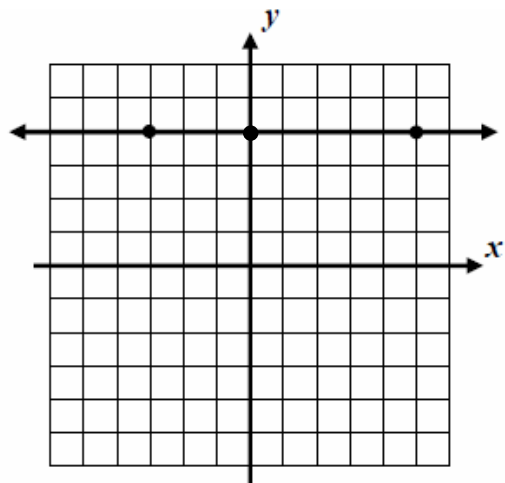


## Algebra RH

**Essential Question:** How do we graph horizontal and vertical lines?

**Do Now:** Pictured below is the graph of a horizontal line and a vertical line.

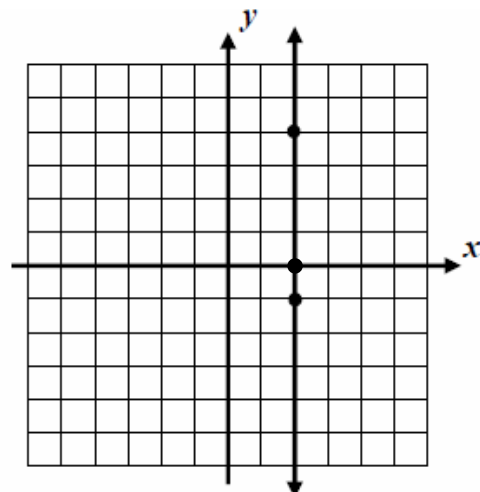


### **HORIZONTAL LINE**

a) Name three points on the line.

( , ) ( , ) ( , )

b) What do these three points have in common?



### **VERTICAL LINE**

a) Name three points on the line.

( , ) ( , ) ( , )

b) What do these three points have in common?

### Equation for a Horizontal Line

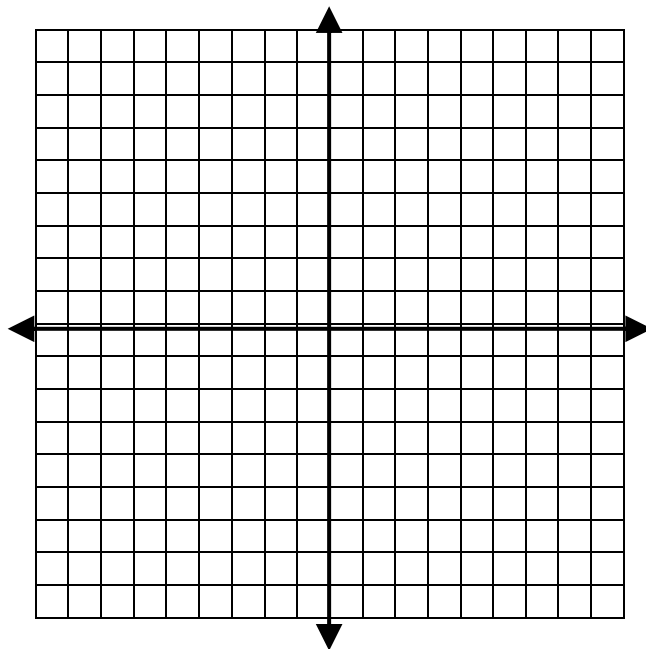
The equation of a horizontal line is  $y = b$ , where  $b$  is any real number.

Example:  $y = 2$

The  $y$ -value for the points that make up this equation is always 2 regardless of the  $x$ -value.

On the same coordinate plane:

- (A) Graph  $y = 2$
- (B) Graph  $y = -4$
- (C) Graph  $y = -1.5$



## Equation for a Vertical Line

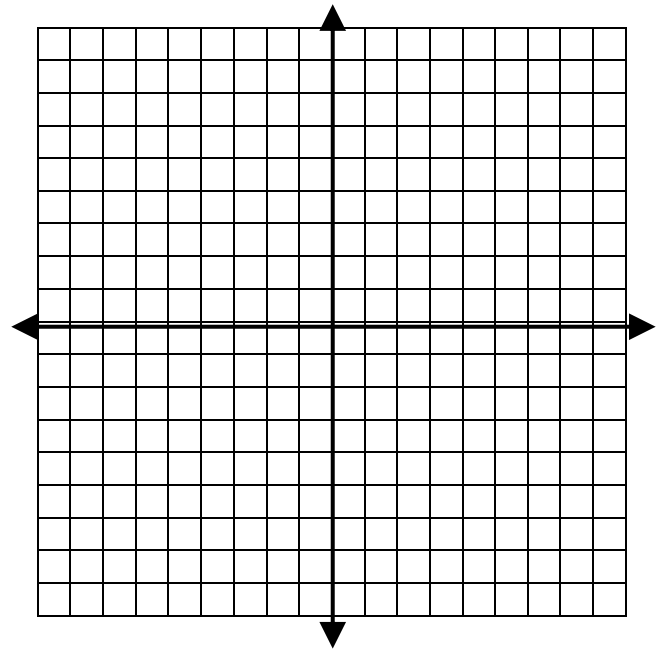
The equation of a vertical line is  $x = a$ , where  $a$  is any real number.

Example:  $x = 2$

The  $x$ -value for the points that make up this equation is always 2 regardless of the  $y$ -value.

On the same coordinate plane:

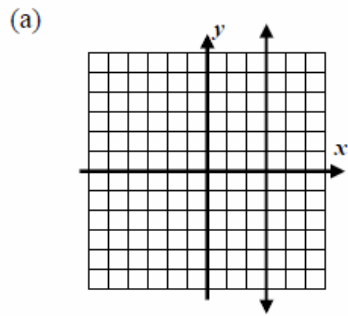
- (A) Graph  $x = 2$
- (B) Graph  $x = -6$
- (C) Graph  $x = -1$



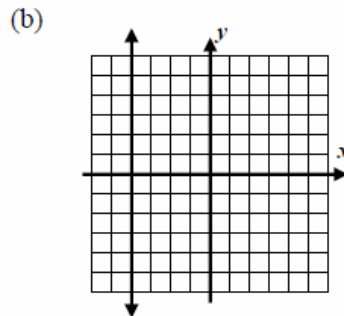
What is the equation of the line that represents the  $x$ -axis?

What is the equation of the line that represents the  $y$ -axis?

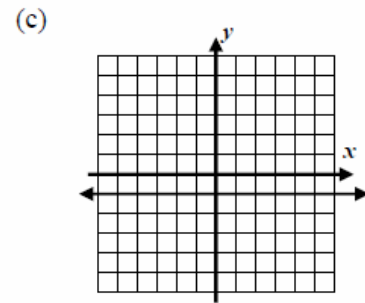
For each of the following, give the equation of the line shown or described.



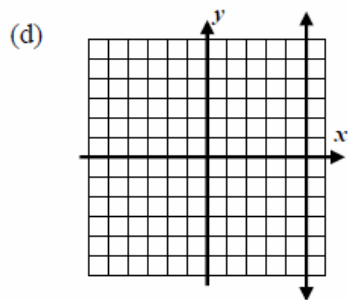
EQUATION: \_\_\_\_\_



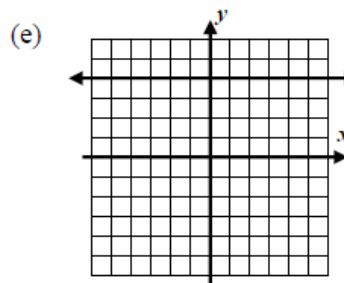
EQUATION: \_\_\_\_\_



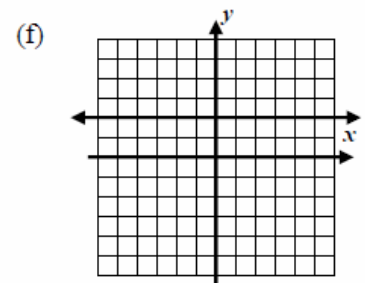
EQUATION: \_\_\_\_\_



EQUATION: \_\_\_\_\_



EQUATION: \_\_\_\_\_



EQUATION: \_\_\_\_\_

(g) The equation of a vertical line passing through the point  $(-4, 5)$ .

(h) The equation of a horizontal line passing through the point  $(3, 2)$ .

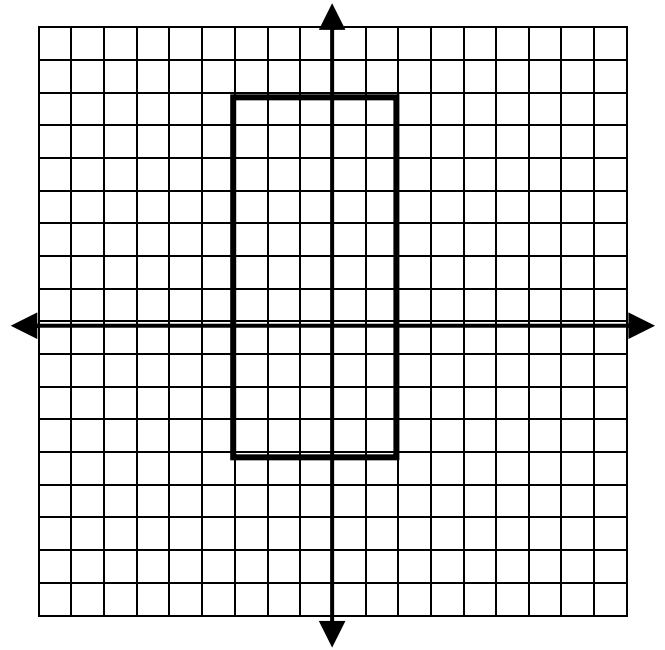
### Geometric Figures on the Coordinate Plane

1) a) Name this figure and explain your reasoning.

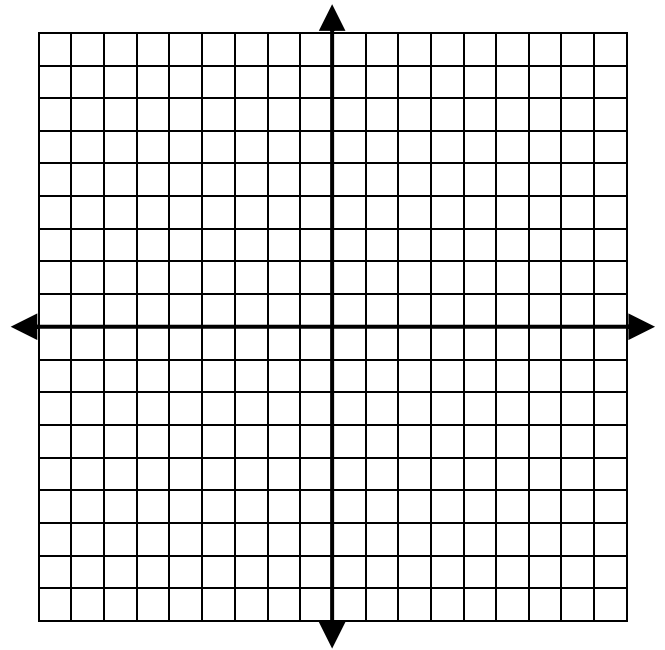
b) Find its perimeter.

c) Find its area.

d) What are the equations of its boundary lines?



2) Using vertical and horizontal lines, determine the boundary lines of a rectangular figure on the coordinate plane whose area is  $24 \text{ un}^2$ .



3) Sketch the region bounded by the three lines whose equations are given below. Label each with its equation. Find the area of the triangular region enclosed by the lines. You may want to use your calculator to create a table of values of the first line.

$$y = 2x - 4$$

$$x = -1$$

$$y = 2$$

