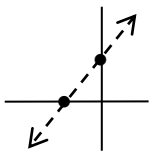
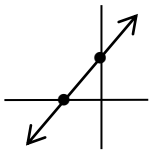
**Unit 3 Linear Equations** **Name:** _____
**Day 6 Graph Linear Inequalities** **Date:** _____ **Hour:** _____
**(PH 7 - 5)**

## Example 1: Graph $-2x + y > 3$

***Step 1 -*** Write the inequality in slope-intercept form: $y = mx + b$

***Step 2 -*** Use the slope and y-intercept to graph the boundary line $y > 2x + 3$

If $>$ *or* $<$, make the line dotted. 

If $\geq$ *or* $\leq$, make the line solid. 

***Step 3 -*** To see which way to shade, pick a test point.
Check if the point works in the original inequality.

Test (0, 0)

$y > 2x + 3$

$0 > 2(0) + 3$

$0 > 3 \rightarrow$ *false*

**(Do not shade)**

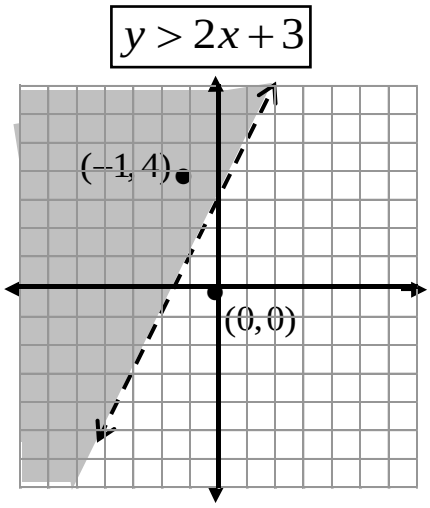
Test $(-1,4)$

$y > 2x + 3$

$4 > 2(-1) + 3$

$4 > 1 \rightarrow$ *true*

**(Shade this region)**



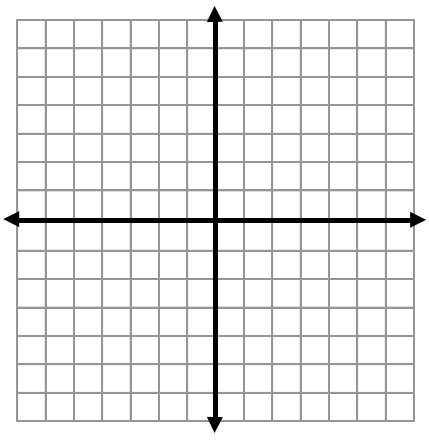

*Short Cut:* Shade region <u>above</u> the line if $y >$ OR $y \geq$.
Shade region <u>below</u> the line if $y <$ OR $y \leq$.

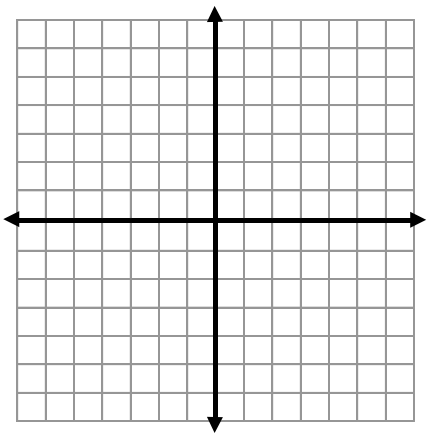
## Example 2: Graph the solution set for each inequality.

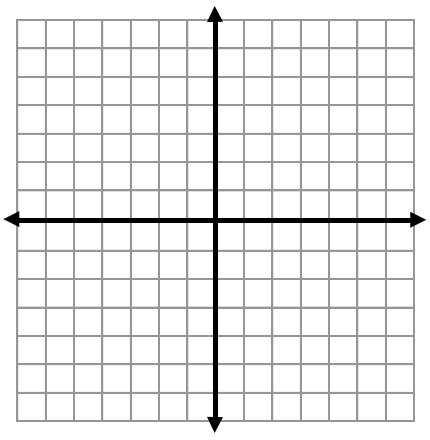
A. $x + 4y > 8$

B. $4x - 5y \leq 10$

C. $x < 4$

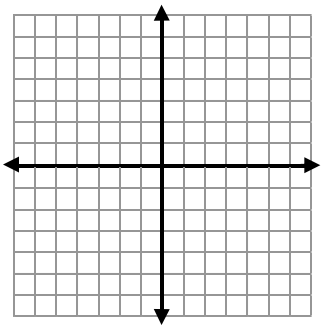




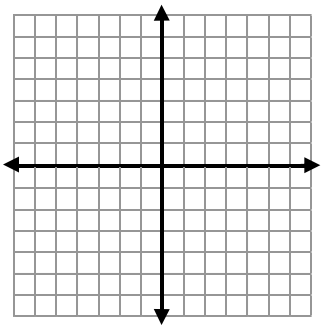


**Practice**: **Graph the solution set for each inequality.**

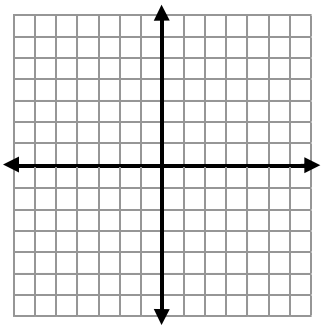
1. $y \leq -2x + 5$



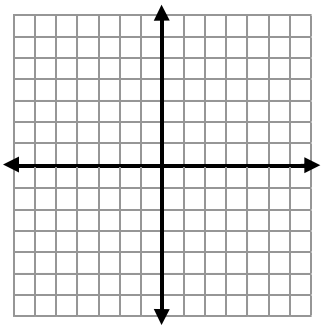
2. $x - 4y < 12$



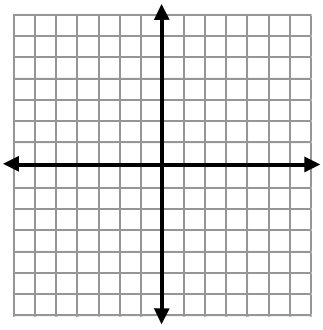
3. $3x + 2y \geq 6$



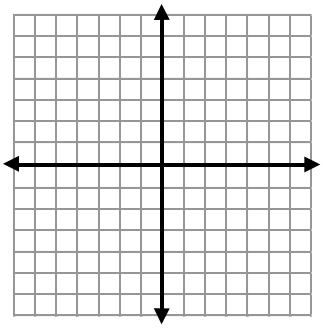
4. $5x - 4y > 8$



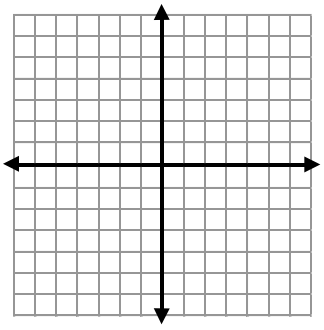
5. $3x + y < 1$



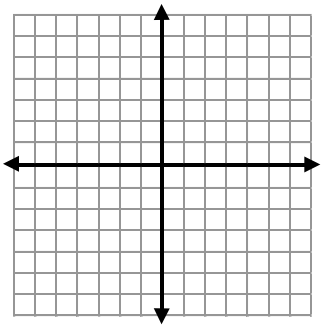
6. $2y \geq x - 6$



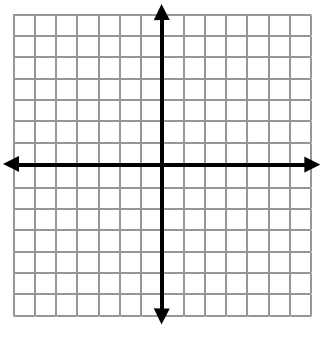
7. $x \geq 2$



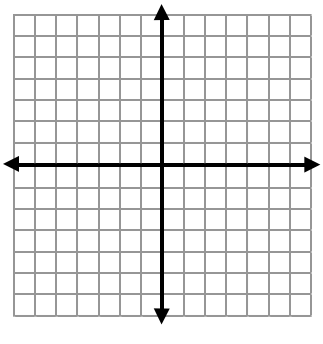
8. $y < -3$



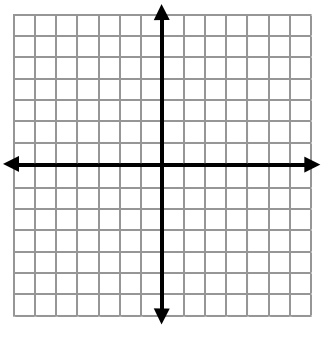
9. $2x + 3y \geq 12$



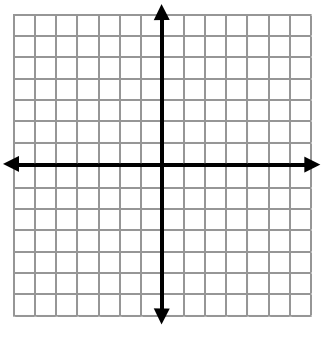
10. $y \geq x - 5$



11. $2x - y > 4$



12. $y - 4x < 3$



**Homework:** Practice graphs #1 - 12 above **AND** complete pages 373 – 375 #4 – 10, 23, 34 – 36, 50 – 53