Bellwork: Algebra 1

1. Happy Wednesday Everyone!
2. Write down your homework in your planner.
3. You just need a ruler.
4. Math Nation Test Yourself - SECTION 4 is due NEXT WEDNESDAY 1/29
5. Answer the following question on your WEDNESDAY Bellwork:

Where would the shading be if we graphed the following inequality?

$y > 2x + 1$

What would the line look like on the graph?

Main Ideas/Questions	Notes/Examples
LINEAR INEQUALITY	A 2-variable inequality on a coordinate plane.
SOLUTION to a Linear Inequality	Any coordinate pair that makes it true (shaded area)
EXAMPLE	**Determine which ordered pairs are solutions to the linear inequality below:** $2x - 3y < 15$

(2, 5)	(-1,- 7)	(3, -4)	(0, 0)
$2(2)-3(5)<15$	$2(-1)-3(-7)<15$		
$4-15<15$	$-2+21<15$		
$-11<15$	$19<15$	$18<15$	$0<15$
yes	no	no	yes

GRAPHING
Linear Inequalities

Graphing linear inequalities is a way to show ALL the ordered pairs that are solutions! Steps to graph:

Step 1

Put the inequality in slope-intercept **form.**

Be sure to flip the inequality symbol if you multiply or divide by a negative number!

Step 2

Graph the line!

- Use a solid line for $\geq$ or $\leq$ symbols.
- Use a dashed line for $>$ or $<$ symbols.

Step 3

Shade!

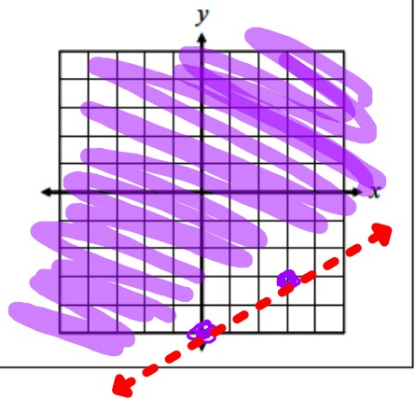
- Shade above the line for $>$ or $\geq$ symbols.
- Shade below the line for $<$ or $\leq$ symbols.

Example: $2x - 3y < 15$

$-2x \quad -2x$

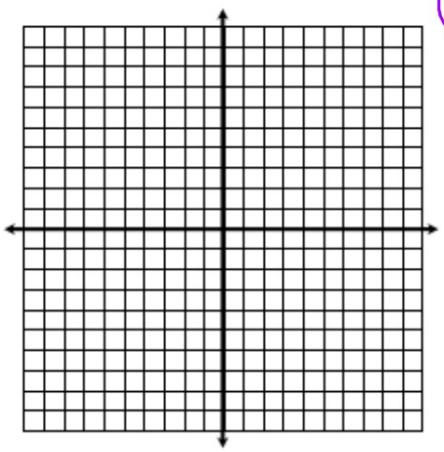
$\frac{-3y}{-3} < \frac{-2x + 15}{-3}$

$y > \frac{2}{3}x - 5$

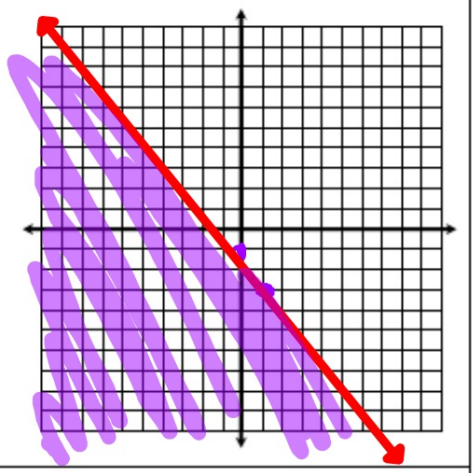


Directions: Graph each linear inequality to show all possible solutions.

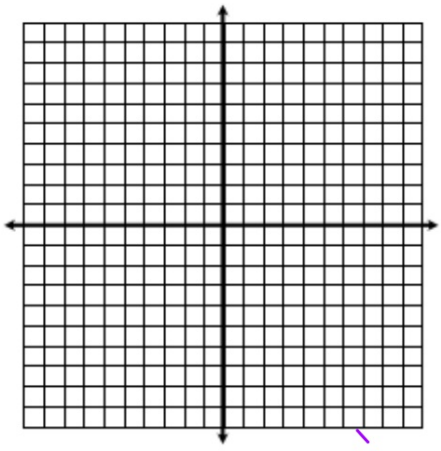
1. $y > \frac{1}{3}x - 5$



2. $y \leq -2x - 1$



3. $5x - 2y > 12$

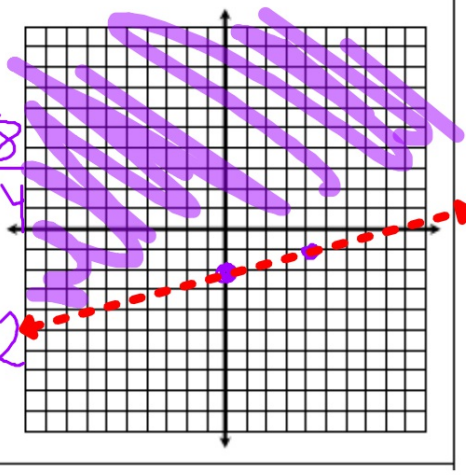


4. $x - 4y < 8$

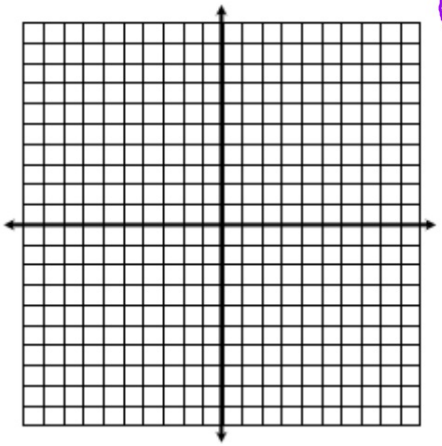
$-x \quad -x$

$\frac{-4y}{-4} < \frac{-x+8}{-4} \quad -4 \quad -4$

$y > \frac{1}{4}x - 2$



5. $x - y \geq 8$

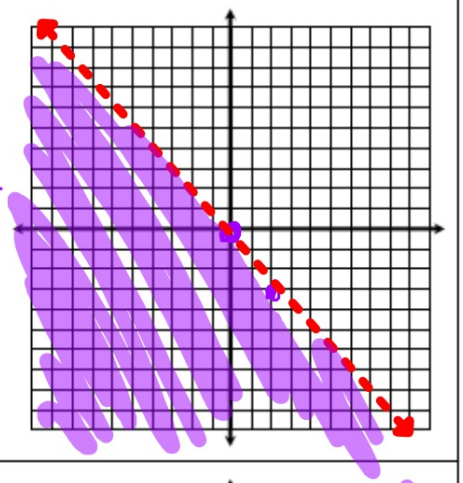


6. $3x + 2y < 0$

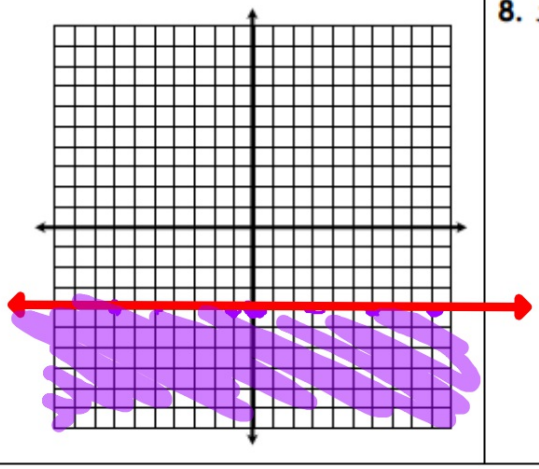
$-3x \quad -3x$

$\frac{2y}{2} < \frac{-3x}{2}$

$y < -\frac{3}{2}x$



7. $y \leq -4$



8. $x > 7$