

# Graphing Linear Inequalities (Two Variables)



Level 1 - Graph the equations using the given inequality form

Level 2 - Rearrange to slope-intercept form and graph

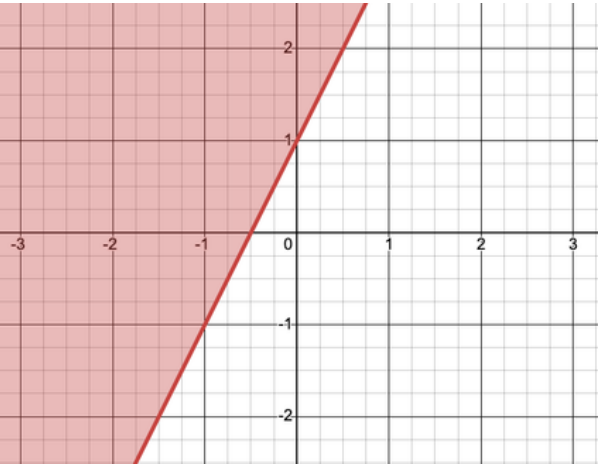
Linear inequalities in two variables look a lot like linear equations, but instead of showing one line, they show a **region** on a graph where all the solutions make the inequality true.

An inequality symbol ( $<$ ,  $>$ ,  $\leq$ , or  $\geq$ .) tells you whether to shade above or below the line.

As we did with one variable inequalities we need to check if the inequality is inclusive or exclusive. With one variable we used open and closed circles on our number lines. With our two variable graphs we'll use either solid lines (included) or dashed lines (not included).

## To Solve:

1. Graph the inequality as if it was an equation, using a solid or dotted line as necessary.
2. Test a point to see if it makes the inequality true. If it is true, shade that side of the line. If it is not true, shade the other side.

<b>Example #1</b> $y \geq 2x + 1$	<b>Example #2</b> $3x - 2y < 6$
<p>1. Graph <math>y \geq 2x + 1</math> using a solid line.</p> <p>2. Test (0, 0) to see if it makes the statement true.</p> $0 \geq 2(0) + 1$ $0 \geq +1$ <p>The statement is not true so the solutions to our inequality fall on the other side of the line.</p> <p>Shade that side to show all possible solutions.</p> 	<p>1. Rearrange to <math>y = mx + b</math> form and graph using a dotted line.</p> $y > \frac{2}{3}x - 3$ <p>2. Test (0, 0) to see if it makes the statement true.</p> $0 > \frac{2}{3}(0) - 3$ $0 > -3$ <p>The statement is true so the solutions to our inequality fall on this side of the line.</p> 