

## Lesson 3.2: Creating Shapes on the Coordinate Plane

### Targets:

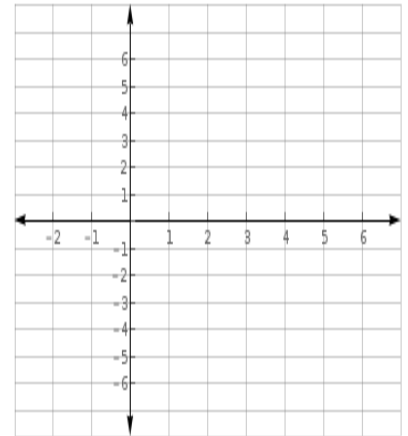
1. I understand how to write a system of equations or inequalities to represent a shape on a coordinate plane.

### Warm Up

Graph all three equations on the same coordinate plane.

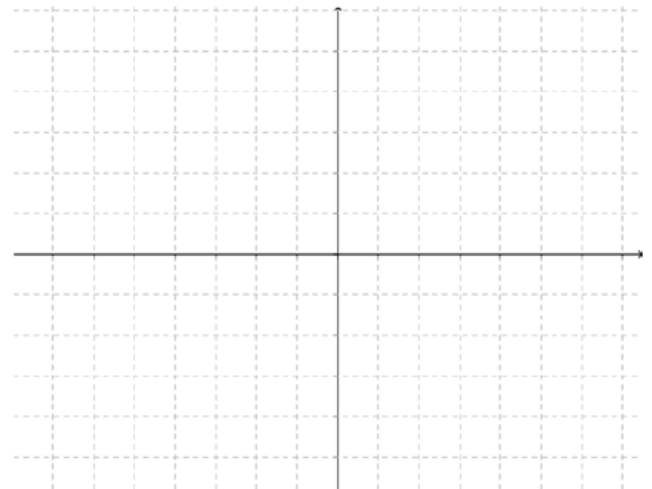
- a.  $y = -2x + 4$
- b.  $y = 3x - 6$
- c.  $y = \frac{1}{2}x + 4$

- d. Find the triangle that was created by the intersection of the three equations and name it  $\triangle ABC$ .



### Practice 1

Draw the triangular region in the plane given by the triangle with vertices  $(0,0)$ ,  $(1,3)$ , and  $(2,1)$ . Can we write a set of equations that describes this region?



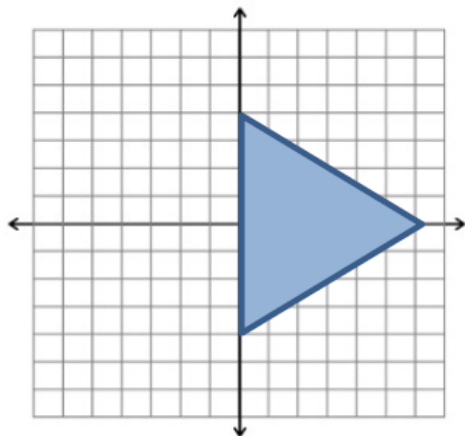
### Practice 2: Khan Academy Activity

We will also be using inequalities to help us describe shapes on a coordinate plane, so let's make sure we review how to graph inequalities.

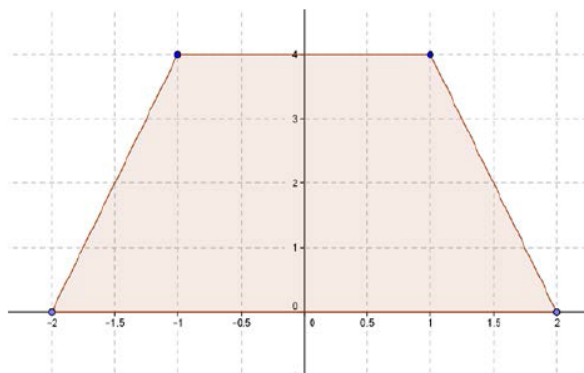
1. Sign in to Khan Academy
2. Complete the Activity: "[Graphs of Inequalities in Two Variables](#)"

### Practice 3

1. Given the triangular region shown, describe this region with a system of inequalities.



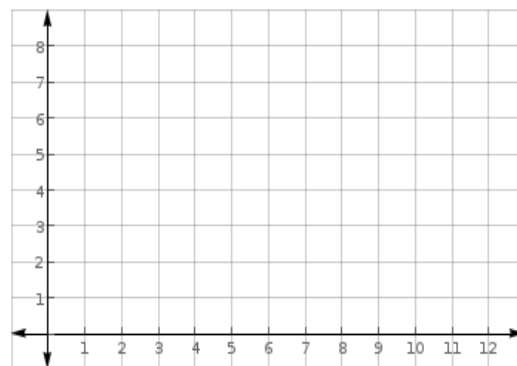
2. Given the trapezoid with vertices  $(-2,0)$ ,  $(-1,4)$ ,  $(1,4)$ , and  $(2,0)$ , describe this region with a system of inequalities.



### Practice 4

Jack wants to plant a garden in his backyard. His yard is 120 feet wide and 80 feet long. He wants to plant a garden that is 20 feet by 30 feet.

- Set up a grid for the backyard and place the garden on the grid. Explain why you placed your garden in its place on the grid.
- Write a system of inequalities to describe the garden.



### Exit Ticket

Region  $T$  is shown to the right.

- Write the coordinates of the vertices.
- Write an inequality that describes the region.
- What is the length and width of the figure?  
What is the length of the diagonals?

