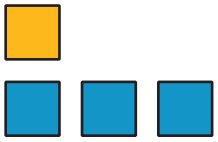
Four Representations

Let's contrast relationships that are and are not proportional in four different ways.

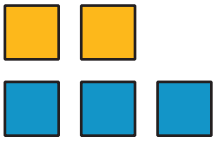
17.1 Which Group Is the Bluest?

1. Which group of blocks is the bluest?

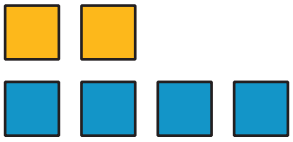
A



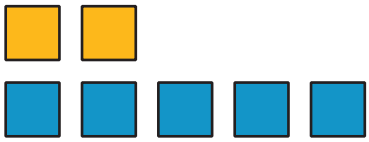
B



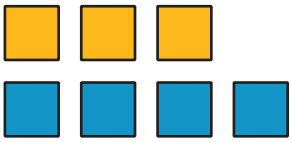
C



D



E



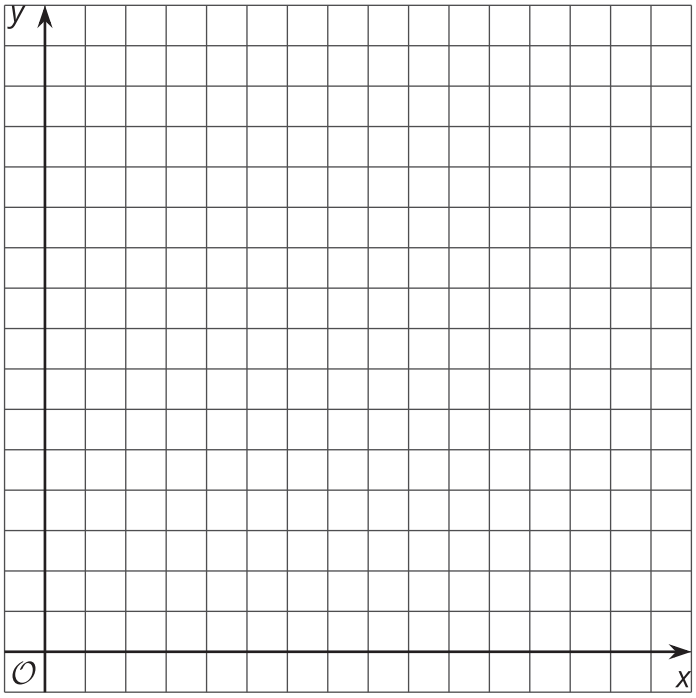
2. Order the groups of blocks from least blue to bluest.

17.2 Creating and Representing Situations

1. Make up a situation where there is a proportional relationship between two quantities.

   a. Write one or more sentences describing the relationship.

   b. Make a table with at least 5 pairs of numbers relating the two quantities.



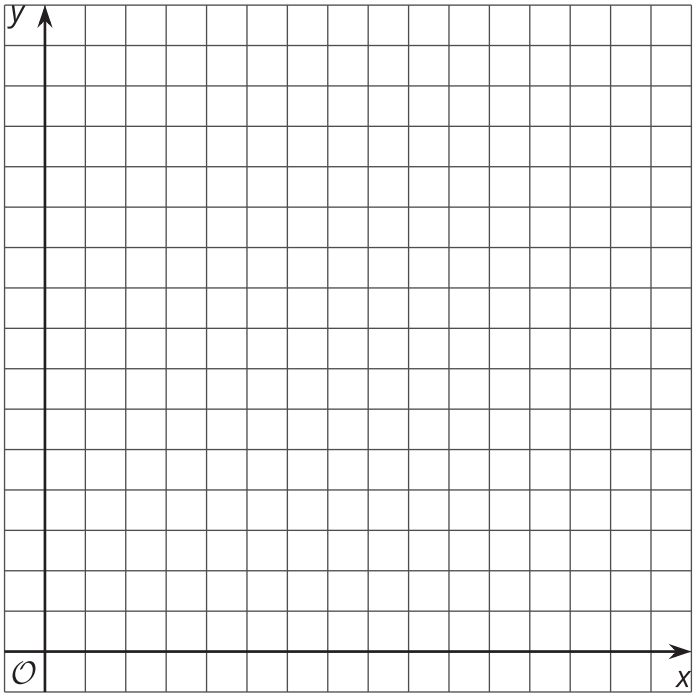
   c. Graph the relationship and label the axes.

   d. Write an equation showing the relationship. Explain in your own words what each number and letter in your equation represents.

2. If you have time, make up another situation where there is a relationship between two quantities, but the relationship is not proportional.

   a. Write one or more sentences describing the relationship.

   b. Make a table with at least 5 pairs of numbers relating the two quantities.



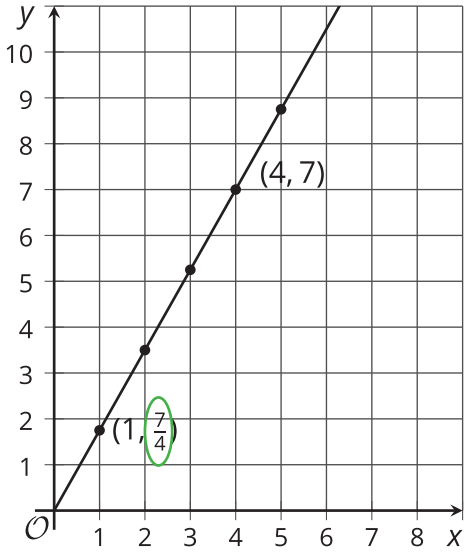
   c. Graph the relationship and label the axes.

   d. If possible, write an equation showing the relationship and explain in your own words what each number and letter in your equation represents.

3. For each of your situations, explain how you know whether the relationship is proportional or not. Give as many reasons as you can.

Lesson 17 Summary

The constant of proportionality for a proportional relationship can often be easily identified in a graph, a table, and an equation that represents it. Here is an example of all three representations for the same relationship. The constant of proportionality is circled:



$y = \frac{7}{4}x$

x	y
0	0
1	$\frac{7}{4}$
2	$\frac{7}{2}$
3	$\frac{21}{4}$
4	7

On the other hand, some relationships are not proportional. If the graph of a relationship is not a straight line through the origin, if the equation cannot be expressed in the form $y = kx$, or if the table does not have a constant of proportionality that can be multiplied by any number in the first column to get the corresponding number in the second column, then the relationship between the quantities is not a proportional relationship.