GRAPHING BASIC INEQUALITIES of the $y > mx + b$ form **DUE EXAM DAY**

NAME AND CLASS PD_____

Graphing an inequality in $y > mx + b$ form is not that different than graphing an equation of the y=mx+b form.

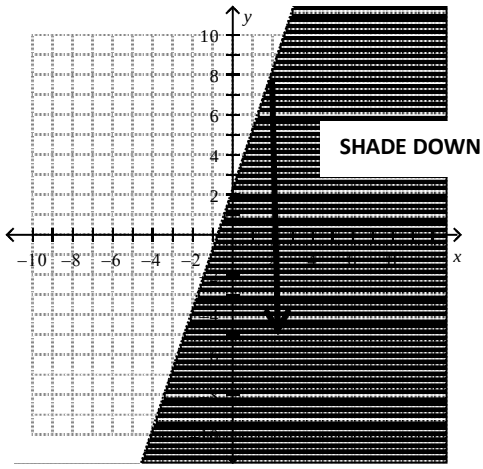
1. Locate the line of the graph as if it were y = mx +b, then you get fancy with it.
2. Remember open circles were used when there was no = sign in your inequality. Now you use **a dashed line for < or >**. A solid line means the inequality has an equal sign too: $\leq or \geq$.
3. Then you have to "shade" up for greater than, down for less than. Examples:

Graph:

$$y < 3x + 2$$

I make a box to make sure I do everything right:

slope=3/1	**y-intercept**=2
no equal sign: dotted line	<: shade down



To shade up or down? Put your finger on the graphed line.

- ***If y***, *< then you move in a direction that y is less than the line –* ***down.***
- ***If $y >$*** *then move in a direction that y is greater than the line –* ***up.***

Solutions? Any point in the shaded area!!! If it is a solid line, also any point on the line (dotted line, those points don't count!!!!

Check: (0, 0) is shaded and therefore should be a solution if put into the inequality.

$$y < 3x + 2$$
$$0 < 3(0) + 2$$
$$0 < 2 \ \ true$$

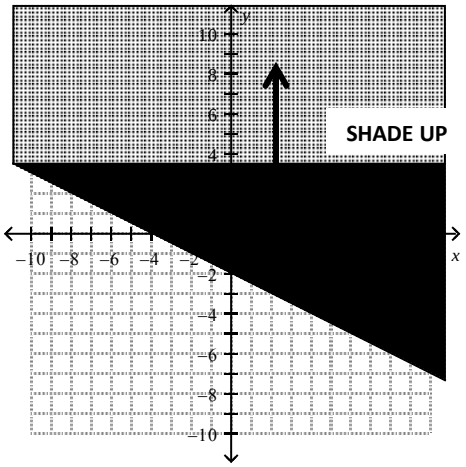
$$y \geq -\frac{1}{2}x - 2$$

slope= -1/2	y-intercept=-2
equal sign: solid lie	>: shade up

Check again (0, 0) should be a solution to the inequality.

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

$$0 \geq -\frac{1}{2}(0) - 2$$
$$0 \geq -2 \ \ true$$



GRAPH THE INEQUALITIES:

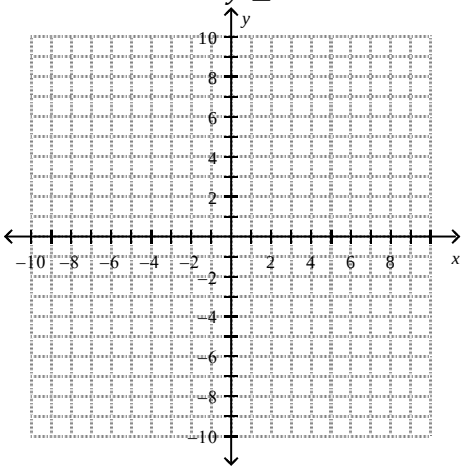
slope:	intercept:

Quick check:
Did you shade the correct direction?

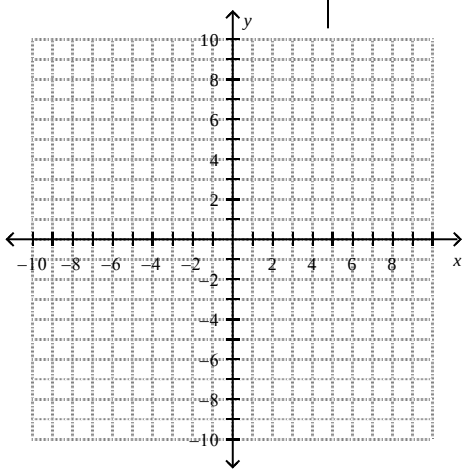
Use (0,0). If that MAKES THE INEQUALITY TRUE, (0,0) SHOULD BE IN THE SHADED DIRECTION.

If not, then (0,0) should not be in the shaded area!!!!

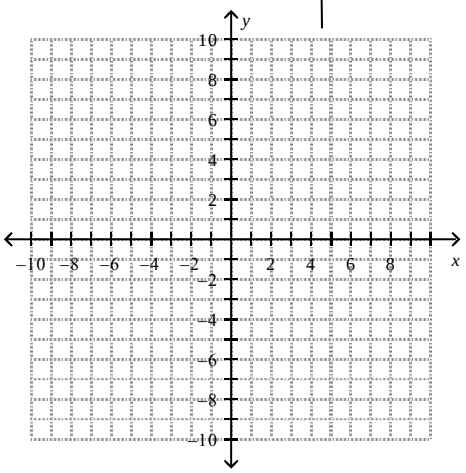
$y \leq -3x + 2$



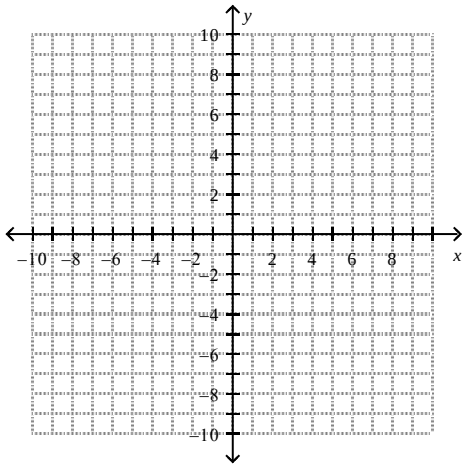
$y \geq \frac{1}{3}x - 2$



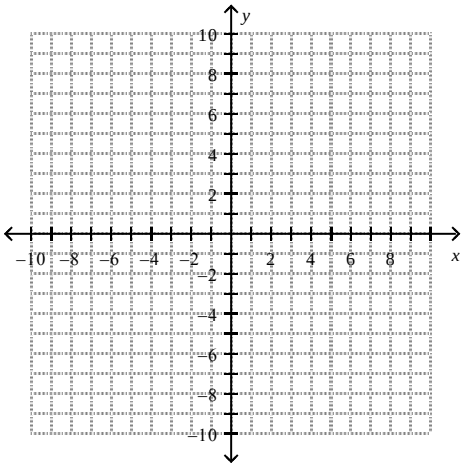
$y < \frac{2}{3}x + 2$



$y > 3x + 4$



$y \leq \frac{3}{5}x - 5$



GRAPHING SYSTEMS OF INEQUALITIES of the $y > mx + b$ form

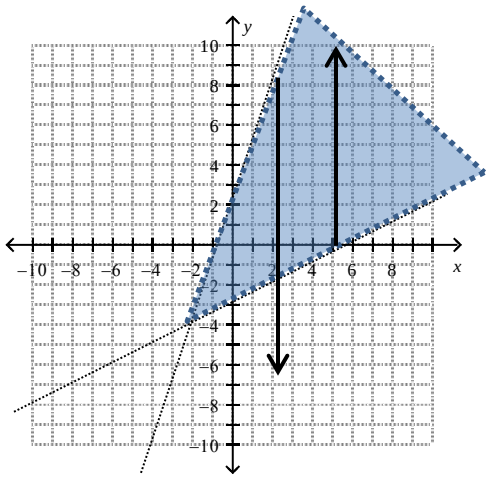
DUE EXAM DAY

NAME AND CLASS PD_____

Graphing a system of inequalities in $mx + b$ form is not that different than graphing an inequality.

1. Locate **both** lines of the graph as if they were y = mx +b, then you get fancy with it.
2. Remember open circles were used when there was no = sign in your equality? Well, now you use a dotted (dashed) line with open spaces between the dashes. AS solid line means it has an = sign also.
3. Then you have to "shade" up for greater than, down for less than. Examples:

$$\begin{cases} y < 3x + 2 \\ y > \frac{1}{2}x - 3 \end{cases}$$



slope =3/1	y-intercept =2
no =: dotted line	< shade down

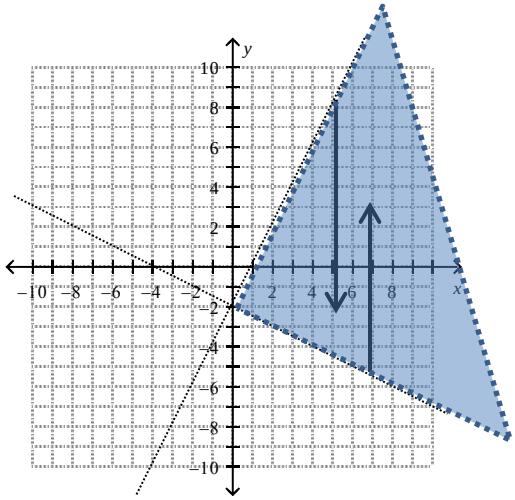
and

slope ½	y-intercept=-3
no =: dotted line	> shade up

The solutions are the points where the two shaded areas meet (remember dotted lines not included, solid lines included)

Quick trick to test your graph. Use (0,0)
Put in both equations. If both are true, then (0,0) is in solution area, if not it should be outside.
$0 < 0 + 2 \ \ True \ \ and \ \ 0 > 0 - 3 \ \ True$
(0,0) IS IN solution area.

$$\begin{cases} y \geq -\frac{1}{2}x - 2 \\ y < 2x - 2 \end{cases}$$



slope -1/2	y-intercept=-2
equal – solid line	> shade up

and

slope=2	y-intercept=-2
dotted	shade down

Using (4, 0) check:

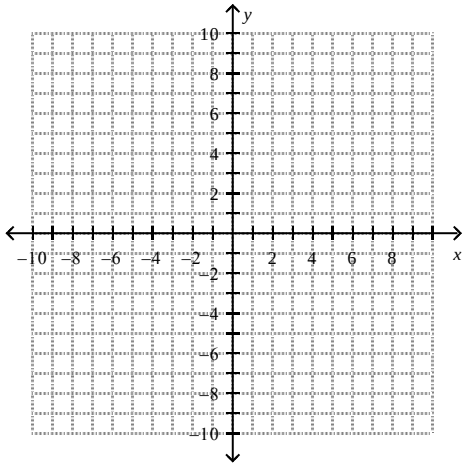
$$0 > -\frac{1}{2}(4) - 2 \ and \ 0 < 2(4) - 2 \ \ True$$

$0 < 0 - 2 \ \ False$ (0,0) is not in the solution set.

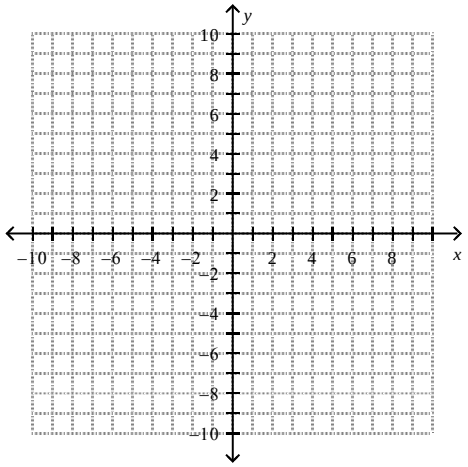
Therefore it should not be shaded.

HOMEWORK: Graph the following System of Inequalities

1. $\begin{cases} y \leq \frac{3}{4}x + 1 \\ y > -3x - 2 \end{cases}$



2. $\begin{cases} y < 4 \\ y \geq 2x - 2 \end{cases}$



3. $\begin{cases} y \leq 2x - 3 \\ y \geq 2x + 2 \end{cases}$