Solving and Graphing Linear Inequalities

A __linear__ __inequality__ describes a region on a coordinate plane that has a boundary line. **DIVIDING LINE** - splits plane into true & false

The solutions to a linear inequality are the set of points that make the inequality __true__.
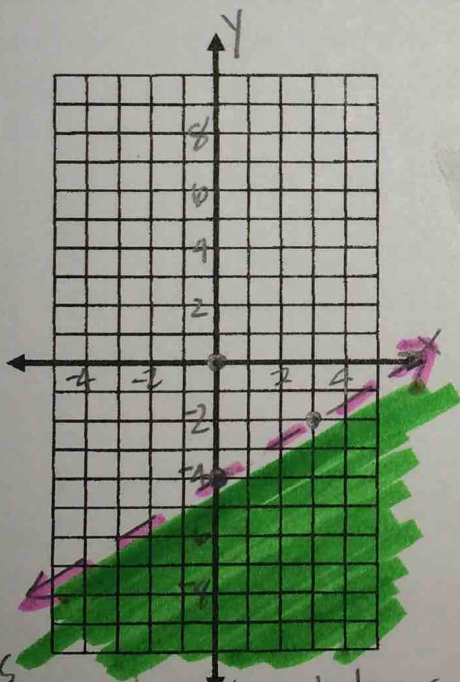
For y < and y > , you use a __dashed__ line. (Points on the line __are NOT__ solutions.)

For y ≤ and y ≥ , you use a __solid__ line. (Points on the line __are__ solutions.)

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

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

Test: $(0,0)$ $0 < \frac{2}{3}(0) - 4$
$0 \not< -4$
False

Examples solutions	Not solutions
$(-2, -8)$	$(0, 0)$
$(0, -12)$	$(3, 2)$

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

$\begin{array}{c} -8x \qquad -8x \\ \frac{-4y}{-4} \le \frac{-8x + 12}{-4} \\ y \ge 2x - 3 \end{array}$

$m = 2$
y intercept: $(0, -3)$

Test: $(0, 0)$
$8(0) - 4(0) \le 12$
$0 \le 12$
TRUE

*Test in ORIGINAL inequality!
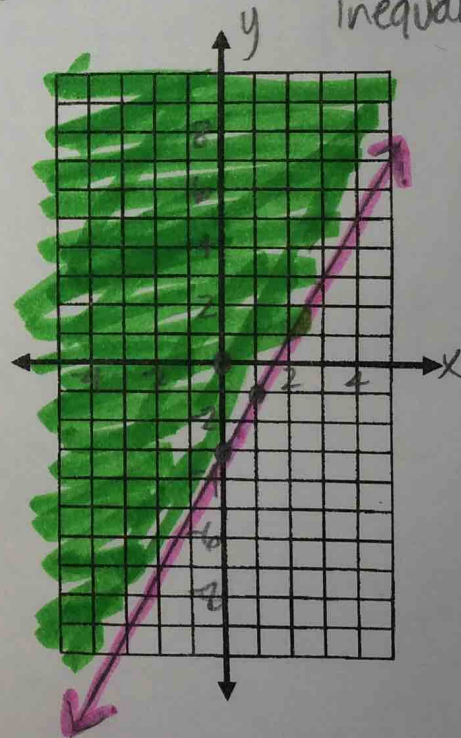
* Inequality implies a SET of solutions (shading on a graph)