

Name \_\_\_\_\_

Date \_\_\_\_\_

**Graphing Linear Inequalities as a Half-Plane - Step-by-Step Lesson**

Graph this inequality completely with shading:

$$y < -6$$

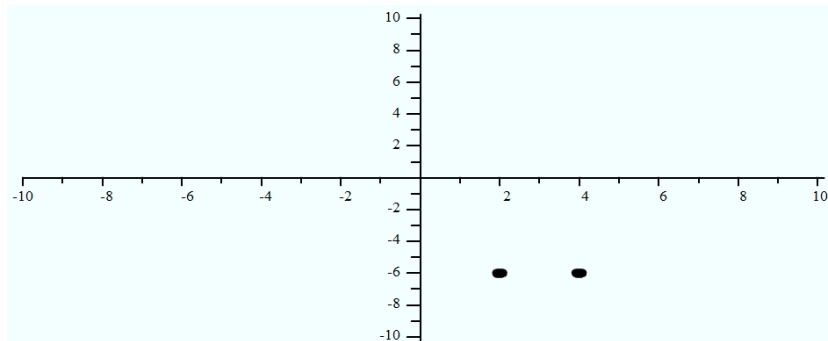
**Explanation:**

The graph of  $y < -6$  is a horizontal line.

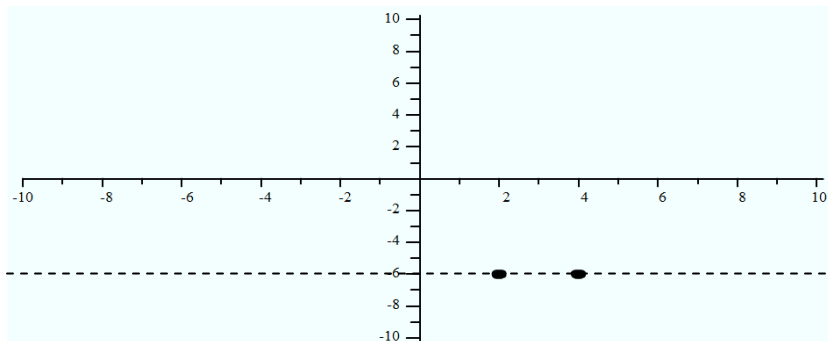
Every  $y$ -value is  $-6$ , including the  $y$ -intercept.

Start by graphing the line  $y = -6$ .

First, plot with a  $y$ -value of  $-6$ , such as  $(2, -6)$  and  $(4, -6)$ .



Now connect two points. The inequality uses the symbol  $<$ , so be sure to draw a dotted line.



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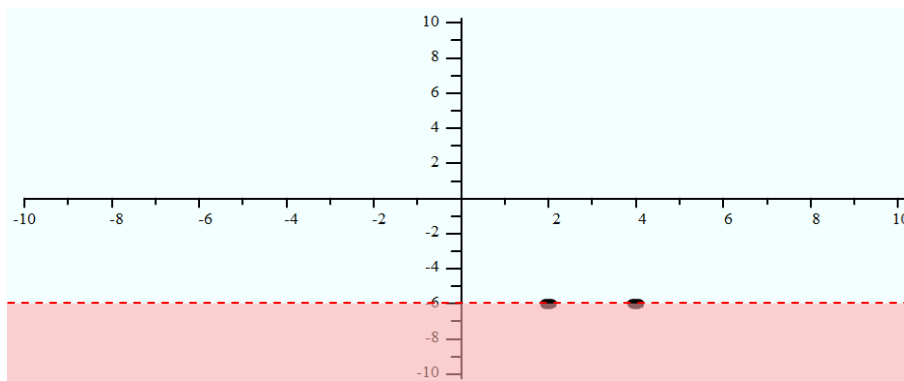
Next, we need to figure out which region to shade. When inequalities start with  $y <$  or  $y \leq$ , you should shade below the line you have created.

Or you could try a test point, such as  $(0, 0)$ :

$$y < -6$$

$$0 < -6 \quad \text{Plug in } y = 0; \text{ x is not used}$$

The statement is false, so you should shade the region that does not contain  $(0,0)$ . Shade the region below the line.



You could remember it as, if you are lesser than something, the shade is below you. If you are greater than a value, the shade is above you.

