Warm-up!

Solve the following, and tell the difference between all 3.

$2x + 7 = 15$ $\quad -7 \quad -7$

$2x + 7 < 15$ $\quad -7 \quad -7$

$2x + 7 \leq 15$

$\frac{2x}{2} = \frac{8}{2}$

$x = 4$

$\frac{2x}{2} < \frac{8}{2}$

$x < 4$

$\frac{2x}{2} \leq \frac{8}{2}$

$x \leq 4$

5.7 Graph Linear Inequalities in Two Variables

Before	You graphed linear equations in two variables.
Now	You will graph linear inequalities in two variables.
Why?	So you can analyze a music competition, as in Ex. 56.

GOAL: Graph the solutions to a linear inequality in two variables as a half-plane and graph the solution set to a system of linear inequalities in two variables as the intersection of corresponding half-planes.

Graphing Inequalities and Shading the graphs

$y \leq 2x - 1$

less than or = below!

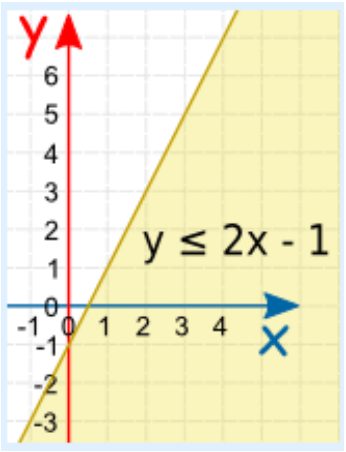
$y = 2x - 1$

$m = 2$

$b = -1$

Shade area below

(because y is less than or equal to)



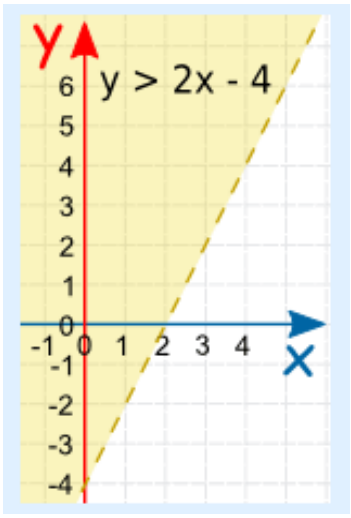
$y > 2x - 4$

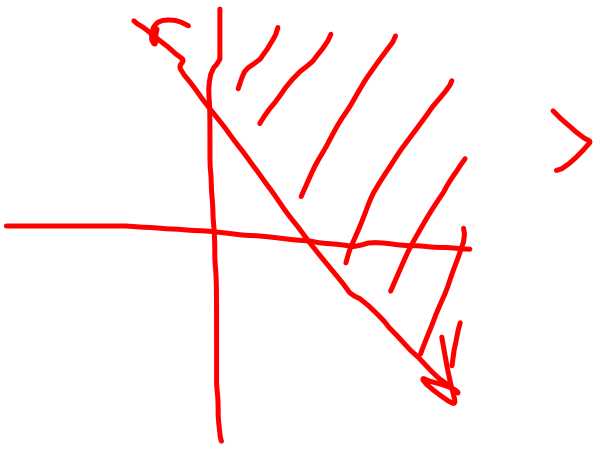
$m = 2$

$b = -4$

Shade area above

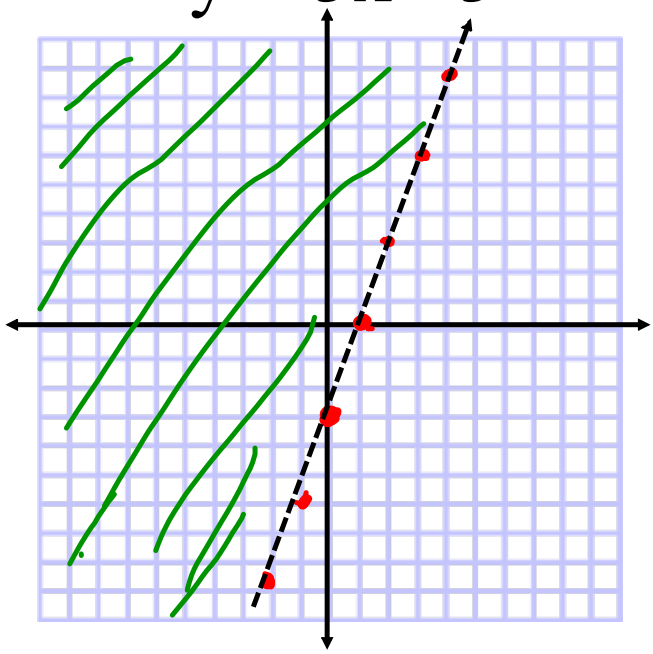
(because y is greater than or equal to)





Example 1, with the Process!

$y > 3x - 3$



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

$b = -3$

$>$ above

$<$ below

$>$, $<$ } dotted

$\geq$, $\leq$ } solid

Example 2

$-3x + 5y \leq -15$

$+3x \qquad +3x$

$\frac{5y}{5} \leq \frac{3x}{5} - \frac{15}{5}$

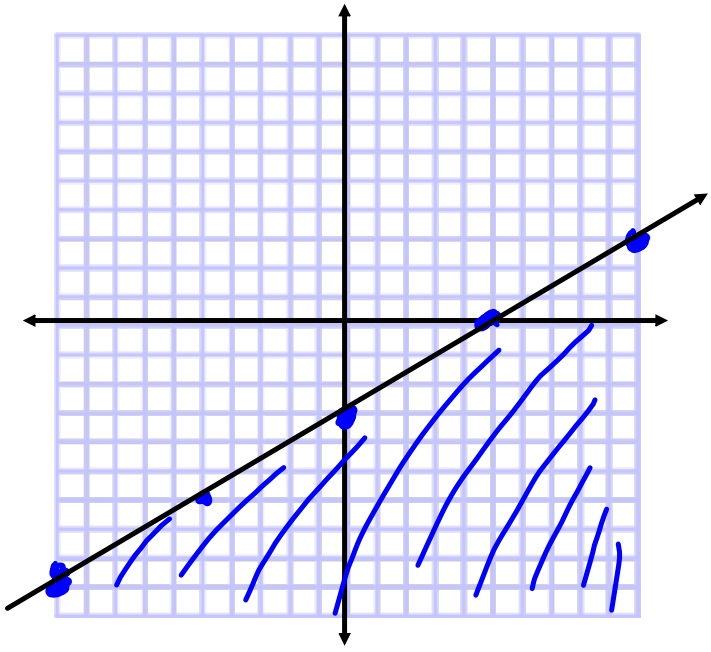
$y \leq \frac{3}{5}x - 3$

$m = \frac{3}{5}$

$b = -3$

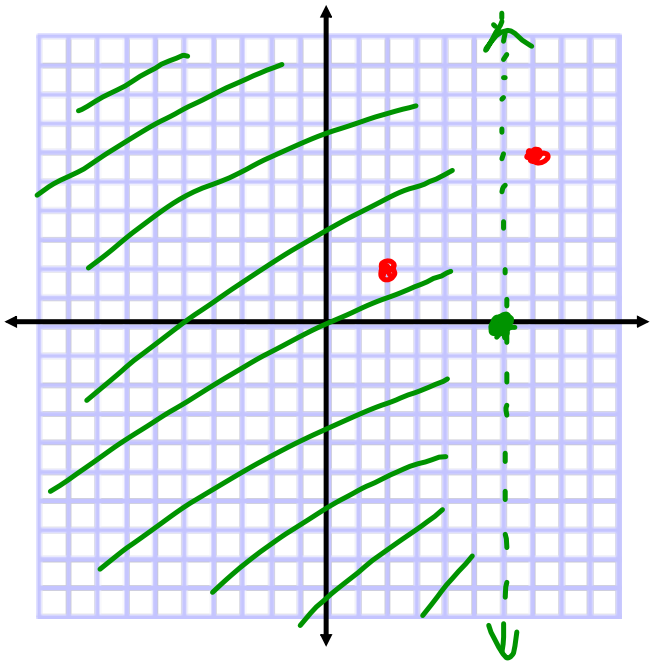
solid

below



Example 3!

$x < 6$



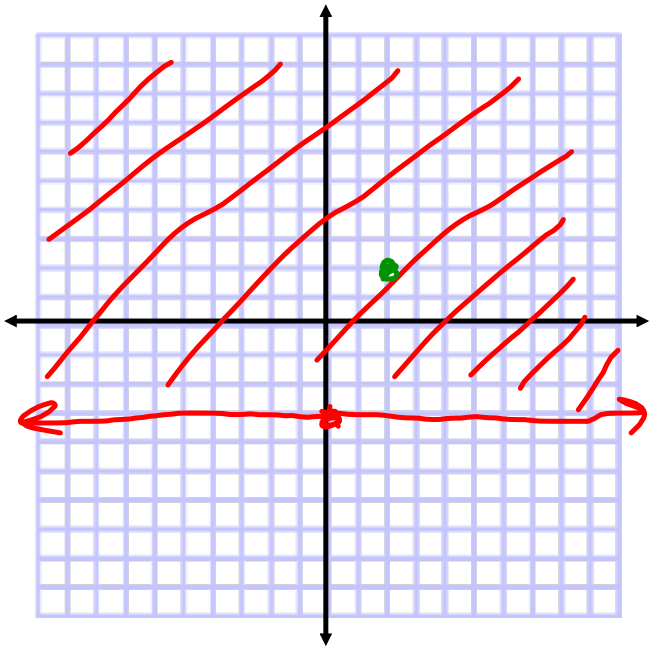
Vertical dotted below

(2, 2) Yes

(7, 6) No

Example 4

$$y \geq -3$$



horiz

m=0

Solid

above

(2,2)

$6x - 5y > 12$

$6(2) - 5(3) > 12$ (x, y) $(2, 3)$

$12 - 15 > 12$

$-3 > 12$ NO

Homework

5.7 WS: Practice C