LESSON 4.2

NAME _____ DATE _____

Practice with Examples

For use with pages 210–217

GOAL **Graph a linear equation using a table or a list of values and graph horizontal and vertical lines**

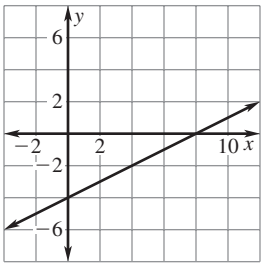
VOCABULARY

A **solution of an equation** in two variables x and y is an ordered pair (x, y) that makes the equation true.

The **graph of an equation** in x and y is the set of all points (x, y) that are solutions of the equation.

EXAMPLE 1 Verifying Solutions of an Equation

Use algebra to decide whether the point $(10, 1)$ lies on the graph of $x - 2y = 8$.



SOLUTION

The point $(10, 1)$ appears to be on the graph of $x - 2y = 8$. You can check this algebraically.

$x - 2y = 8$ Write original equation.

$10 - 2(1) \stackrel{?}{=} 8$ Substitute 10 for x and 1 for y.

$8 = 8$ Simplify. True statement

$(10, 1)$ is a solution of the equation $x - 2y = 8$, so it is on the graph.

Exercises for Example 1

Decide whether the given ordered pair is a solution of the equation.

1. $-3x + 6y = 12, (-4, 0)$

2. $x + 5y = 11, (2, 1)$

3. $y = 1, (3, 1)$

4. $3y - 5x = 4, (-2, 2)$

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EXAMPLE 2 Graphing a Linear Equation

Use a table of values to graph the equation $x - 2y = 4$.

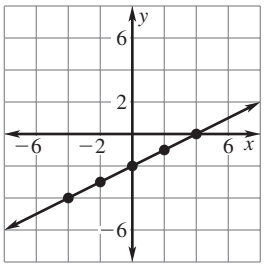
SOLUTION

Rewrite the equation in function form by solving for y.

$x - 2y = 4$	Write original equation.
$-2y = -x + 4$	Subtract x from each side.
$y = \frac{x}{2} - 2$	Divide each side by -2.

Choose a variety of values of x and make a table of values.

Choose x.	-4	-2	0	2	4
Evaluate y.	-4	-3	-2	-1	0



Using the table of values, you can write five ordered pairs.

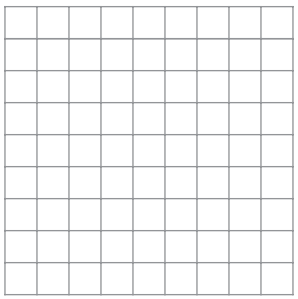
$(-4, -4), (-2, -3), (0, -2), (2, -1), (4, 0)$

Plot each ordered pair. The line through the points is the graph of the equation.

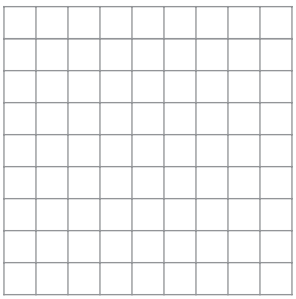
Exercises for Example 2

Use a table of values to graph the equation.

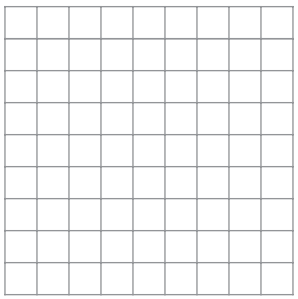
5. $y = 3x - 4$



6. $3y - 3x = 6$



7. $y = -3(x - 1)$



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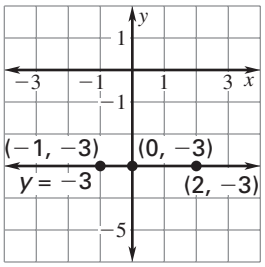
EXAMPLE 3 Graphing $y = b$

Graph the equation $y = -3$.

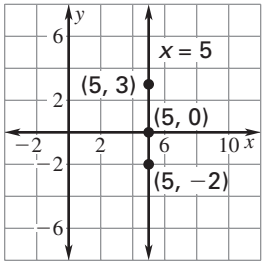


SOLUTION

The y-value is always -3, regardless of the value of x. The points $(-1, -3)$, $(0, -3)$, $(2, -3)$ are some solutions of the equation. The graph of the equation is a horizontal line 3 units below the x-axis.

EXAMPLE 4 Graphing $x = a$

Graph the equation $x = 5$.



SOLUTION

The x-value is always 5, regardless of the value of y. The points $(5, -2)$, $(5, 0)$, $(5, 3)$ are some solutions of the equation. The graph of the equation is a vertical line 5 units to the right of the y-axis.

Exercises for Examples 3 and 4

Graph the equation.

8. $y = 0$

9. $x = -4$

10. $x = 0$

11. $y = 6$

12. $y = -5$

13. $x = 2$

Chapter 4