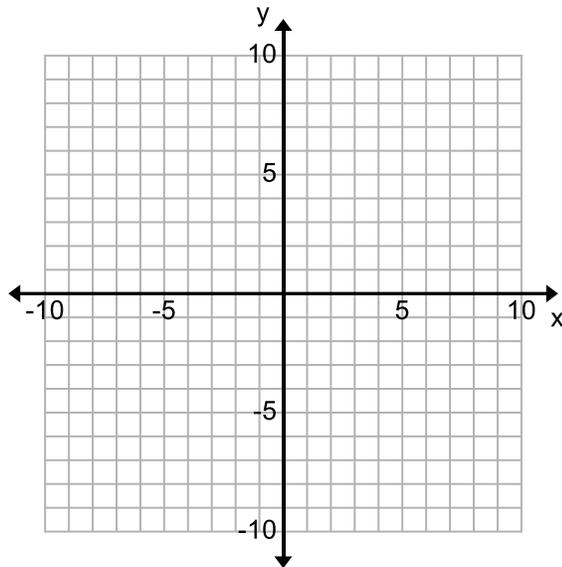Name: _____   Date: _____

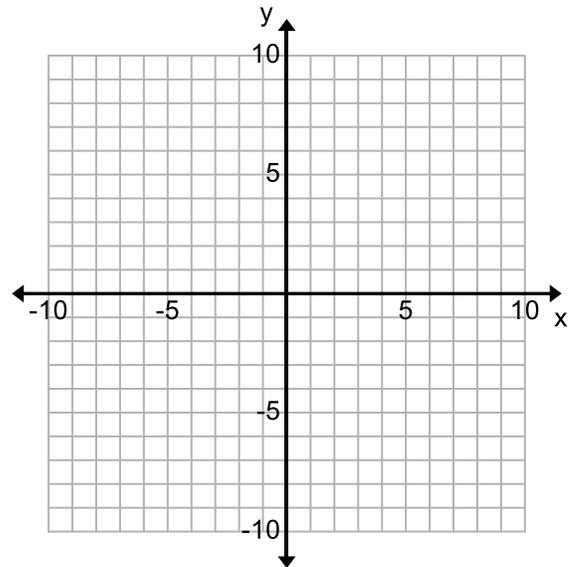**10.2 NOTES: Solving Linear Inequalities (in 2 Variables)**   Algebra 1

I.   Equations vs. Inequalities:

Graph the following **equation** and **inequality** to show their solution sets.

a. $y = 3x + 1$

b. $y \geq 3x + 1$

Is $(2, 7)$ a solution to the equation?

Is $(2, 7)$ a solution to the inequality?

Is $(2, -7)$ a solution to the equation?

Is $(2, -7)$ a solution to the inequality?

Is $(-2, 7)$ a solution to the equation?

Is $(-2, 7)$ a solution to the inequality?

II. Graphing Linear Inequalities in Two Variables:

Graphing an Inequality
1. Solve the equation for **y** (if necessary).
2. Graph the equation as if it contained an $=$ sign.
3. Draw the line solid if the inequality is $\leq$ or $\geq$.
4. Draw the line dashed if the inequality is $<$ or $>$.
5. Pick a point **not** on the line to use as a test point. The point $(0, 0)$ is a good test point.
6. If the point makes the inequality true, shade that side of the line. If the point does not make the inequality true, shade the opposite side of the line.

$y < mx + b$	dashed line, shade below the line
$y \leq mx + b$	solid line, shade below the line
$y > mx + b$	dashed line, shade above the line
$y \geq mx + b$	solid line, shade above the line

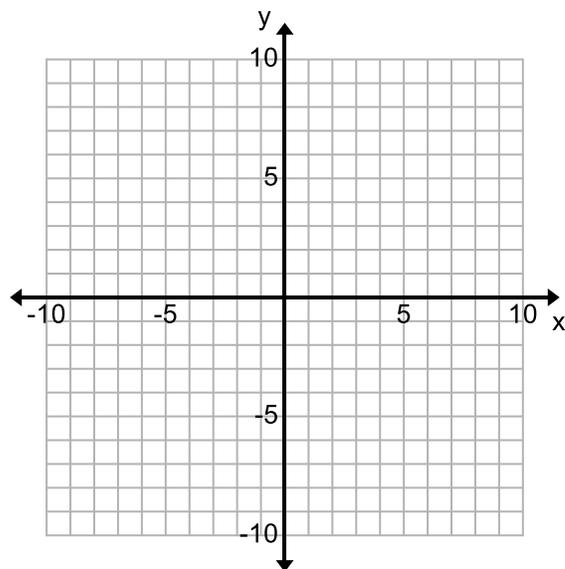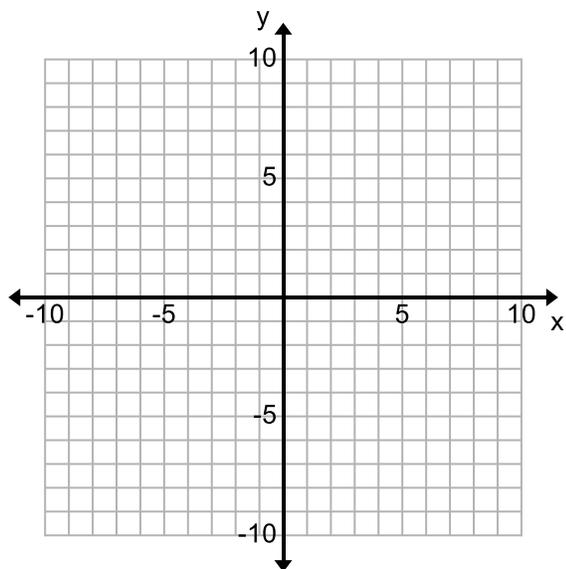**Graph the inequalities.**

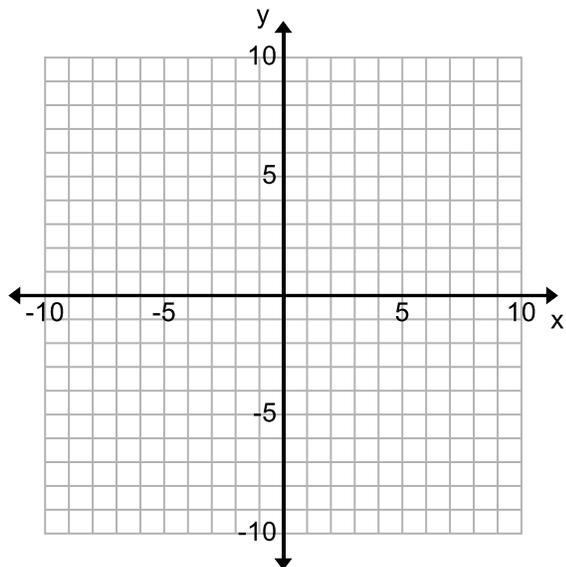1. $x + y \geq 3$ Is $(0, 0)$ a solution?   2. $x + 2y \leq 6$ Is $(0, 0)$ a solution?
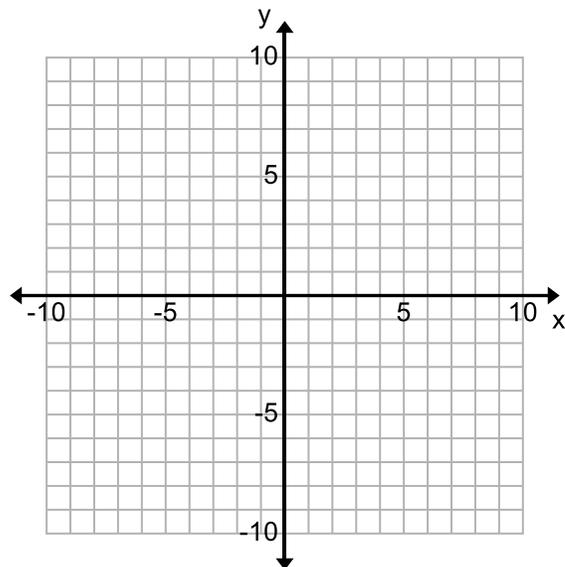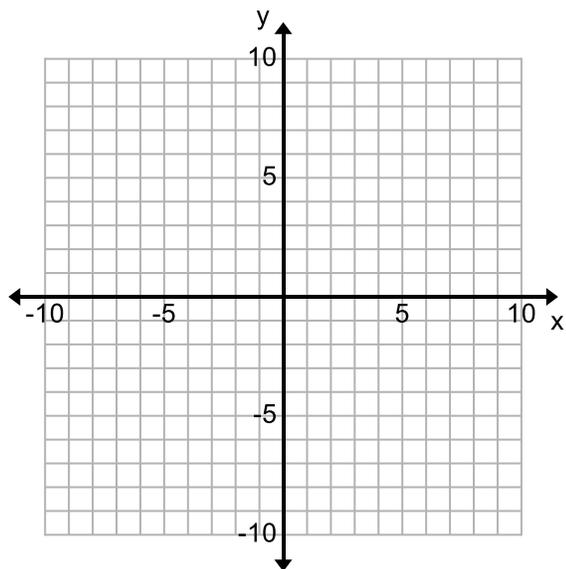
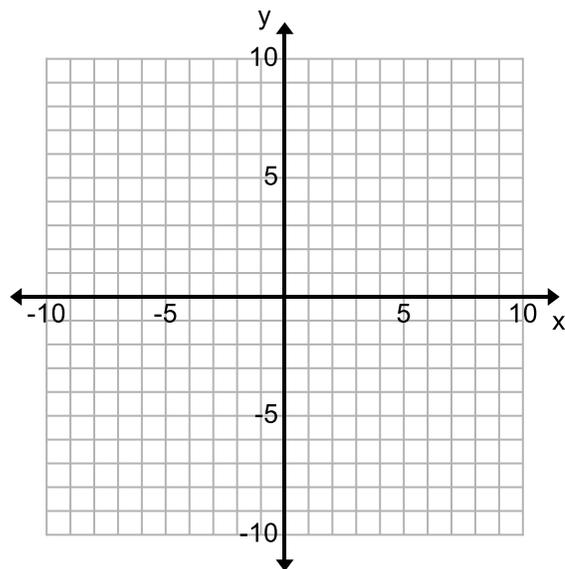3. $y - x > 3$ Is $(0, 0)$ a solution?   4. $3x - 4y > 12$ Is $(0, 0)$ a solution?

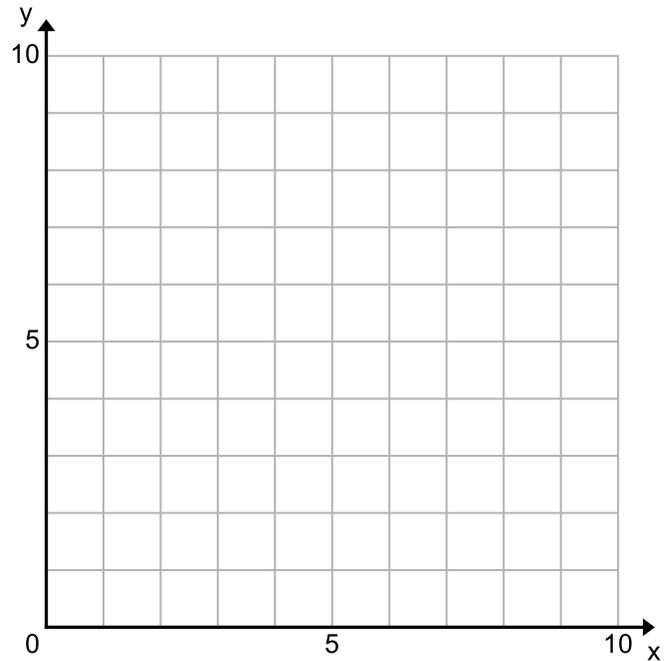5. $y > -3$ Is $(0, 0)$ a solution?   6. $x \leq -5$ Is $(0, 0)$ a solution?

7. You are going clothes shopping and can spend at most $130. It costs $30 for a pair of pants and $22 for a shirt. Let x represent the number of pants you can buy. Let y represent the number of shirts you can buy.

a. Write and graph an equality that describes all of the different numbers of pants and shirts you can buy.

b. Give 3 possible combinations of pants and shirts that you can buy.

8. Write the inequality represented in the graph.
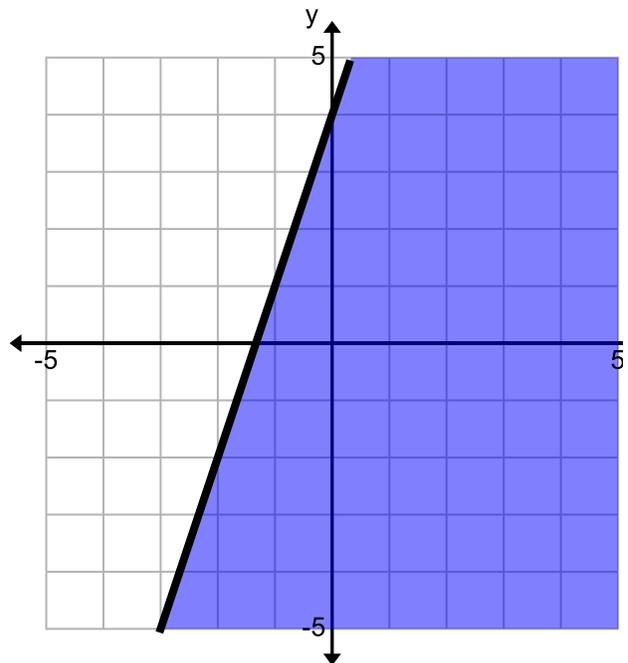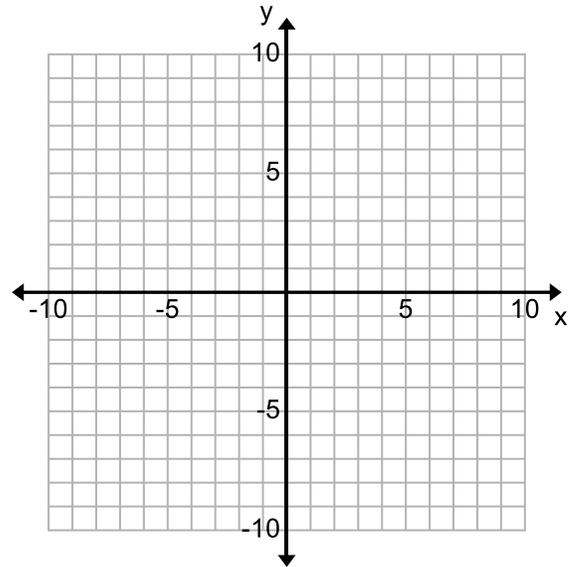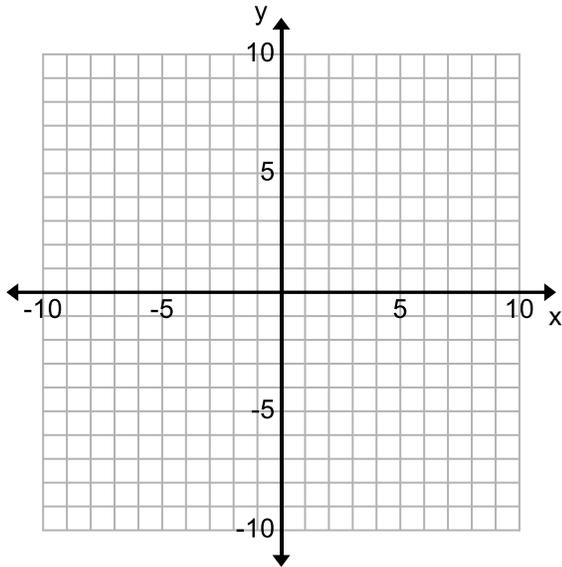
Name: _____   Date _____

10.2 HOMEWORK: Solving Linear Inequalities (in 2 Variables) Algebra 1

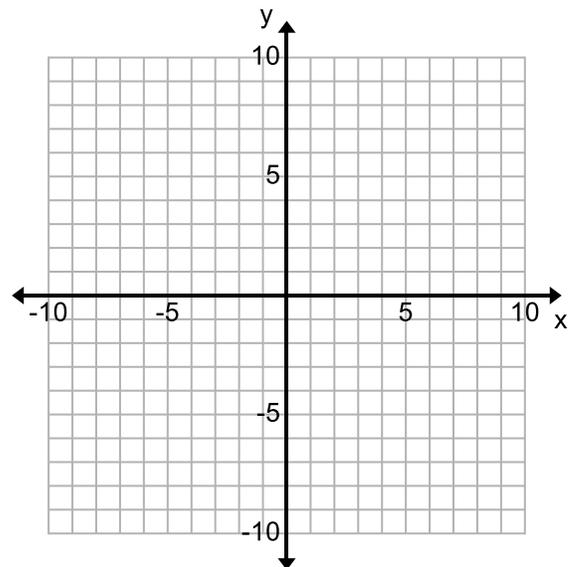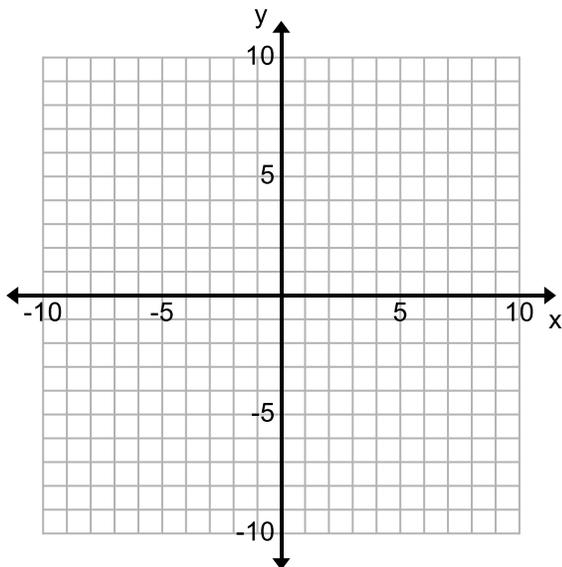Graph the following inequalities and **name one point in the solution set**.

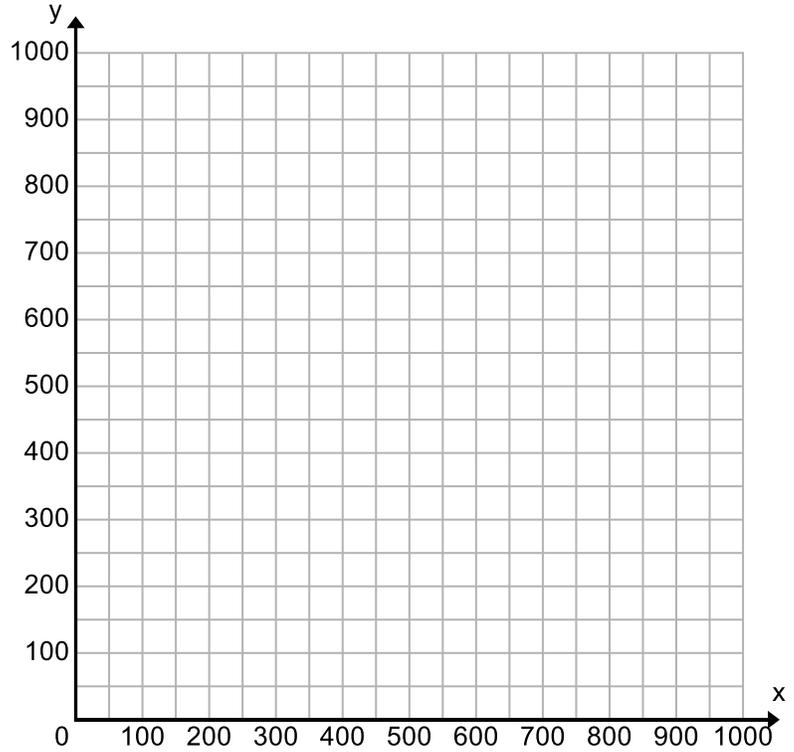1. $2x - 5y < 15$

2. $3y + 4x \geq 6$

3. $x \geq -4$

4. $y < 3$

5. In a two-man bobsled competition, the sum of the weight of the bobsled, x, and the combined weight of the athletes, y, must not exceed 860 pounds.

   a. Write and graph an inequality that describes the possible weights of the bobsled and athletes.

   b. Identify and interpret one of the solutions.