NAME _____ DATE _____ PERIOD _____

6-6 Study Guide and Intervention

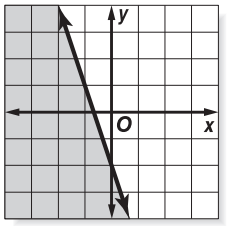
Graphing Inequalities in Two Variables

Graph Linear Inequalities The solution set of an inequality that involves two variables is graphed by graphing a related linear equation that forms a boundary of a **half-plane**. The graph of the ordered pairs that make up the solution set of the inequality fill a region of the coordinate plane on one side of the half-plane.

Example **Graph $y \leq -3x - 2$.**

Graph $y = -3x - 2$.

Since $y \leq -3x - 2$ is the same as $y < -3x - 2$ and $y = -3x - 2$, the boundary is included in the solution set and the graph should be drawn as a solid line.



Select a point in each half plane and test it. Choose (0, 0) and (−2, −2).

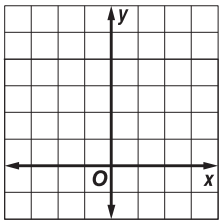
$y \leq -3x - 2$	$y \leq -3x - 2$
$0 \leq -3(0) - 2$	$-2 \leq -3(-2) - 2$
$0 \leq -2$ is false.	$-2 \leq 6 - 2$
	$-2 \leq 4$ is true.

The half-plane that contains (−2, −2) contains the solution. Shade that half-plane.

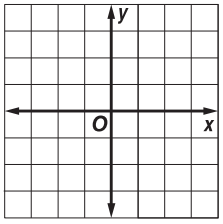
Exercises

Graph each inequality.

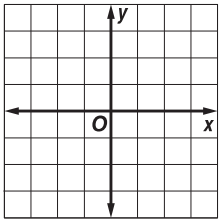
1. $y < 4$



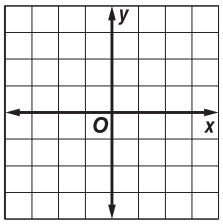
2. $x \geq 1$



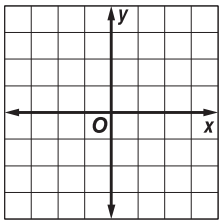
3. $3x \leq y$



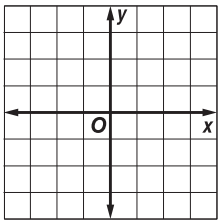
4. $-x > y$



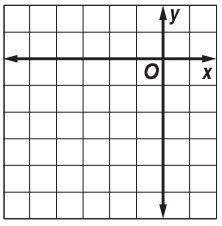
5. $x - y \geq 1$



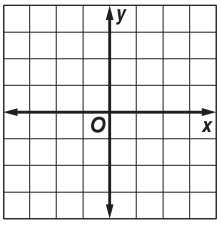
6. $2x - 3y \leq 6$



7. $y < -\frac{1}{2}x - 3$



8. $4x - 3y < 6$



9. $3x + 6y \geq 12$