

Graphing Linear Inequalities

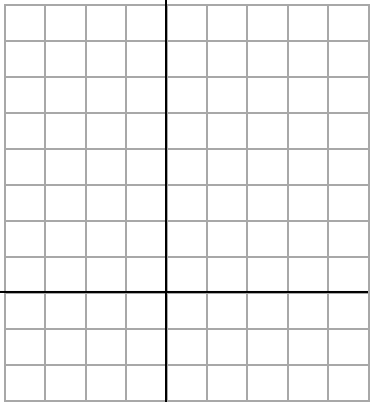
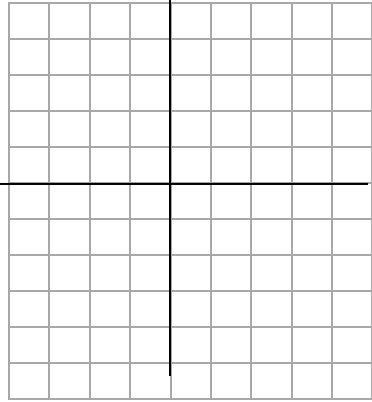
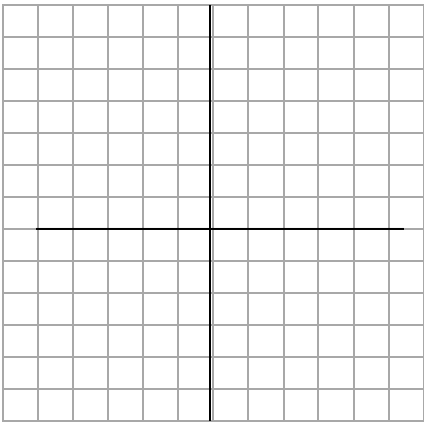
Step 1: Graph the boundary line. Use slope-intercept, x - y intercepts, or making a table.

$<$ or $>$ means dashed line $\left\langle \text{-----} \right\rangle$
 \leq or \geq means solid line $\left\langle \text{=====} \right\rangle$

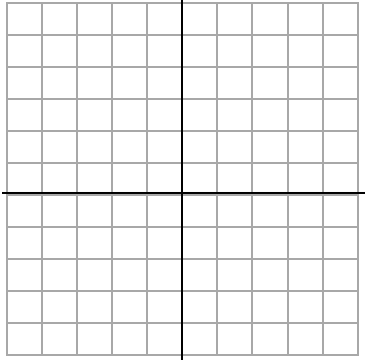
Step 2: Choose a test point that is not on the line. Substitute x and y into the inequality and determine if the point is TRUE or FALSE.

Step 3: Shade the TRUE side.

A graph is a picture of the solutions, or TRUE points.

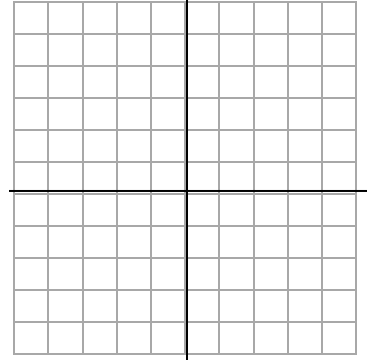
<p>1. $x + y \leq 5$ Graph the boundary: $x + y = 5$</p> 	<p>Test Points (pick a point that is not on the boundary line): $x + y \leq 5$</p> <p>Point: () $\text{---} + \text{---} \stackrel{?}{\leq} 5$</p> <p>Point: () $\text{---} + \text{---} \stackrel{?}{\leq} 5$</p>
<p>2. $y > 2x - 3$</p> 	<p>Test Points (pick a point that is not on the boundary line): $y > 2x - 3$</p> <p>Point: () $\text{---} > 2(\text{---}) - 3$</p> <p>Point: () $\text{---} > 2(\text{---}) - 3$</p>
<p>3. $x - 2y > 4$</p> 	<p>Test Points (pick a point that is not on the boundary line): $x - 2y > 4$</p> <p>Point: () $\text{---} - 2(\text{---}) > 4$</p> <p>Point: () $\text{---} - 2(\text{---}) > 4$</p>

4. $y \geq x$



Point: () ?
 $\text{---} \geq \text{---}$

5. $y < 2$



Point: () ?
 $\text{---} < 2$

Solve the following equations. Be sure to distribute and combine like terms before solving.

6. $-5(a + 8) = -11 - 2(a - 8)$

7. $-12r + 8r = 9(r + 5) - 9(2r + 10)$

8. $6(9m - 14) - 8(12m + 9) = 7 + 5m + 9m + 5$

9. $\frac{1}{3}m + 1 + \frac{2}{3} = \frac{5}{2}$

Answers: -15, -9, -3, 5/2