

Name:	Date:
Goal: To graph linear inequalities in two variables	Class/Period:

Questions/Main Ideas:

Notes:

Steps on Graphing Linear Inequalities:

- 1.) Solve the inequality for y
- 2.) Plot your b
- 3.) Travel your slope

- 4.) Decide if you should use a solid line or dashed line.
 - $<, >$
use a dashed line
 - \leq, \geq
use a solid line

- 5.) Use a point that is not on the boundary line to check whether the statement is true or not.

- 6.) Shade the side containing the point that is the true solution.

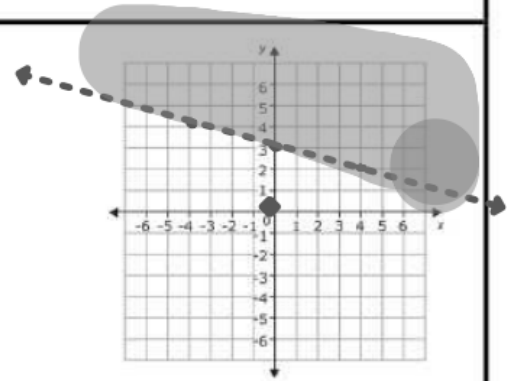
Graph: $y > -\frac{1}{4}x + 3$

$b = 3$
 $m = -\frac{1}{4}$ ↗

Choose $(0,0)$ and plug in $y > -\frac{1}{4}x + 3$

$$0 > -\frac{1}{4}(0) + 3$$

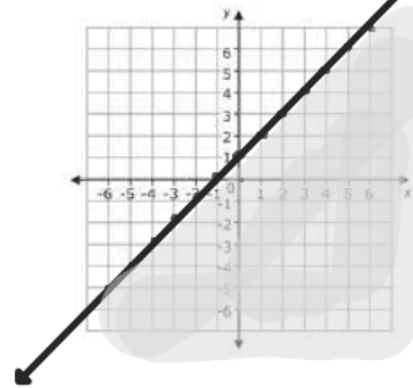
$0 > 3$ not true so the point $(0,0)$ not shaded



Example 1: $y \leq x + 1$

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

Pick $(0,0)$ + plug in
 $0 \leq 0 + 1$
 $0 \leq 1$ True $(0,0)$ is shaded

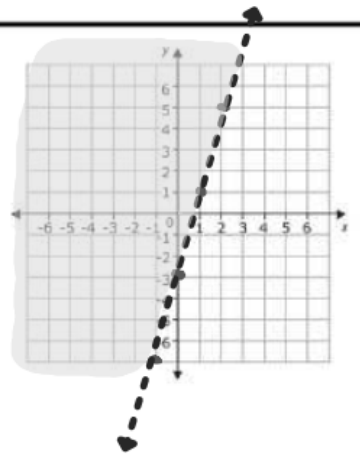


Try it: Graph the inequality
 $y > 4x - 3$

$$b = -3$$

$$m = \frac{4}{1}$$

Pick $(0,0)$ + plug in
 $0 > 4(0) - 3$
 $0 > -3$ True $(0,0)$
 is shaded



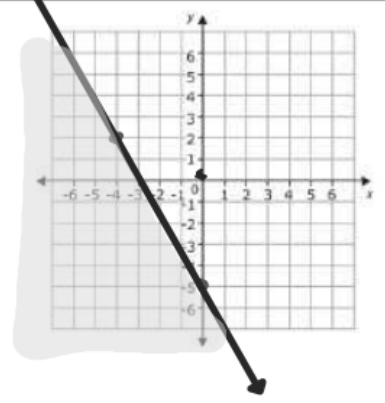
Example 2:
 $7x + 4y \leq -20$

$(0,0)$
 $7(0) + 4(0) \leq -20$
 $0 \leq -20$
 not true;
 not shaded

$$\begin{array}{r} 7x + 4y \leq -20 \\ -7x \qquad -7x \\ \hline 4y \leq -7x - 20 \\ \frac{4y}{4} \leq \frac{-7x - 20}{4} \\ y \leq -\frac{7}{4}x - 5 \end{array}$$

$$b = -5$$

$$m = -\frac{7}{4}$$



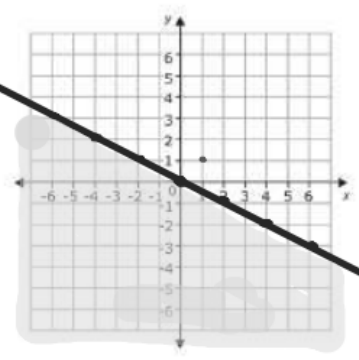
Example 3:
 $x + 2y \leq 0$

$$\begin{array}{r} -x \qquad -x \\ \hline 2y \leq -x \\ \frac{2y}{2} \leq \frac{-x}{2} \\ y \leq -\frac{1}{2}x \end{array}$$

$$b = 0$$

$$m = -\frac{1}{2}$$

Pick $(1,1)$ + plug
 $1 + 2(1) \leq 0$
 $1 + 2 \leq 0$
 $3 \leq 0$
 not True $(1,1)$ not
 shaded



Try it again:

$$x + 3y \geq -1$$

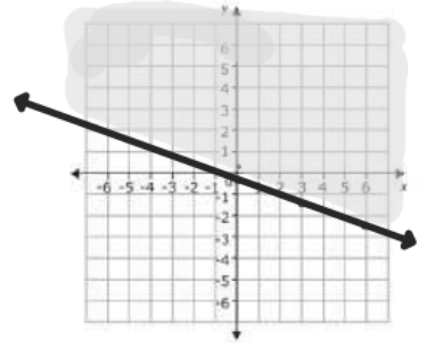
$$\frac{-x}{3} \geq \frac{-x-1}{3}$$
$$y \geq -\frac{1}{3}x - \frac{1}{3}$$

Pick $(0,0)$

$$0 + 3(0) \geq -1$$

$$0 \geq -1$$

True $(0,0)$ Shaded



$$b = -0.\bar{3}$$

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

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Summary:

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