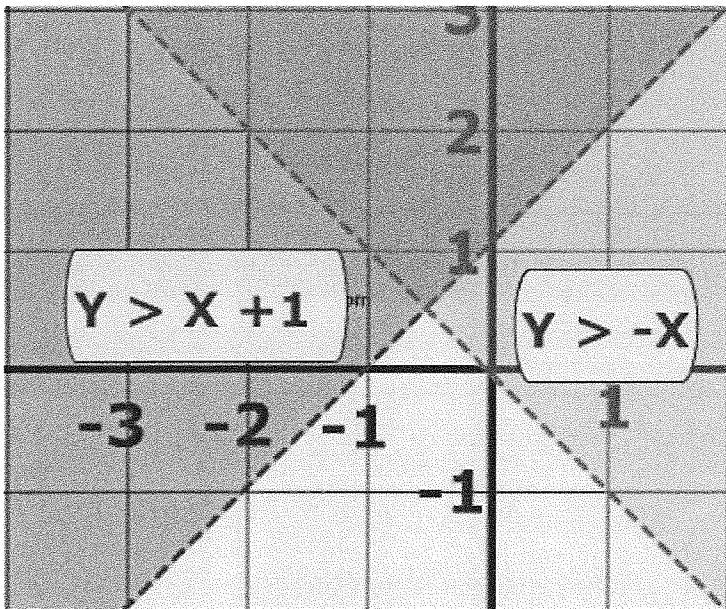


Algebra Packet 11

Name _____

Assigned Teacher _____

Date _____



| Day | Homework (due next class unless otherwise stated) |
|-----|---|
| | |
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| | |

- Graphing systems of linear inequalities (standards 6.0 and 9.0)

Warm Ups

| | | |
|---|--|--|
| Circle M T W Th | | |
| Circle M T W Th | | |
| Circle M T W Th | | |

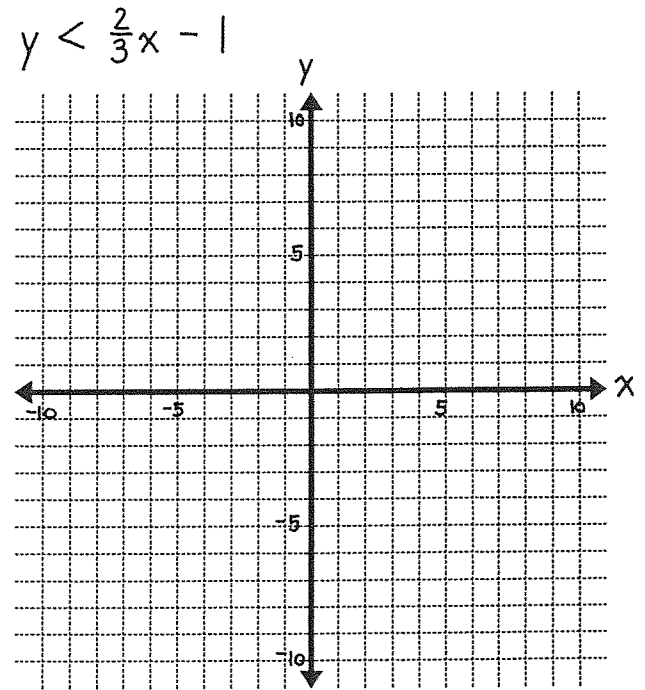
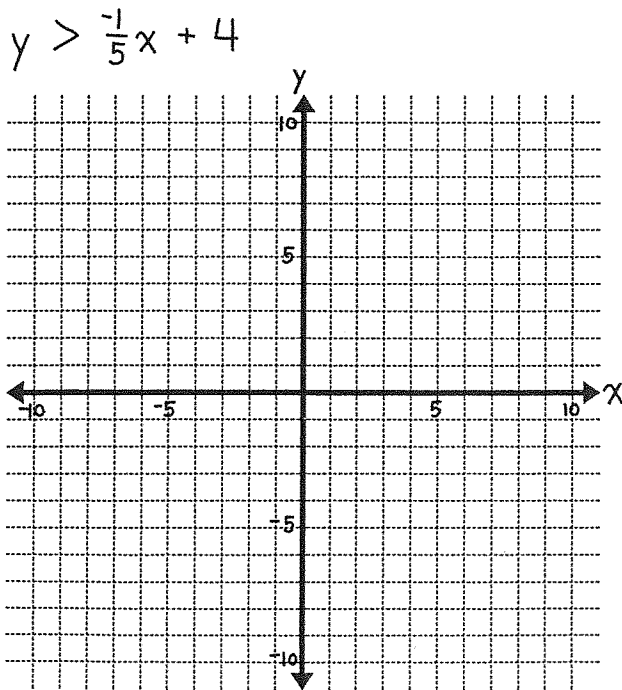
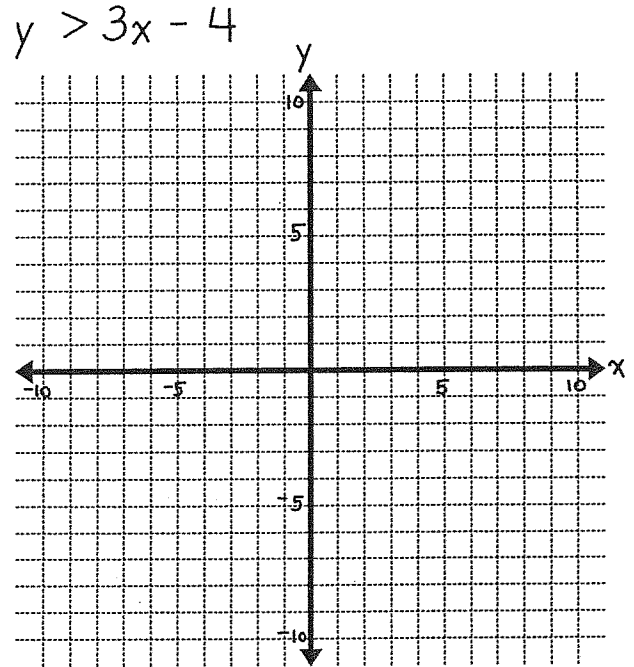
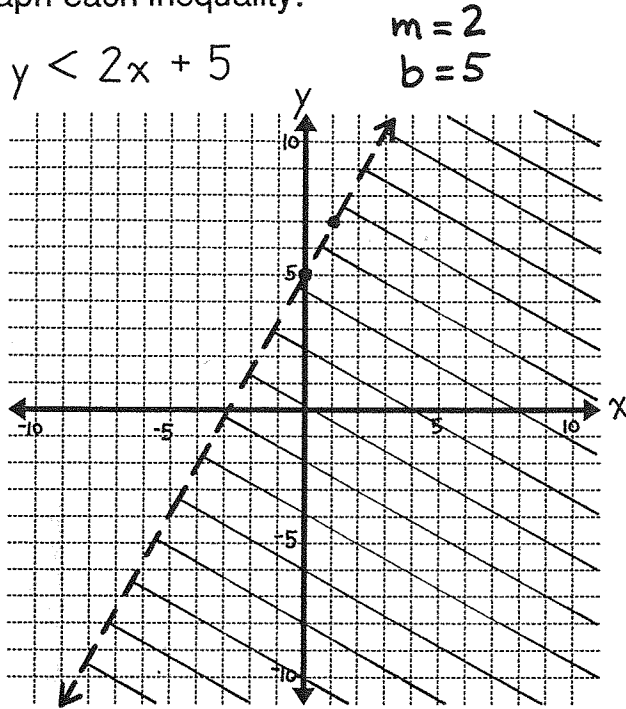
Warm Ups

| | | |
|---|--|--|
| Circle M T W Th | | |
| Circle M T W Th | | |
| Circle M T W Th | | |

The example on page 30 suggests a way to graph any inequality which is written as $y > mx + b$ or $y < mx + b$. We just have to follow these steps:

1. Graph the equation $y = mx + b$. This line will be the boundary of the graph for the inequality. Use a dashed line to show that points on this line are not included.
2. Shade the region *above* the line to graph $y > mx + b$. Or, shade the region *below* the line to graph $y < mx + b$.

Graph each inequality.

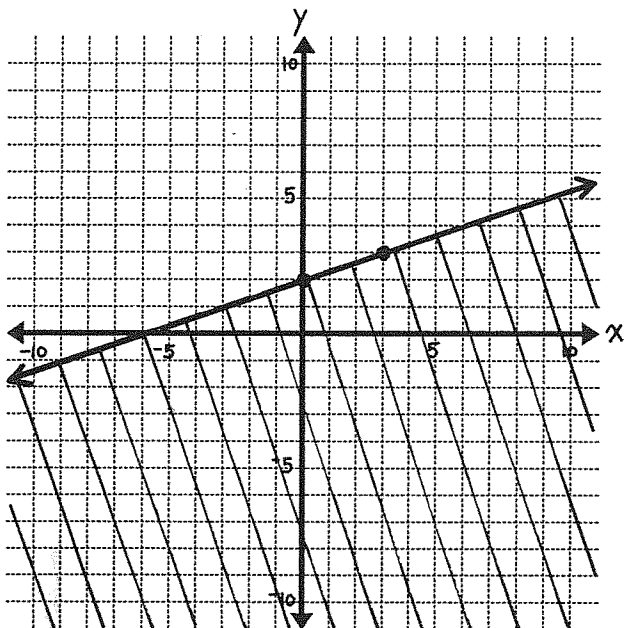


The inequalities on this page contain \geq and \leq instead of $>$ and $<$. That means their solution sets include the points where $y = mx + b$. These points are on the line so we draw a solid line instead of a dashed line for the boundary.

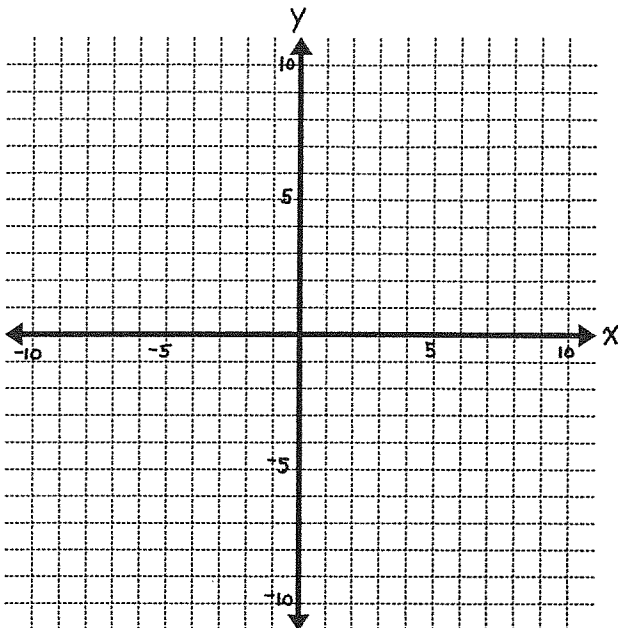
$$y \leq \frac{1}{3}x + 2$$

$$m = \frac{1}{3}$$

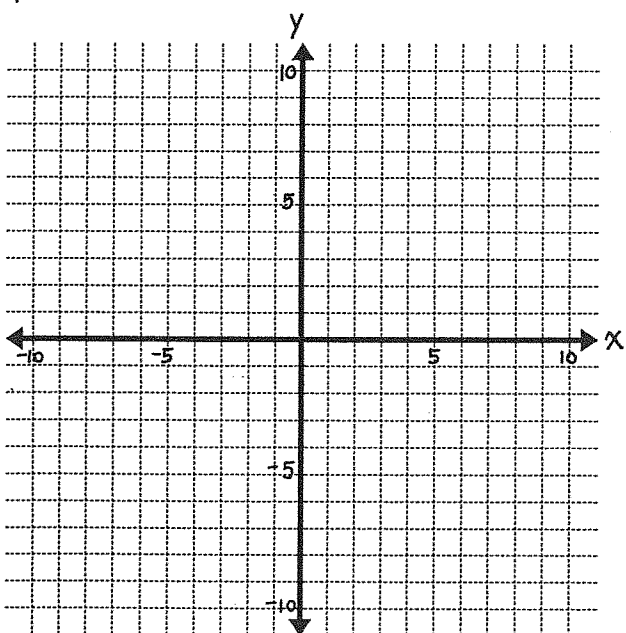
$$b = 2$$



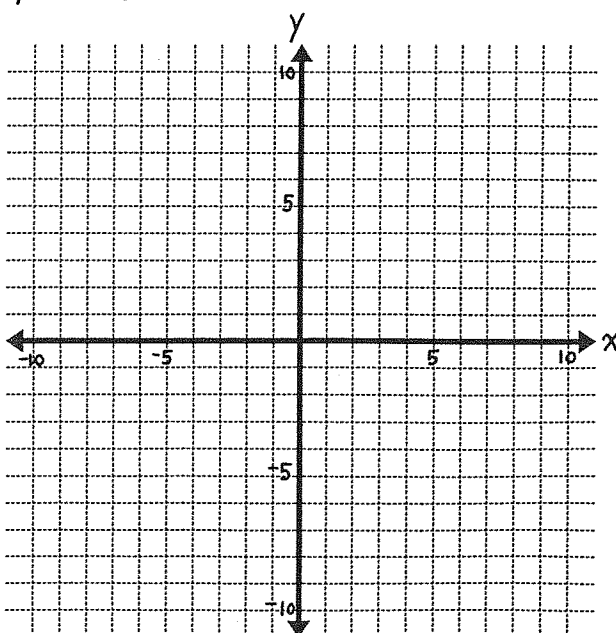
$$y \geq x - 4$$



$$y \geq -\frac{2}{3}x - 1$$

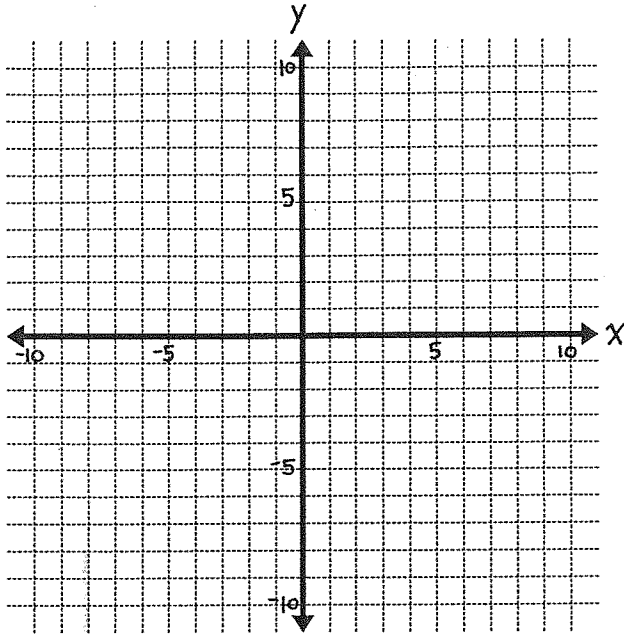


$$y \leq \frac{5}{3}x + 4$$

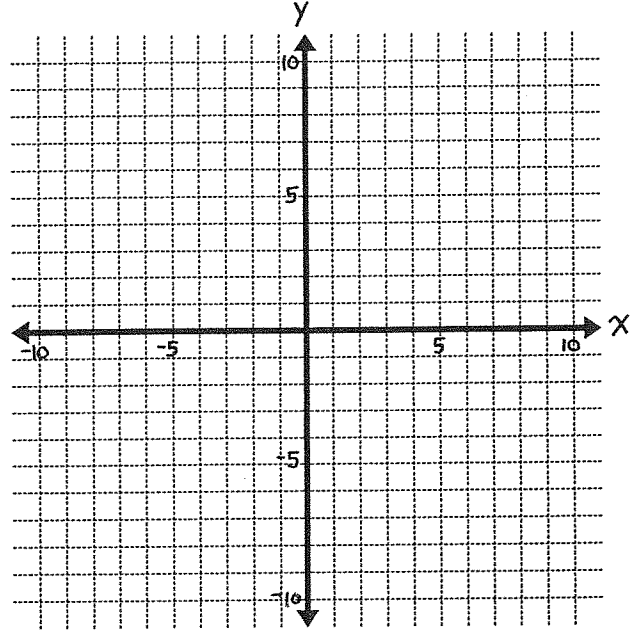


You will have to solve each of these inequalities for y before graphing it.

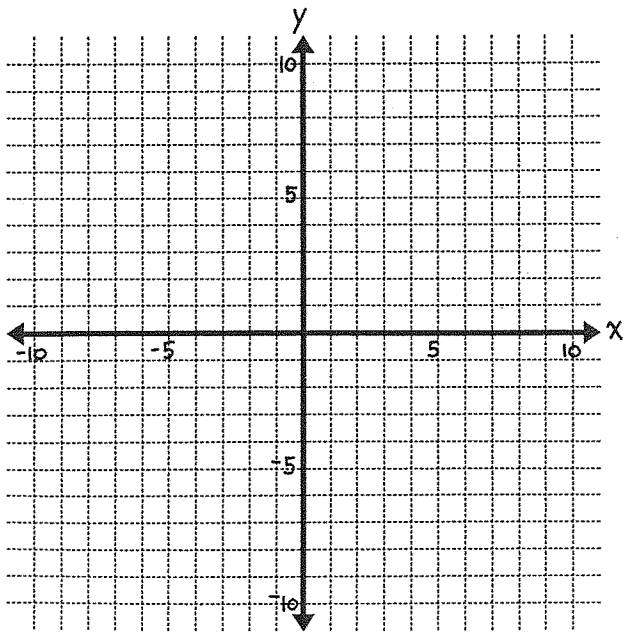
$$y - 2x > 3$$



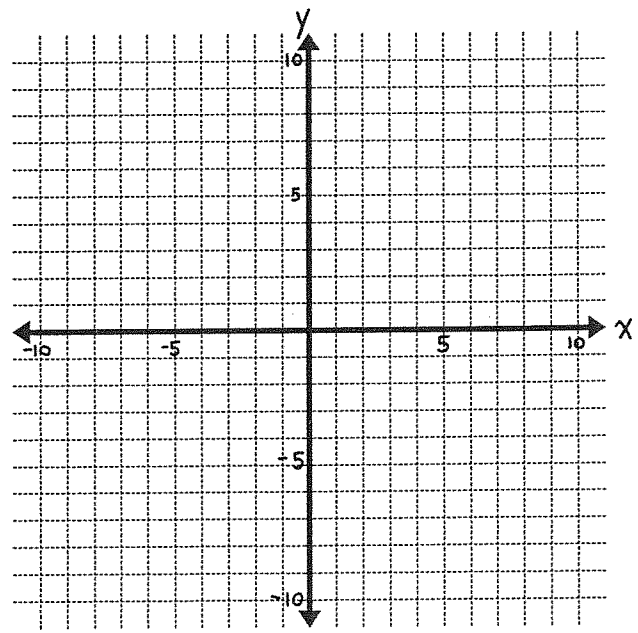
$$2x + y \leq 5$$



$$3y - 2x \geq 9$$



$$4y - x < 0$$



Solving Systems of Inequalities

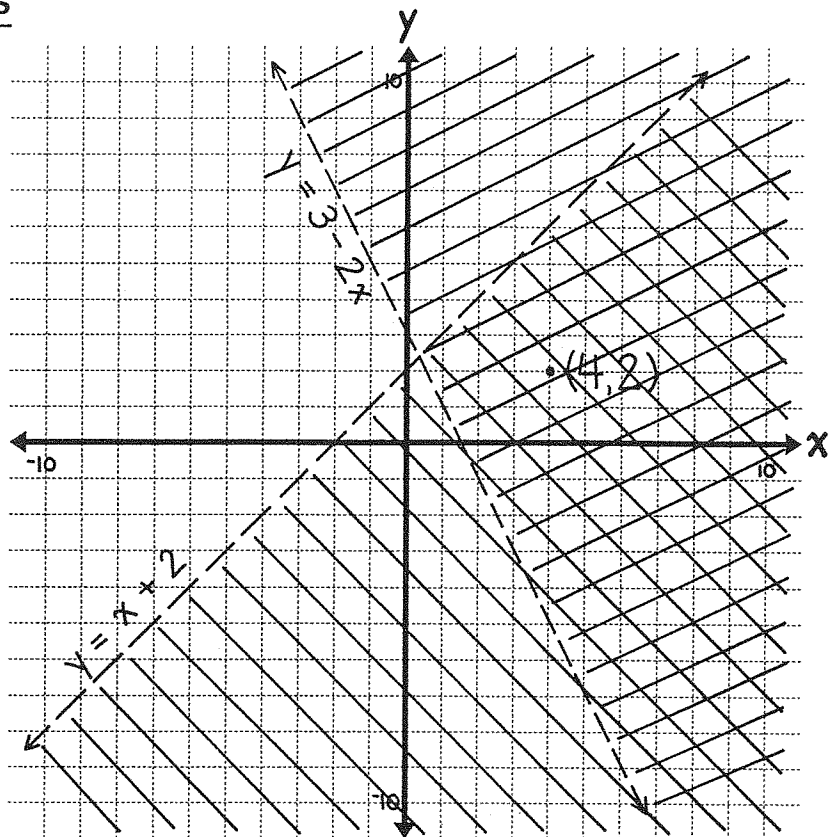
To solve a system of inequalities we can graph both inequalities using the same pair of axes.

Look at the graph to the right to see how we would solve this system:

$$y < x + 2$$

$$y > 3 - 2x$$

One region has been shaded twice. The point $(4,2)$ is in this region. Its coordinates make both inequalities true as shown in the table below, so $(4,2)$ is a solution. Now you test the other points in the table below to see if they are solutions.



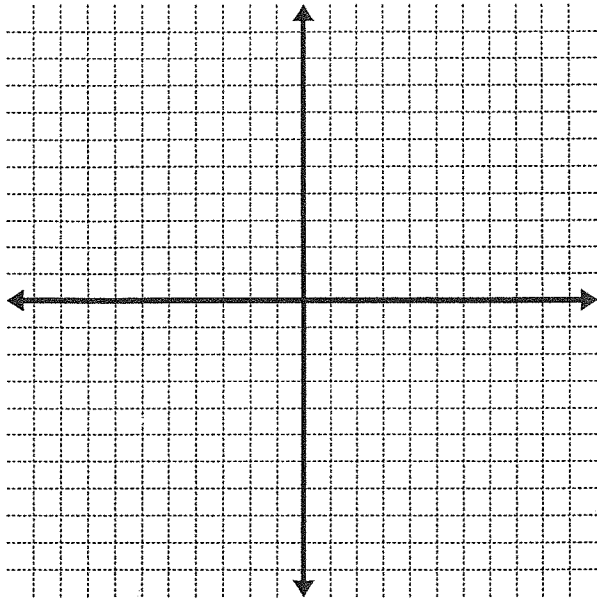
| (x,y) | Is (x,y) in the double - shaded region? | ? $y < x + 2$ | ? $y > 3 - 2x$ | Is (x,y) a solution? |
|---------------|---|----------------------------|--------------------------------|------------------------|
| $(4,2)$ | yes | $2 < 4 + 2$ $2 < 6$ yes | $2 > 3 - 2(4)$ $2 > -5$ yes | yes |
| $(6,-1)$ | | | | |
| $(2,-5)$ | | | | |
| $(-5,3)$ | | | | |
| $(3,5)$ | | | | |
| Pick a point. | | | | |

Did you notice that all points in the double-shaded region are solutions of both inequalities and points in other regions are not. The double-shaded region is the graph of the solution set for this system. Since we could not possibly list all the points in this region, the graph is the easiest way to show the solution set.

Show the solution set for each system of inequalities.

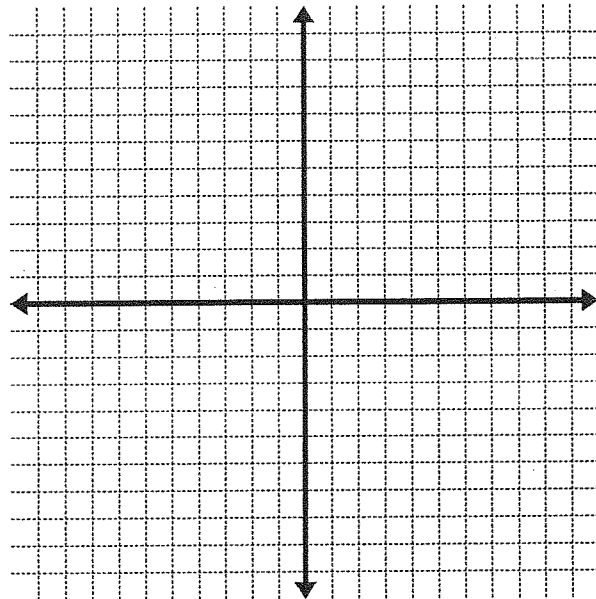
$$y > 2x - 7$$

$$y > -2x + 2$$



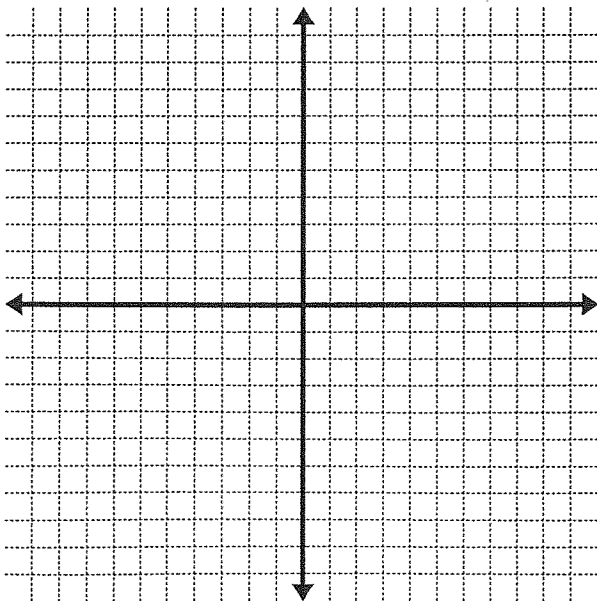
$$y > x - 3$$

$$y < -\frac{1}{2}x + 2$$



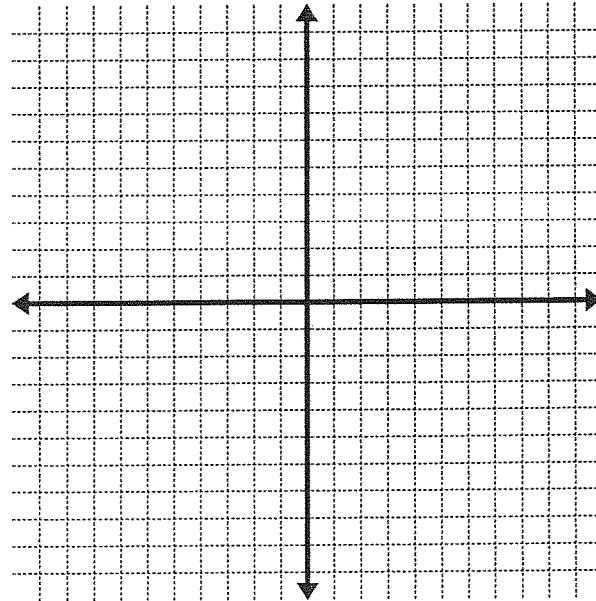
$$y \leq \frac{3}{5}x + 1$$

$$y \geq -x$$



$$y \geq \frac{2}{5}x + 3$$

$$y \geq -x + 3$$



Teacher: Sw eeley

Date: _____

Score: _____

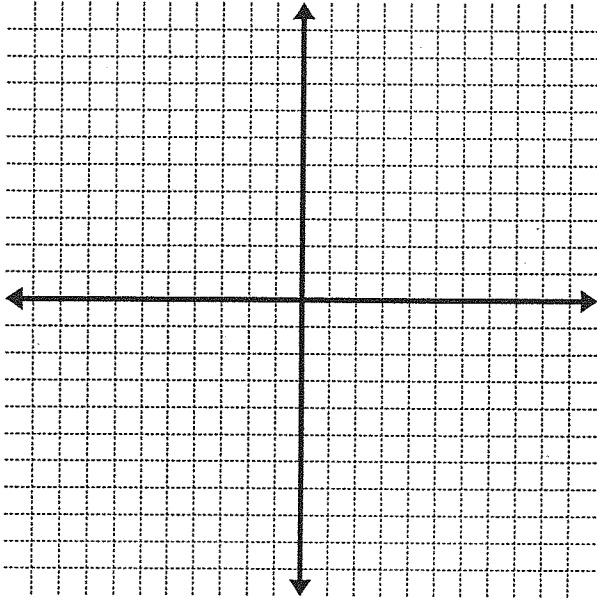
ADA: 1

algebra 1

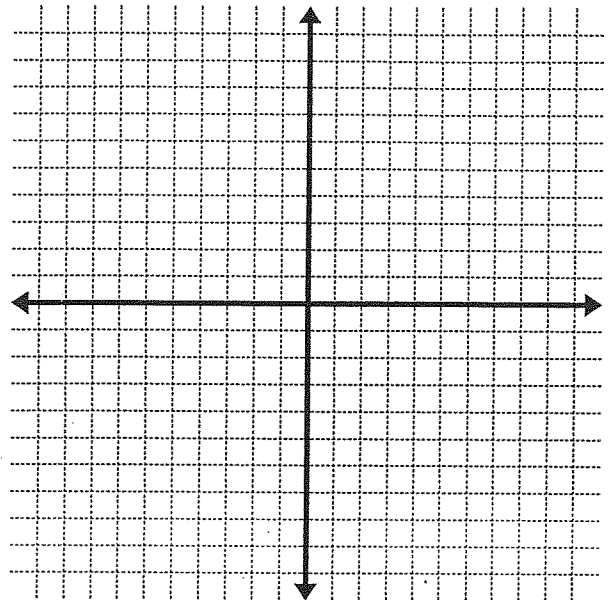
Graph the solution set.

$$x > 3$$
$$y < -2$$

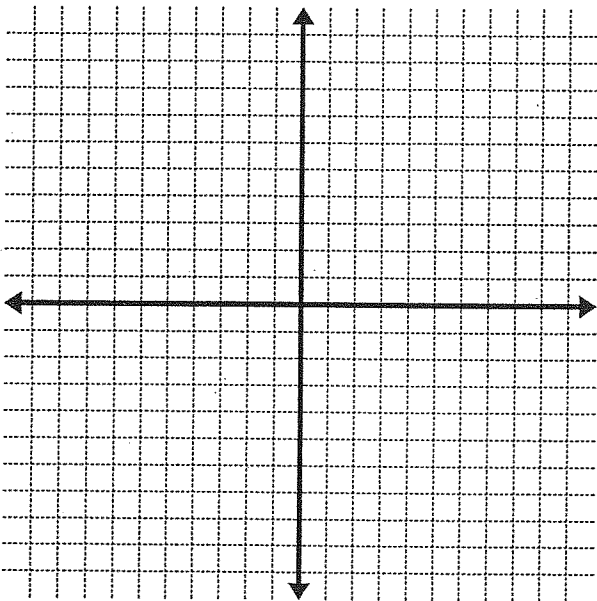
The graph of $x = 3$ is a vertical line. Points to the right have x -values greater than 3.



$$x \leq -2$$
$$y < 4$$



$$x \geq 7$$
$$x \geq -1$$



$$y \leq 0$$
$$y \geq -6$$

