PreCalculus 11 Date _____

Unit 8: Systems of Equations; Linear & Quadratic Inequalities

8.4 Linear Inequalities in Two Variables

Recall – Linear Inequalities in One Variable

Solve $2x + 5 > 3x - 8$

Linear Inequalities in 2 Variables:

- Describes a region in the Cartesian (coordinate) plan.
- An ordered pair (x, y) is a solution if it satisfies the inequality when substituted in. (there are an infinite number of these points, hence a solution region)

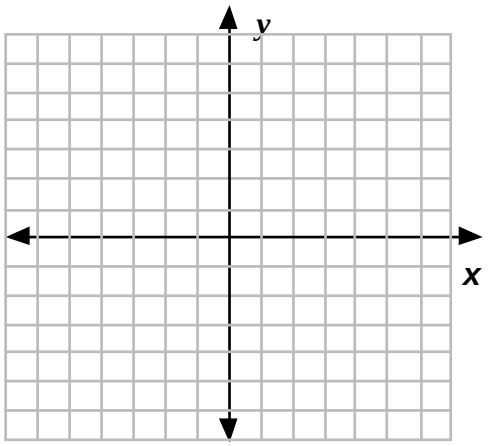
Solution Region:

- **ALL** the points in the Cartesian (coordinate) plane that satisfy the two variable inequality.
- The solution set.

Boundary:

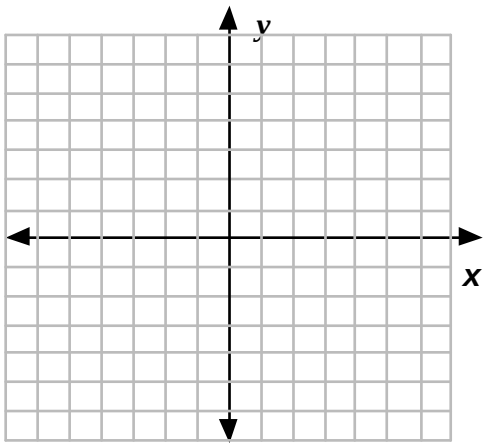
- Line or curve that separates the Cartesian (coordinate) plane into 2 regions with the solution region being one of those two.
- Solid boundary for $\leq$ or $\geq$ - the boundary **IS** part of the solution region
- Dashed boundary for $<$ or $>$ - the boundary is **NOT** part of the solution region

ex. Graph $2x + 3y \geq 6$



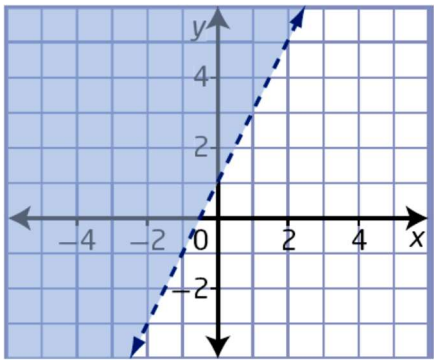
Is $(-2, 4)$ part of the solution?

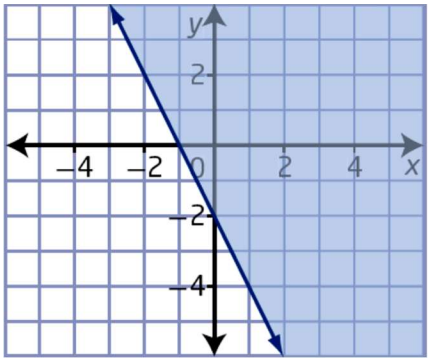
ex. Graph $10x - 5y > 0$



Shortcut?

ex. Write an inequality for each graph below:





ex. Suppose you are constructing a tabletop using an aluminum frame and glass top. The most that you can spend on materials is \$50. Laminated safety glass costs \$60/m^2, and aluminum costs \$1.75/ft. Find all possible combinations of materials sufficient to make the tabletop.

Practice: pg. 472/ # 1bc, 2bc, 3, 4, 5(sketch viewing window), 9, 13, 15