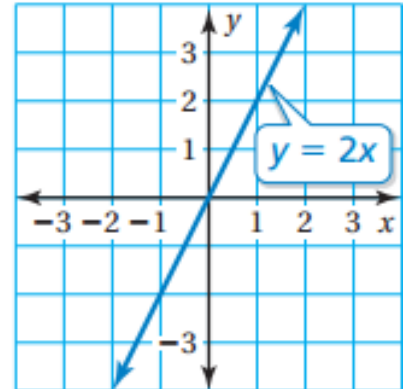


## 5.6 Proportional Relationship Equation

- Objective:** 1. Identify proportional relationships from graphs or equations.  
2. Use proportional relationship models to solve problems.

### Key Idea: Proportional Relationship Equation

- A Proportional Relationship Equation is in the form \_\_\_\_\_ where  $m$  is a number and  $m \neq 0$ .
- The number  $m$  is called the \_\_\_\_\_ (that constant ratio:  $\frac{y}{x}$  we look for to determine if quantities are proportional) and  $m = \frac{y}{x}$
- The graph of  $y = mx$  is a line with a slope of  $m$  that passes through the origin.



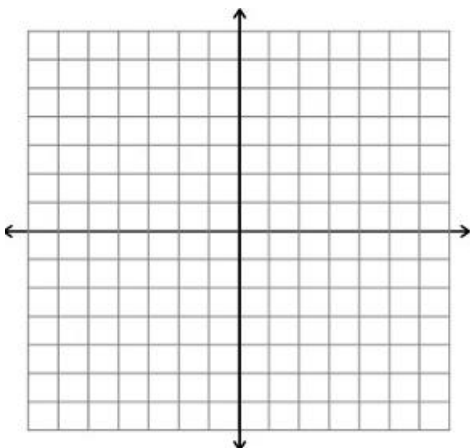
### EXAMPLE 1 Proportional Relationship Equation from Table (Two methods)

**Determine if the relationship shown in the table is proportional and explain why. If it is, write an equation representing the relationship.**

Either graph the table to see if it makes a constant slope (straight line) and goes through the origin (0,0); or see if each pair of values have a constant ratio:  $\frac{y}{x}$  (constant of proportionality) don't use origin if given

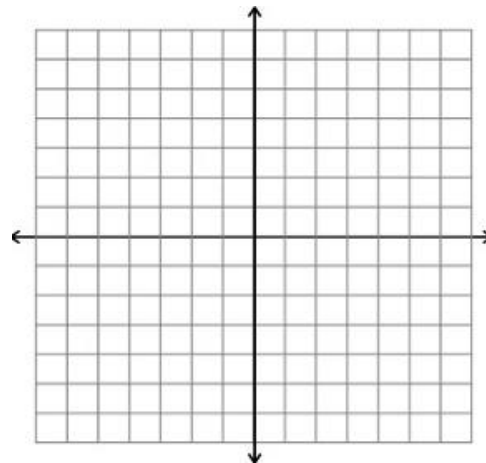
a.

<b>x</b>	1	2	3	4
<b>y</b>	-2	0	2	4



b.

<b>x</b>	0	2	4	6
<b>y</b>	0	2	4	6

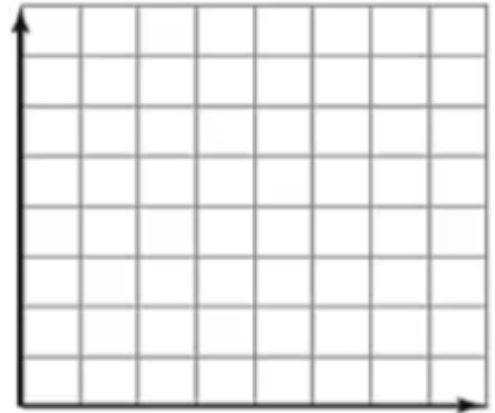


### EXAMPLE 2 Real-Life Application

The table shows the area  $y$  (in square feet) that a robotic vacuum cleans in  $x$  minutes.

a. Graph the data. Tell whether  $x$  and  $y$  are proportional.

$x$	$y$
$\frac{1}{2}$	8
1	16
$\frac{3}{2}$	24
2	32



b. Write an equation that represents the line.

c. Use the equation to find the area cleaned in 10 minutes.

### On your own:

Determine if the relationship shown in the table is proportional and explain why. If it is, write an equation representing the relationship. (No #1)

2.

$x$	$y$
1	4
2	8
3	12
4	16

3.

$x$	$y$
-2	4
-1	2
0	0
1	2

