

Unit 2 Lesson 21: Graphing Linear Inequalities in Two Variables (Part 1)

1 Math Talk: Less Than, Equal to, or More Than 12? (Warm up)

Student Task Statement

Here is an expression: $2x + 3y$.

Decide if the values in each ordered pair, (x, y) , make the value of the expression less than, greater than, or equal to 12.

$(0, 5)$

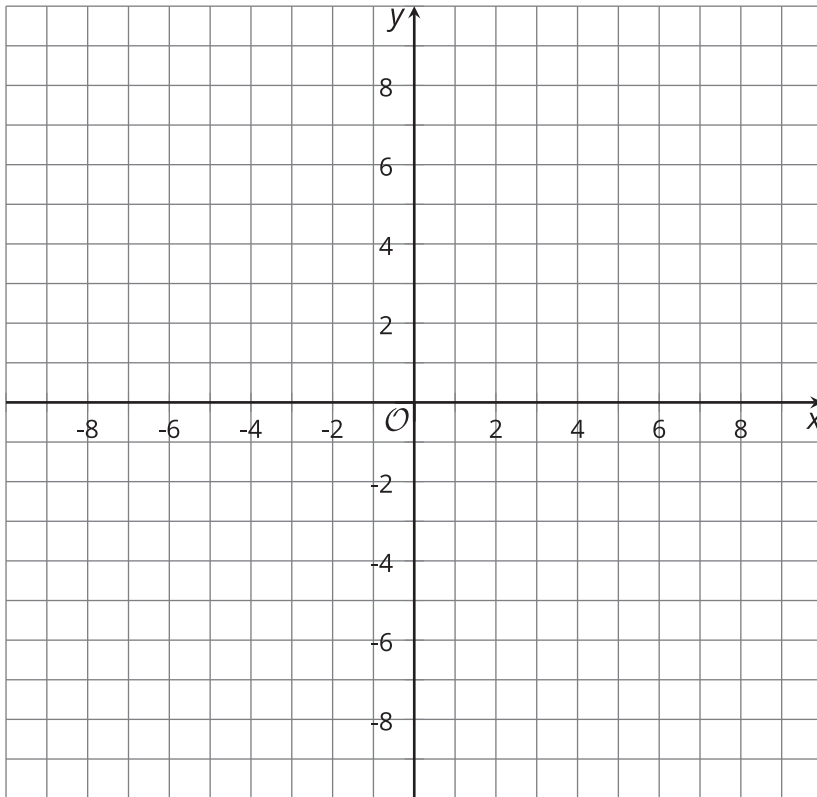
$(6, 0)$

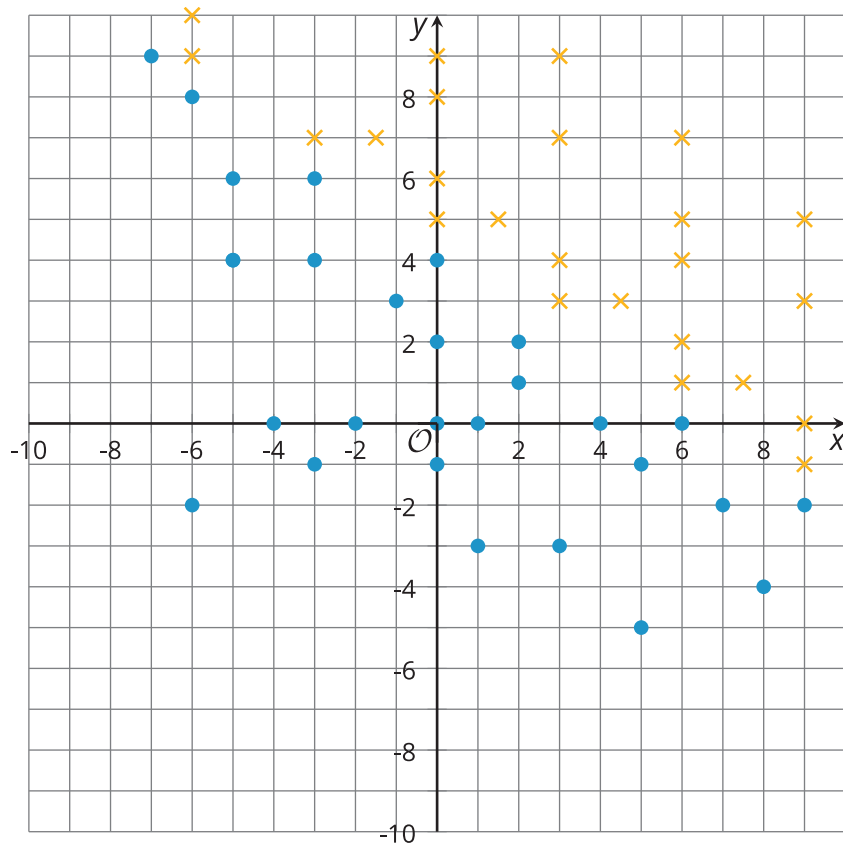
$(-1, -1)$

$(-5, 10)$

2 Solutions and Not Solutions

Images for Launch



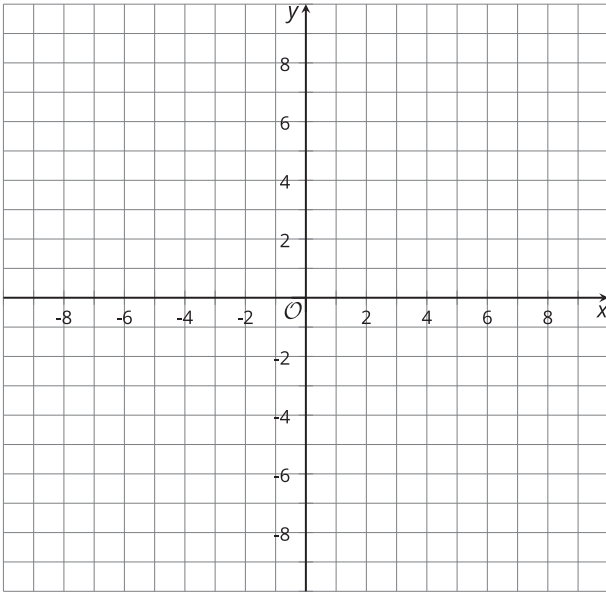


Student Task Statement

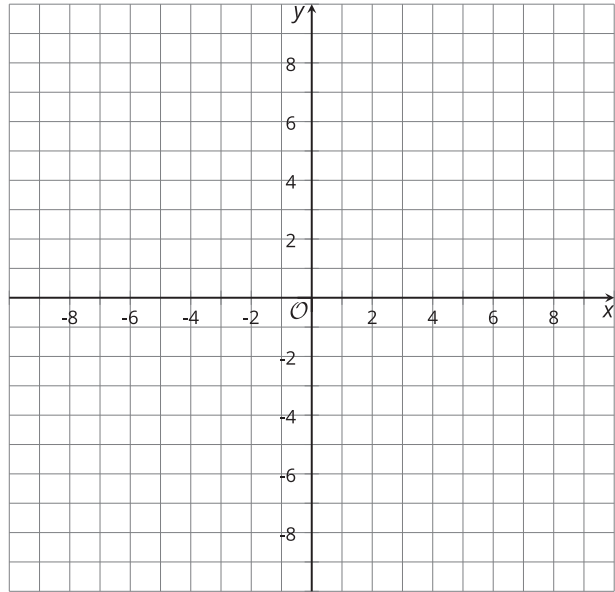
Here are four inequalities. Study each inequality assigned to your group and work with your group to:

- Find some coordinate pairs that represent solutions to the inequality and some coordinate pairs that do not represent solutions.
- Plot both sets of points. Either use two different colors or two different symbols like X and O.
- Plot enough points until you start to see the region that contains solutions and the region that contains non-solutions. Look for a pattern describing the region where solutions are plotted.

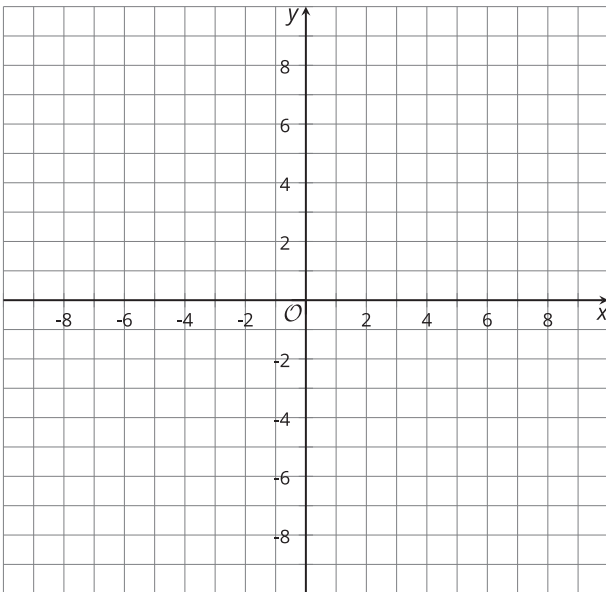
$$x \geq y$$



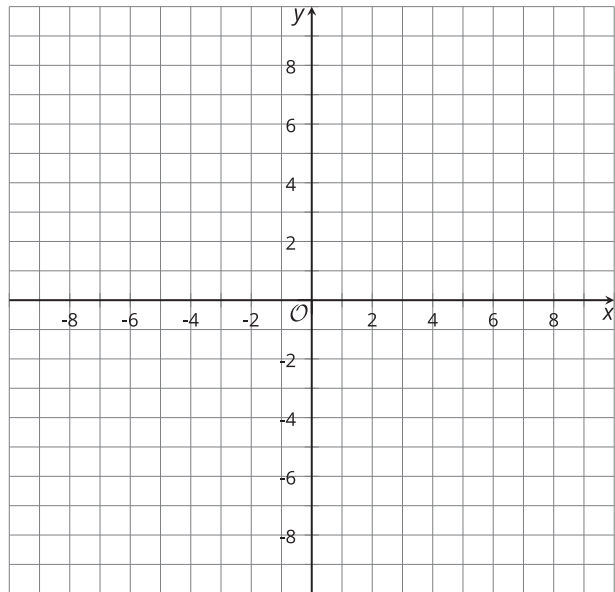
$$-2y \geq -4$$



$$3x < 0$$

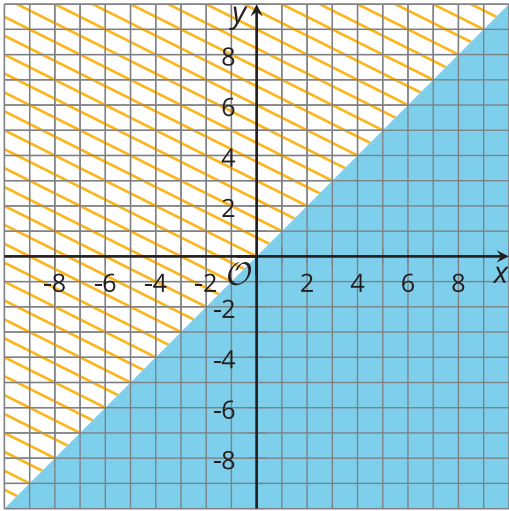


$$x + y > 10$$

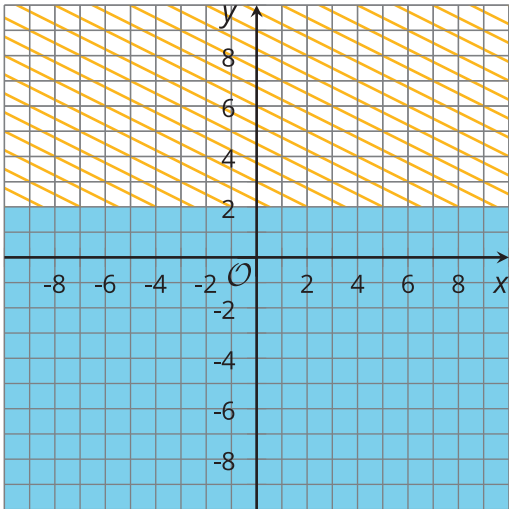


Activity Synthesis

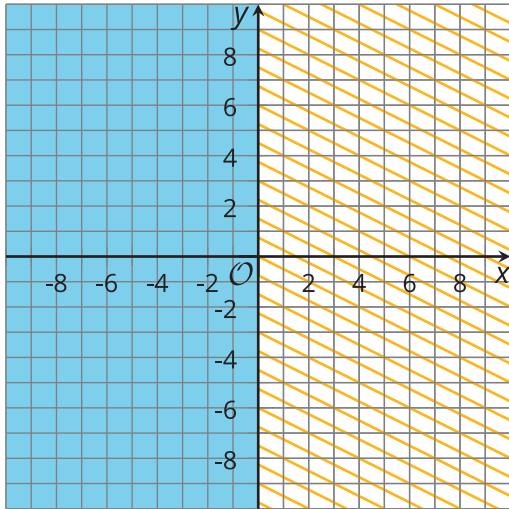
$$x \geq y$$



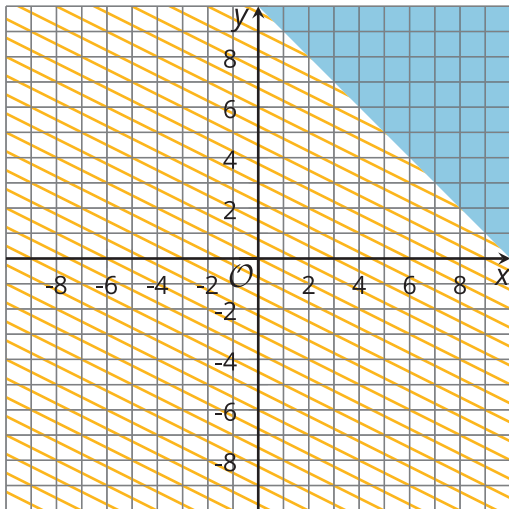
$$-2y \geq -4$$



$$3x < 0$$

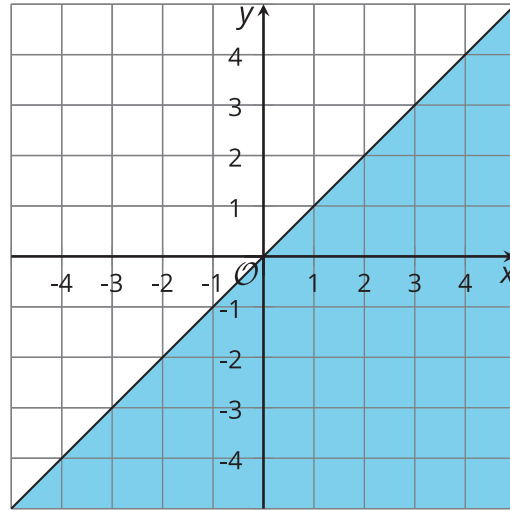
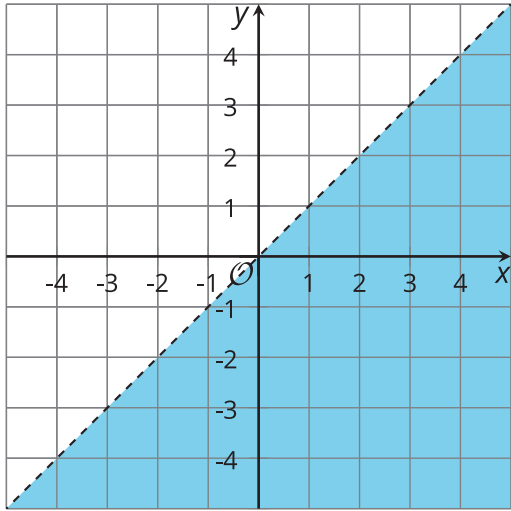


$$x + y > 10$$



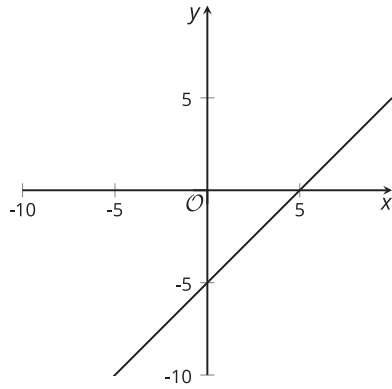
3 Sketching Solutions to Inequalities

Images for Launch



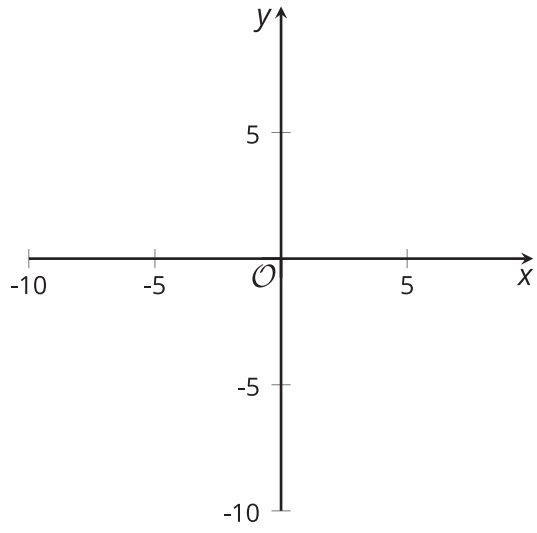
Student Task Statement

1. Here is a graph that represents solutions to the equation $x - y = 5$.

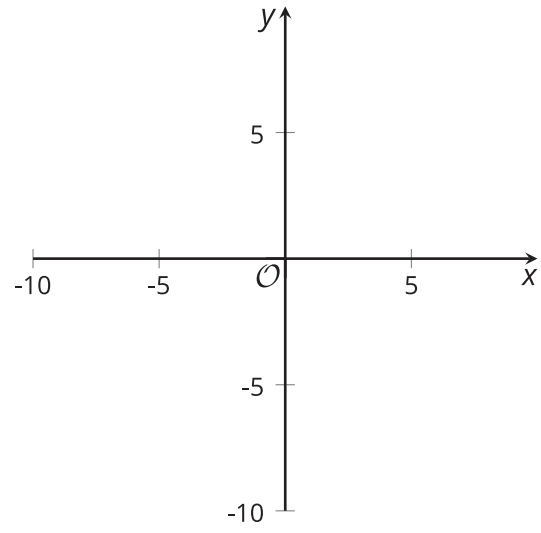


Sketch 4 quick graphs representing the solutions to each of these inequalities:

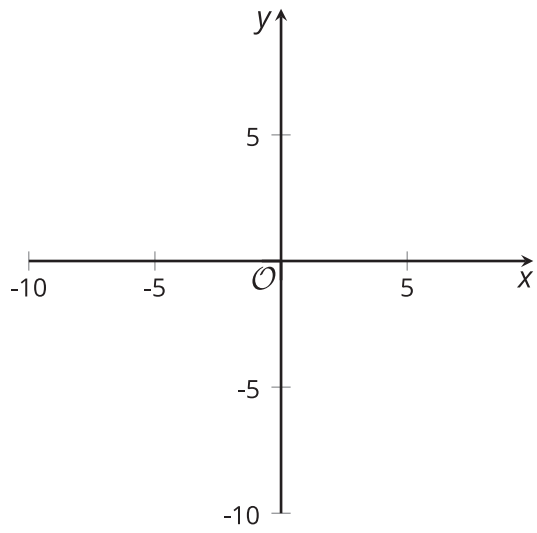
$$x - y < 5$$



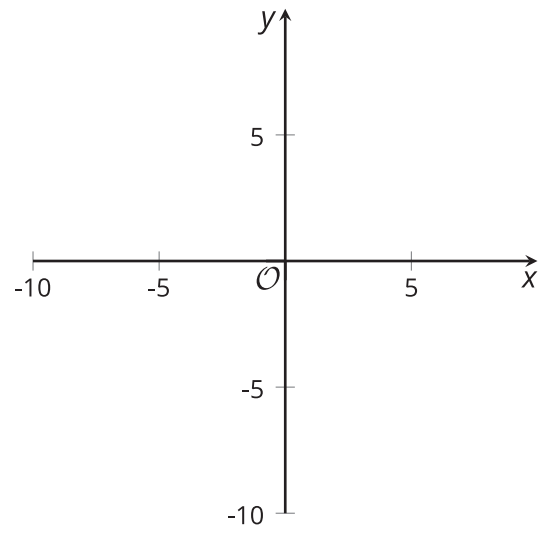
$$x - y \leq 5$$



$$x - y > 5$$

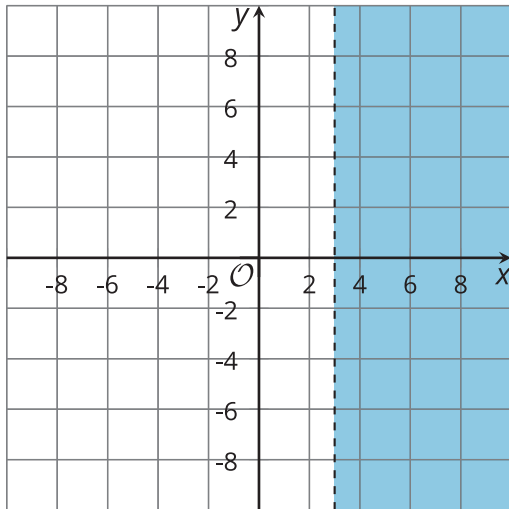


$$x - y \geq 5$$

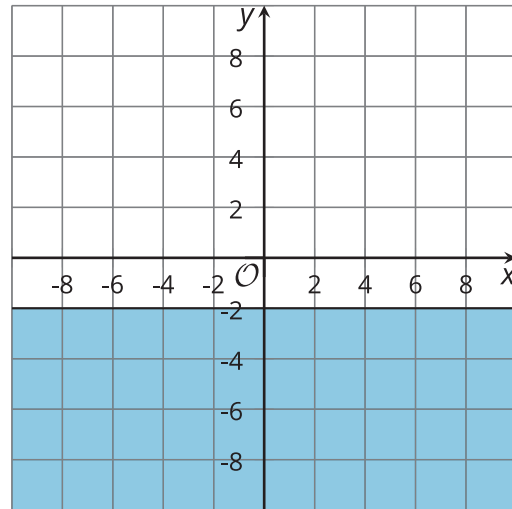


2. For each graph, write an inequality whose solutions are represented by the shaded part of the graph.

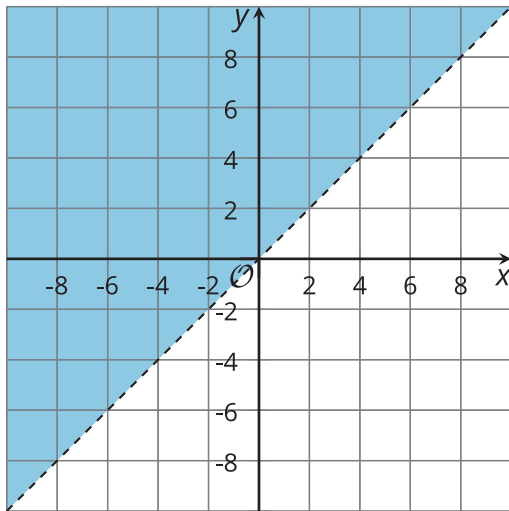
A



B



C



D

