*Inequality implies a larger SET of SOLUTIONS (includes SHADING on a graph!)

Solving and Graphing Linear Inequalities

A linear inequality describes a region on a coordinate plane that has a boundary line. (DIVIDING LINE (= EXACT): splits the coordinate plane into points that are TRUE & False)

The solutions to a linear inequality are the set of points that make the inequality TRUE.

For y < and y >, you use a dashed line. (Points on the line are NOT solutions.)

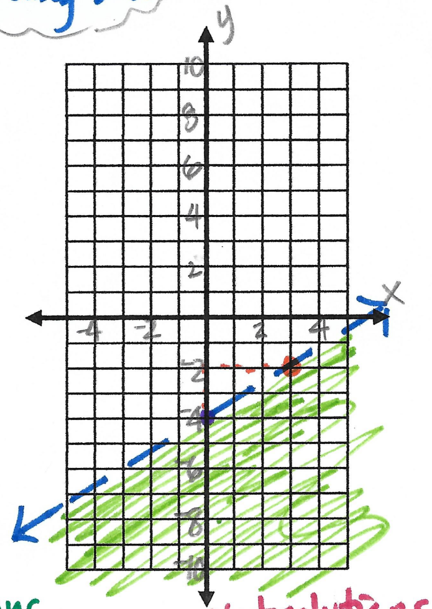
For y ≤ and y ≥, you use a solid line. (Points on the line are solutions.)
= of exact... dividing line points are part of SOLUTION

Graph the inequality: $y < \frac{2}{3}x - 4$ (Slope int)

- Graph the Dividing Line
- Dashed line (<)
- Shade TRUE SIDE of Dividing Line

$m = \frac{2}{3}$ y int: (0, -4)

"The output is BELOW the line."



Solutions
(0, -8), (8, 0)
($\frac{1}{2}$, -8)... etc

Not solutions
(0, 0), (0, -4)
(-5, 10) etc...

Graph the inequality: $8x - 4y \le 12$ Standard Form

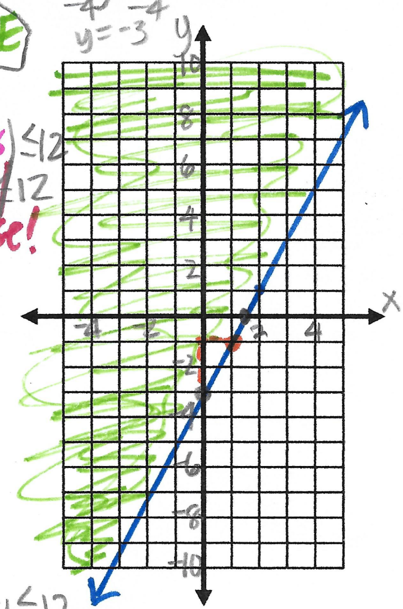
Since NOT y form, inequality symbol can be misleading (TEST POINT!)

- Find intercepts of Dividing LINE
- Solid line (≤)
- Test point not on dividing line
- shade TRUE SIDE

xint: (y=0)
$\frac{8x}{8} = \frac{12}{8}$
$x = \frac{3}{2}$ $(\frac{3}{2}, 0)$

yint: (x=0)
$\frac{-4y}{-4} = \frac{12}{-4}$ (0, -3)
$y = -3$

Test (0, -8)
$8(0) - 4(-8) \le 12$
$0 + 32 \not\le 12$
False!



OR
- Put in y form

$8x - 4y \le 12$
$-8x \qquad -8x$
$\frac{-4y}{-4} \le \frac{-8x + 12}{-4}$
$y \ge 2x - 3$ m=2 yint: (0, -3)

"The outputs are ABOVE or on the line"

*There are an INFINITE # of solutions in the solution set! (even ones not visible)