Name _____ Class _____ Date _____

Reteaching 6-1

Solving Systems by Graphing

OBJECTIVE: Solving systems of linear equations by graphing

MATERIALS: Graph paper, two toothpicks

- When you graph two equations, the point of intersection is the solution.
- To graph each equation, apply the slope-intercept form, $y = mx + b$.

Example

Solve by graphing.

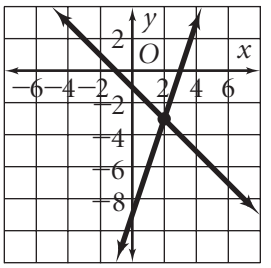
$y = 3x - 9$

$y = -x - 1$

a. In the first equation, $b = -9$ and $m = 3$. Therefore, place one toothpick so that it intersects the y-axis at -9 and has a slope of 3.

b. Graph the second equation with $b = -1$ and $m = -1$ by placing another toothpick that intersects the y-axis at -1 and has a slope of -1.

c. Find the point where the two lines intersect. The lines intersect at $(2, -3)$. The solution of the system is $(2, -3)$.



Check. See whether $(2, -3)$ makes both equations true.

$y = 3x - 9$		$y = -x - 1$
$\mathbf{-3} \stackrel{?}{=} 3(\mathbf{2}) - 9$	← **Substitute (2, −3) for (x, y).** →	$\mathbf{-3} \stackrel{?}{=} -(\mathbf{2}) - 1$
$-3 \stackrel{?}{=} 6 - 9$		$-3 = -3$ ✓
$-3 = -3$ ✓		

Exercises

Use graph paper, toothpicks, and steps a–c above to model and solve each system.

1. $y = 5x - 2$
$y = x + 6$

2. $y = 2x - 4$
$y = x + 2$

3. $y = x + 2$
$y = -x + 2$

Solve each system.

4. $y = 3x + 2$
$y = 3x - 4$

5. $y = 2x + 1$
$2y = 4x + 2$

6. $y = x - 3$
$y = -x + 3$

7. $y = 5x + 1$
$y = x - 3$

8. $y = x - 5$
$y = 4x + 1$

9. $y = 3x - 1$
$y = 3x - 4$

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