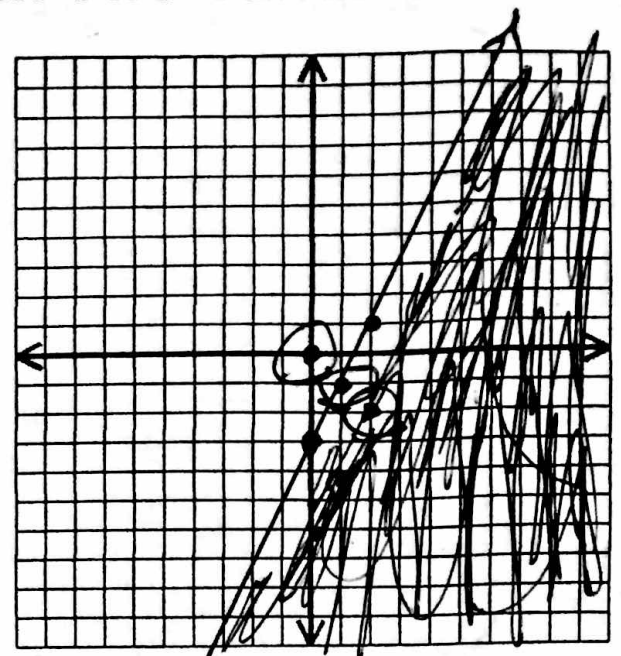


Graphing Inequalities in Two Variables

GRAPH: $y = 2x - 3$

$\begin{matrix} m \\ \downarrow \\ \end{matrix}$
 $\begin{matrix} b \\ \downarrow \\ \end{matrix}$



Determine where $y \leq 2x - 3$.

↳ less than or equal to

Choose 3 points – one on either side of the line and one on the line $y = 2x - 3$.

Plug each point into $y \leq 2x - 3$

Point $(0, 0)$ ^{above}

x, y

$0 \leq 2(0) - 3$

$0 \leq 0 - 3$

$0 \leq -3$ ✗

Not solution

Point $(1, -1)$ ^{on line}

$-1 \leq 2(1) - 3$

$-1 \leq 2 - 3$

$-1 \leq -1$ ✓

solution

Point $(2, -2)$

$-2 \leq 2(2) - 3$

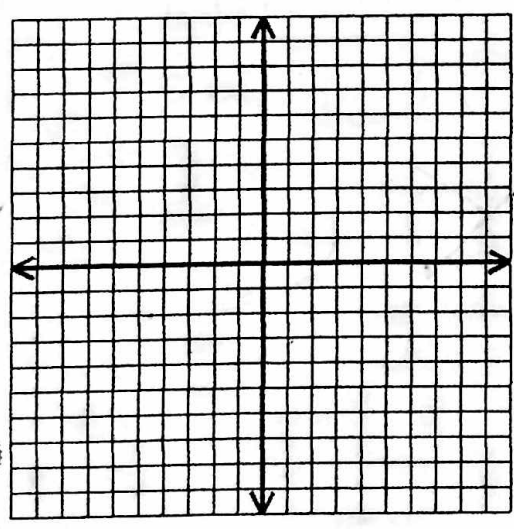
$-2 \leq 4 - 3$

$-2 \leq 1$ ✓

solution

Graph: $y \leq 2x - 3$

What would the graph look like



for \leq : solid line, shade below

for \geq : solid line, shade above

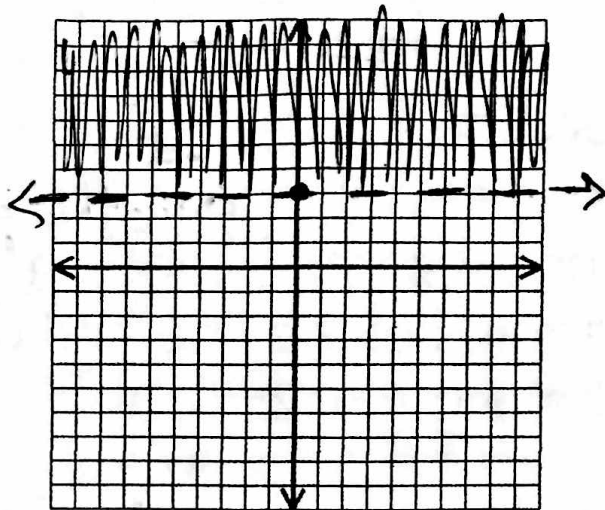
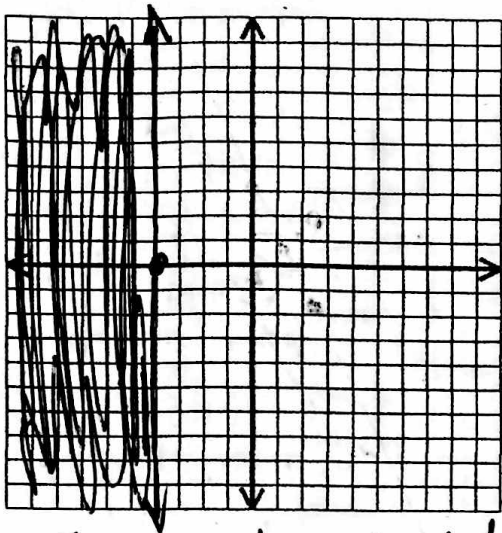
for $<$: dotted line, shade below

for $>$: dotted line, shade above

Solve each inequality by graphing.

1. $x \leq -4$

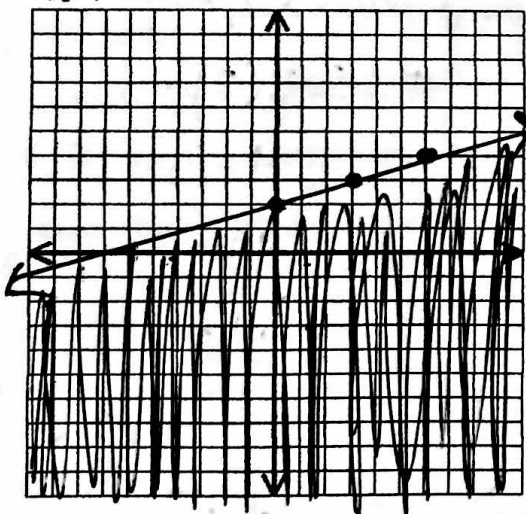
2. $y \geq 3$



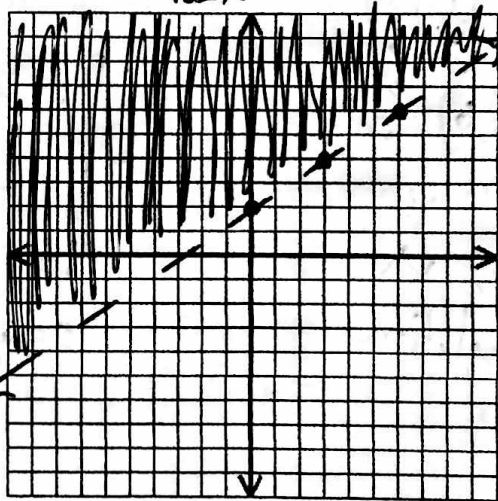
Always put in slope-intercept form!

3. $x - 3y \geq -6$

4. $3y - 2x > 6$



$-\frac{3y}{-3} > \frac{-x-6}{-3}$
 $y < \frac{1}{3}x + 2$
 solid line
 shade below



$\frac{3y}{3} > \frac{2x+6}{3}$
 $y > \frac{2}{3}x + 2$
 dotted line
 shade above

5. On #3 above, which of the following would be a solution?

- $(1, 0)$
- ~~$(4, 8)$~~
- $(-6, -2)$
- ~~$(-8, 0)$~~
- $(-5, -4)$