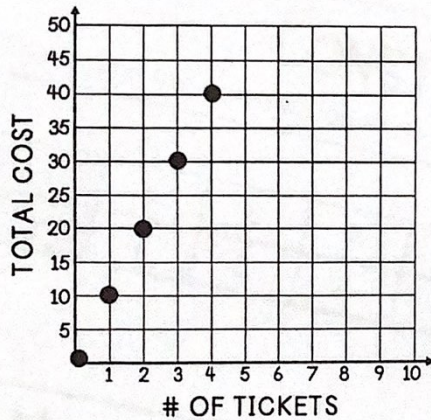
4. The cost of 6 pounds of almonds is \$23.28. What is the constant of proportionality that relates y, the cost in dollars, to x, the number of pounds?

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

5. A car travels 220 miles in 4 hours. What is the constant of proportionality that relates y, the total number of miles, to x, the number of hours?

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

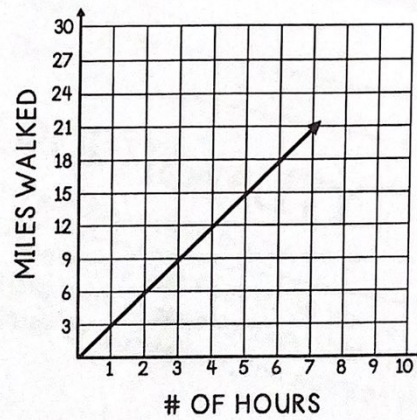
6. Use the graph below to complete the table and answer the following questions.



x	y

- a.  $k =$  \_\_\_\_\_
- b. What does the point (1, 10) represent in the relationship?

7. Use the graph below to complete the table and answer the following questions.



x	y

- a.  $k =$  \_\_\_\_\_
- b. What does the point (1, 3) represent in the relationship?

Use your understanding of the constant of proportionality to answer the questions below.

8. While training for a marathon, Keith's watch reported the number of calories he had burned at each mile marker. The data is shown below.

# OF MILES	1	2	3	4	5
# OF CALORIES BURNED	117	234	351	468	585

- a. Is the number of calories proportional to the number of miles? Justify your thinking.
- b. What is the constant of proportionality that relates  $y$ , the number of calories burned, to  $x$ , the number of miles?
- c. Write an equation to represent the relationship between the number of miles and the calories burned.
- d. The next day, Keith ran 7 miles. How many calories did he burn?
- e. If Keith's watch reported that he burned 1,170 calories, how many miles did Keith run that day?

Summarize today's lesson:

