

# Functions and Equations (pages 254–257)

A **linear equation** has a graph that is a straight line. A linear equation looks like  $y = ax + b$ , where  $a$  and  $b$  are positive or negative numbers.

<b>Graphing a Linear Equation</b>	<p>To graph an equation:</p> <ul style="list-style-type: none"> <li>• Select a few values for <math>x</math>. Substitute and solve for <math>y</math>. Use each solution to write an ordered pair <math>(x, y)</math>.</li> <li>• Graph the points for two of the <math>(x, y)</math> pairs.</li> <li>• Draw a line through the two points you graphed.</li> <li>• Check by graphing the other <math>(x, y)</math> pairs to make sure that they are on the same line that you drew. Make corrections if they are not.</li> </ul>
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## EXAMPLE

For  $y = 2x$ , find four ordered pairs that make the equation true.

Choose four values for  $x$ , for example, 0, 1, 2, and 3.

Replace $x$ and solve for $y$ .	$y = 2(0)$ or 0	Write the result as an ordered pair. (0, 0)
	$y = 2(1)$ or 2	Write the result as an ordered pair. (1, 2)
	$y = 2(2)$ or 4	Write the result as an ordered pair. (2, 4)
	$y = 2(3)$ or 6	Write the result as an ordered pair. (3, 6)

## Try These Together

1. Graph  $y = 2x$ .

*HINT: Use the four ordered pairs you found in the Example.*

2. Graph  $y = 3x - 5$ .

*HINT: Choose four values for  $x$ , such as 0, 1, 2 and 3. Then replace  $x$  with each value and solve for  $y$ .*

## PRACTICE

**Graph each equation.**

3.  $y = x - 2$

4.  $y = 4x$

5.  $y = -4x + 8$

6.  $y = 5x - 10$

**Make a table of values for each sentence. Then write an equation.**

**Let  $x$  represent the first number and  $y$  represent the second number.**

7. The second number is 2 less than the first.

8. The second number is 3 times the first.

9. The sum of the numbers is 5.

10. The second number is the product of 6 and the first number.



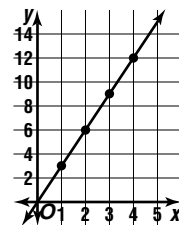
11. **Standardized Test Practice** What is the equation for this graph?

A  $y = 5x$

B  $2x - 1 = y$

C  $y = 3x$

D  $y = 4x - 2$



Answers: 1–6. See Answer Key. 7.  $y = x - 2$  8.  $y = 3x$  9.  $x + y = 5$  10.  $y = 6x$  11. C