AA2 Graphing Inequalities

**To graph a linear inequality:**

1. Isolate the variable *y* just as you would if you were working with a linear equation. (Remember to reverse the inequality if multiplying or dividing by a negative.) Arrange the inequality in slope-intercept form. (If *y* is not in the equation, solve for *x*.)

2. Graph the line. Use a **solid line** if your inequality sign is ≤ or ≥. Use a **dashed line** if your sign is < or >.

3. Shade the correct side of the line. If *y* < ... or *y* ≤ ... , shade **below** the line.   If *y* >... or *y* ≥ ... , shade **above** the line. (If *x* < ... or *x* ≤ ... shade to the **left** of the line. If *x* >... or *x* ≥ ... shade to the **right** of the line.

(Or, in order to see which side of your line to shade, test the point (0,0). If (0,0) is a solution of your inequality, shade the side containing (0,0). If not, shade the other side.)
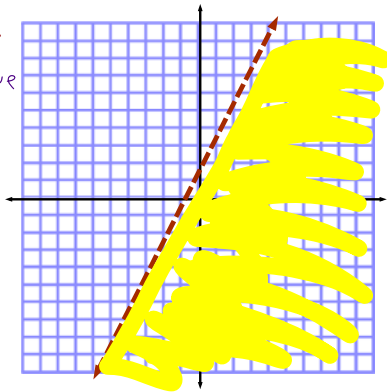
Example:

Graph y < 2x + 1.

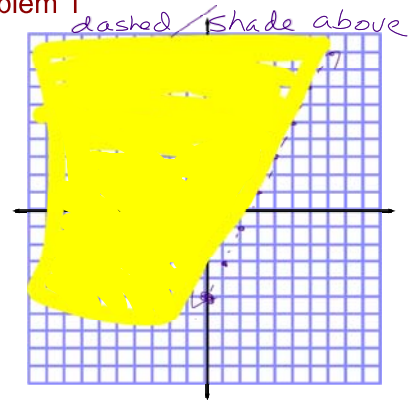1. Graph y=2x+1. (Because we have <, we will draw a dashed line.)
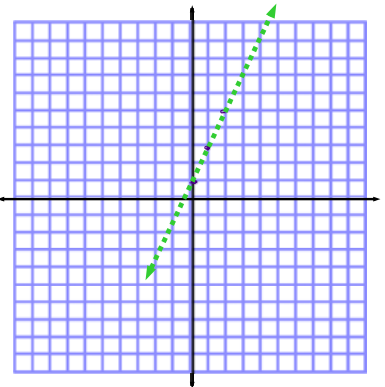
Example:

Test (0,0)

Graph *y* < 2*x* + 1.

0<2(0)+1
0<1 true

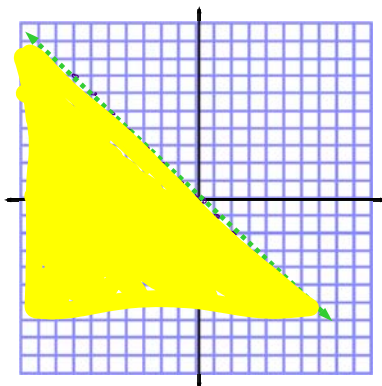2. Since *y* < ... , shade below the line, because *y* gets less when you go down.

Practice Problem 1

dashed / shade above

y > 2x - 5

0>-5
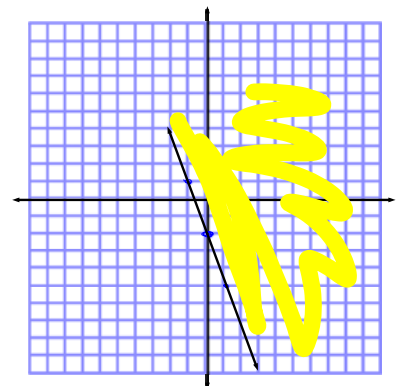True
(0,0)

Practice Problem 2
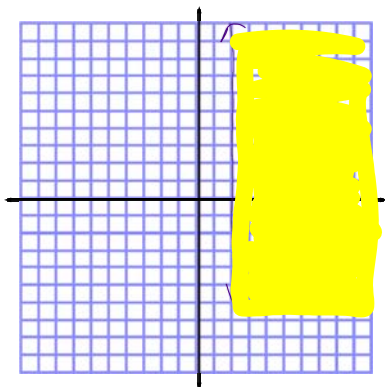
y < -x

Practice Problem 3

y ≥ -3*x* - 2

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Practice Problem 4

$x \geq 2$

Practice Problem 5
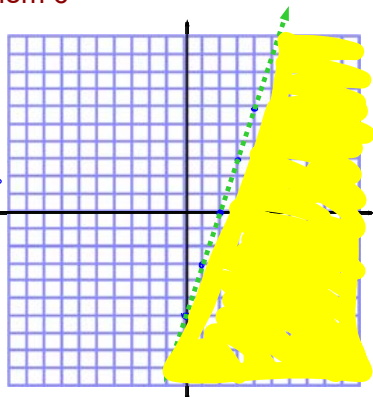
$y > 3$
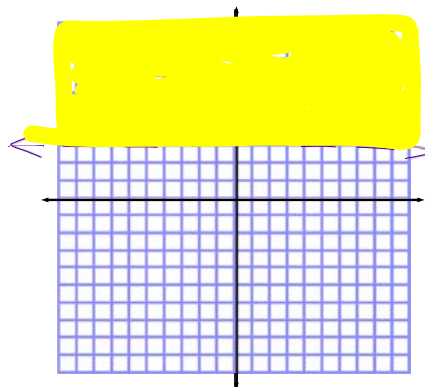
Practice Problem 6

$3x - y > 6$

$-3x \quad -3x$

$\dfrac{-y}{-1} > \dfrac{-3x + 6}{-1} \quad \dfrac{}{-1}$

$y < 3x - 6$

test (0,0) in original

$3(0) - 0 > 6$

$0 > 6$

FALSE
so, (0,0) not shaded.

Practice Problem 7

$x - 6y > -12$

$0 - 6y = -12$

$y = 2$

$(0,2) \quad y-int$

$x - 6(0) = -12$

$x = -12$

x-int $(-12, 0)$

MUST TEST
a point (0,0)

$0 > -12$ True

so, shade side
with (0,0) in it.