# We will be able to:

1. Graph linear equations by plotting points.
2. Graph linear equations by intercepts.
3. Graph vertical and horizontal lines.
4. Applications of Linear Equations.

# Linear Equation:

A Linear equation in two variable (in Standard Form) looks like this

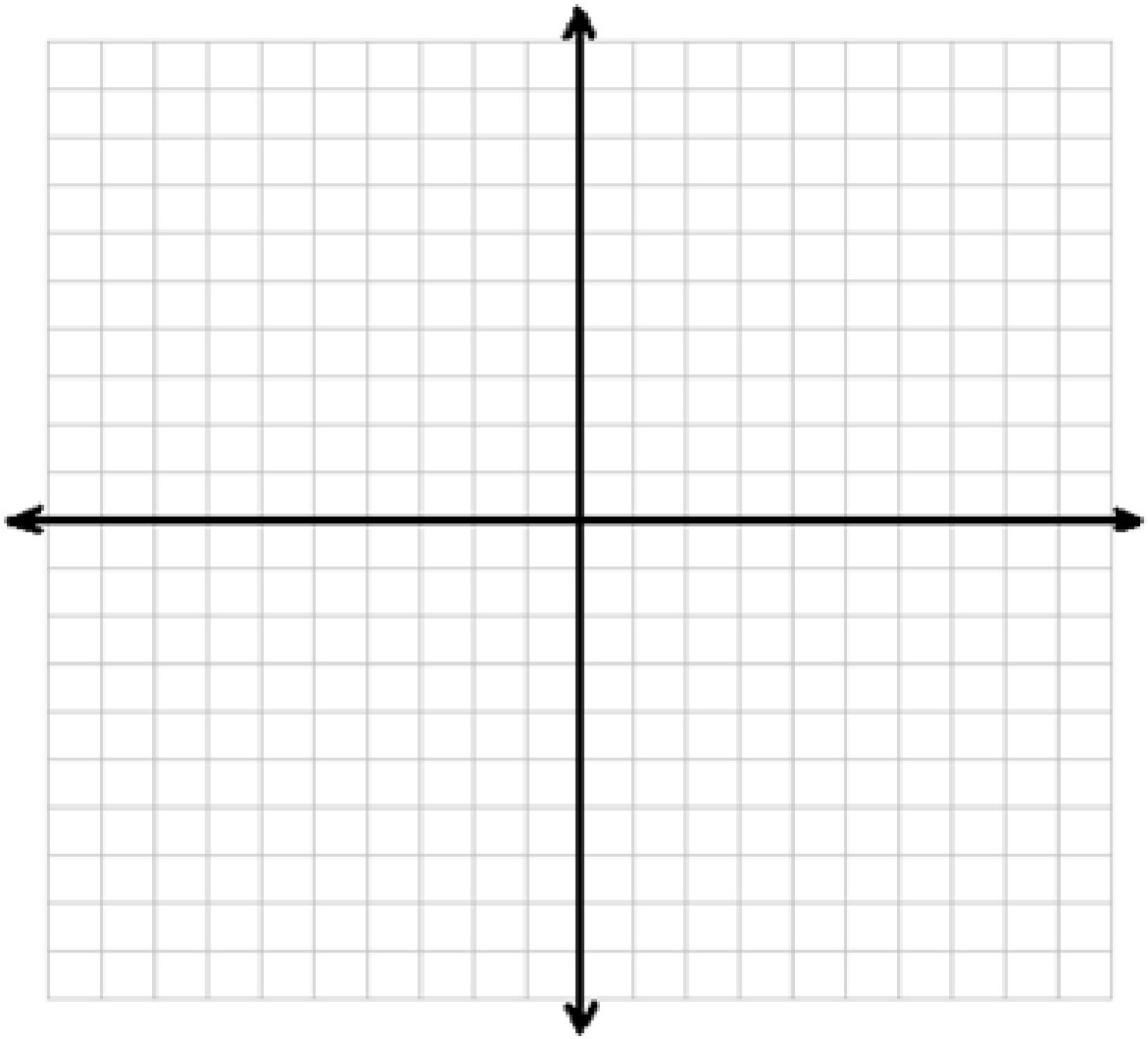
$$Ax + By = C$$

where A, B, and C are real numbers. A and B cannot BOTH be 0.

# Graph by Plotting Points:

## Example 1: $4x + 2y = 6$

| x | y |
|---|---|



# Graph by Intercepts:

We can graph a line by finding the X and Y intercepts. We find each, plot, connect the dots and, voila, we have a line. :)

## Here's how:

X-Intercept: Let y = 0 in the equation and then solve for x. This is your x - intercept.

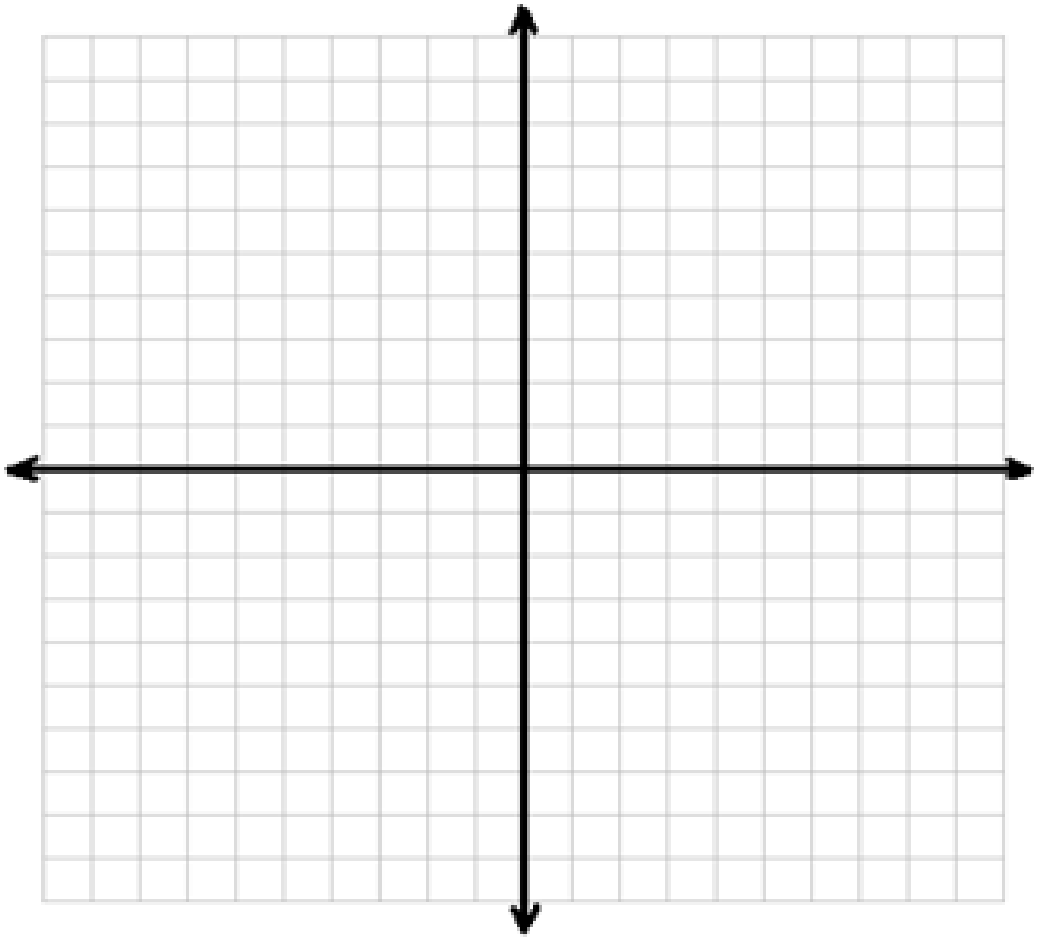
Y- Intercept: Let x = 0 in the equation and then solve for y. This is your y - intercept.

# Graph by Intercepts:

## Example 2: $3x + 2y = 12$

x- int:

y- int:

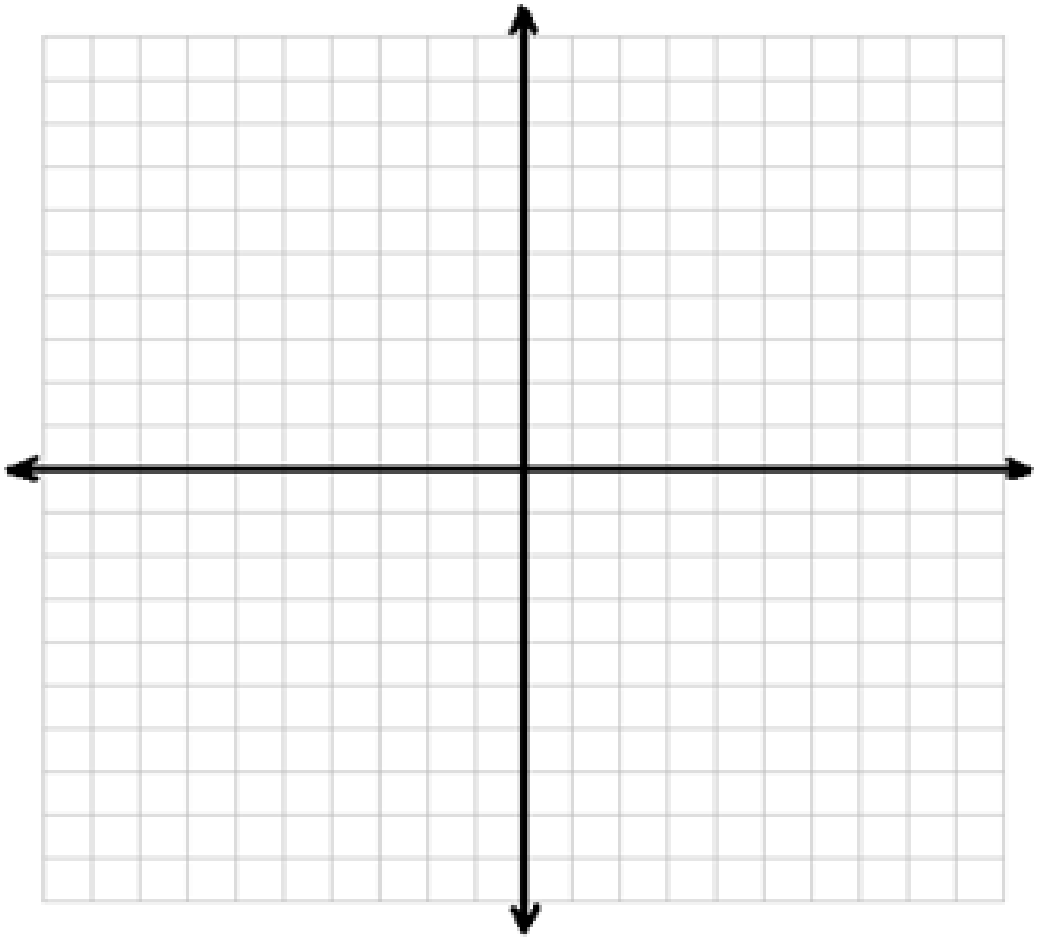


# Graph by Intercepts:

## Example 3: $4x - 5y = 20$

x- int:

y- int:

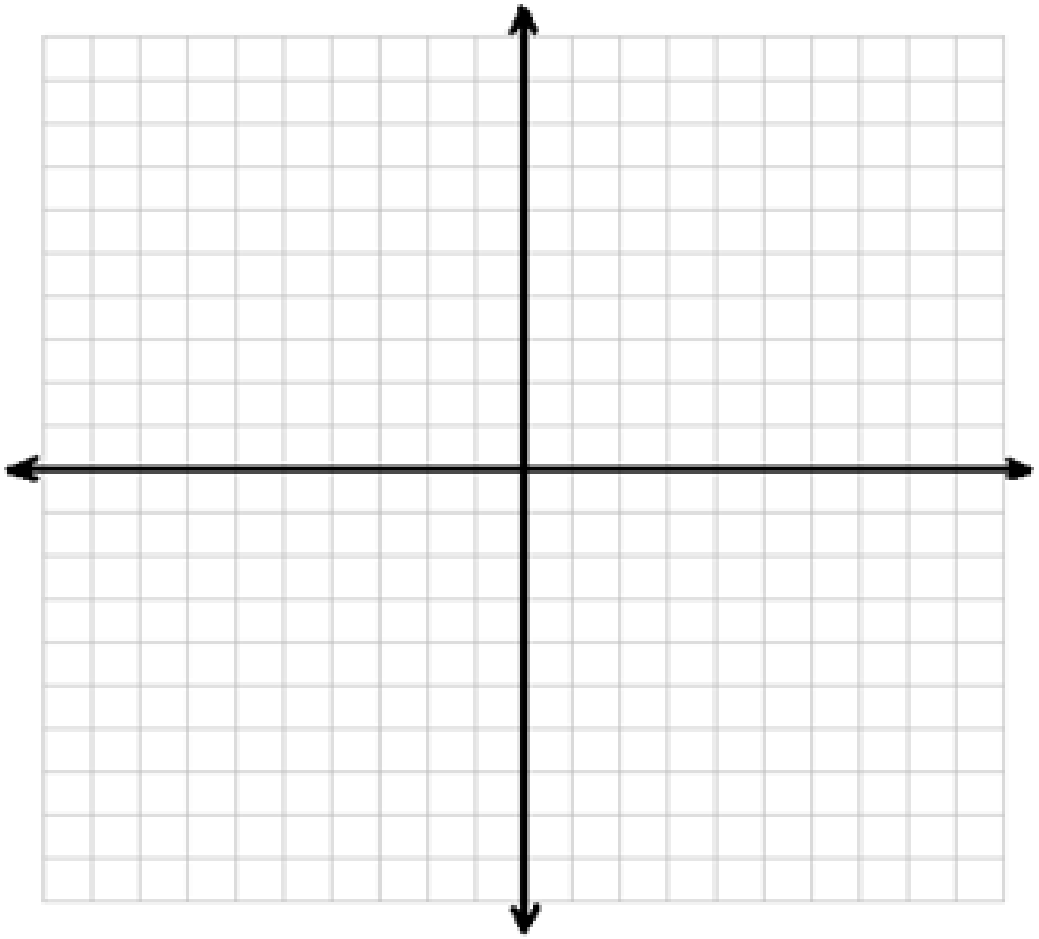


# Graph by Intercepts:

## Example 4: $x + 3y = 0$

x- int:

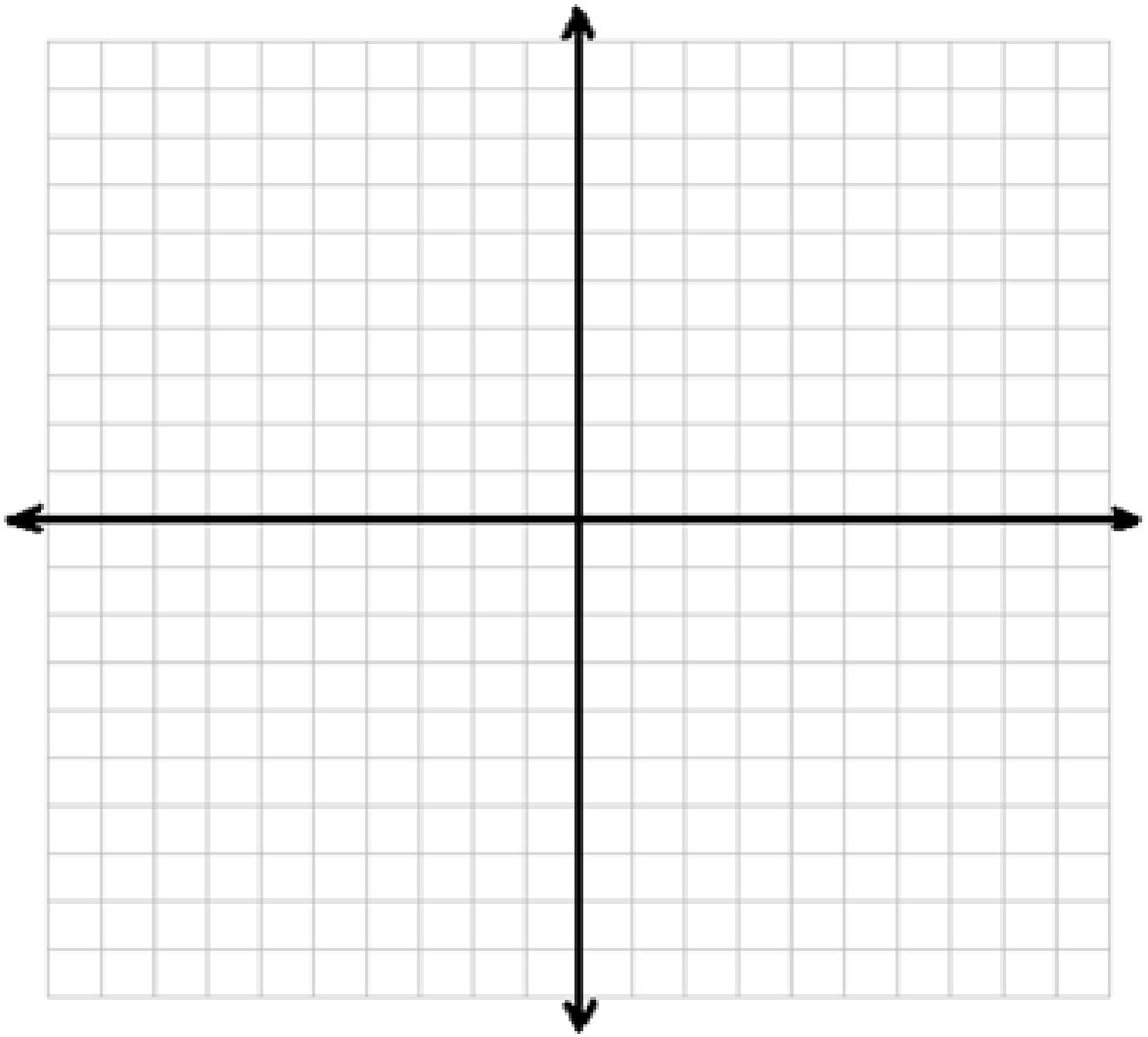
y- int:



# Graph by Plotting Points:

## Example 5: $x = 6$

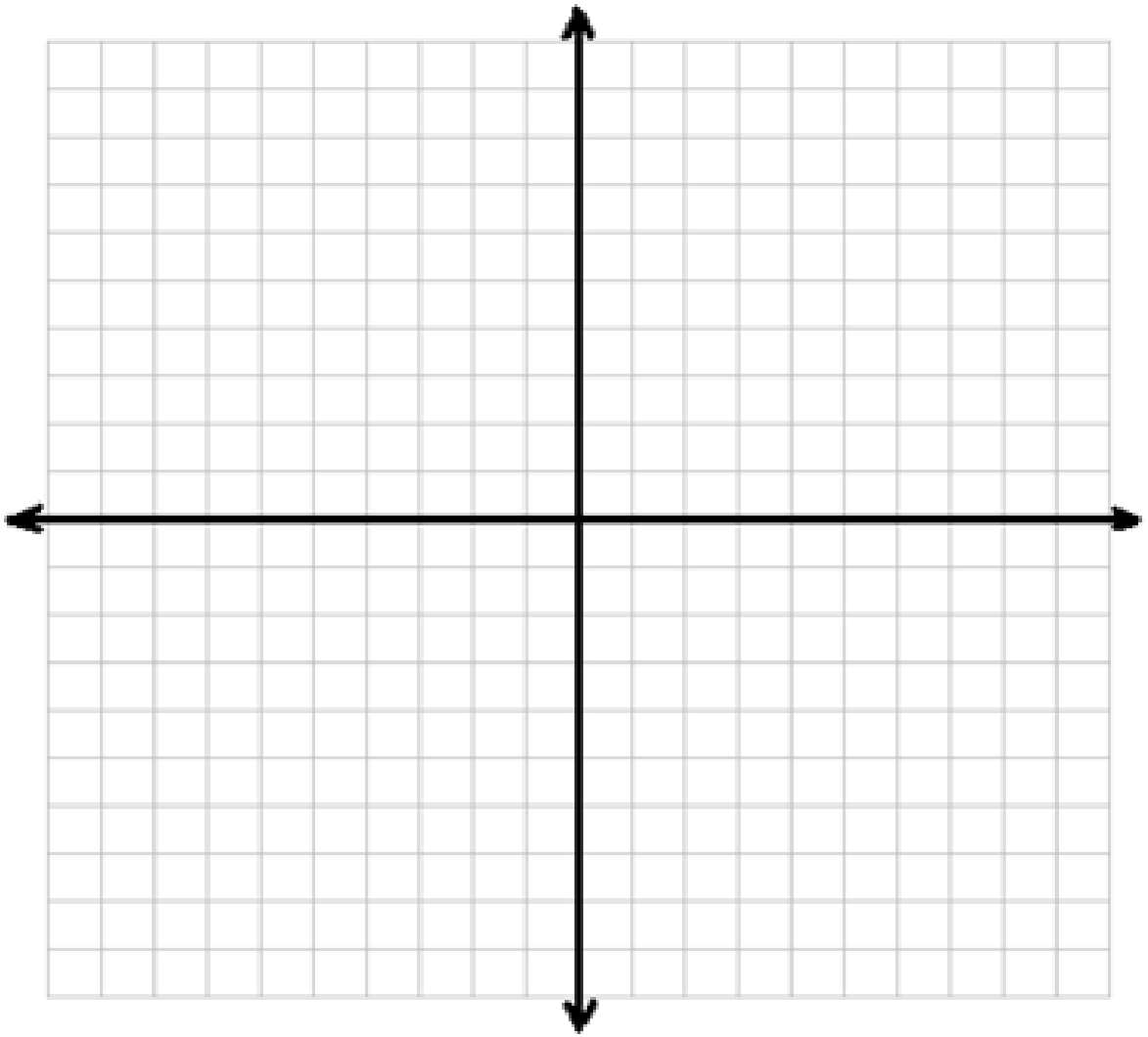
| x | y |
|---|---|



# Graph by Plotting Points:

## Example 6: $y = -2$

| x | y |
|---|---|



A Vertical Line is given by an equation of the form

$$x = a$$

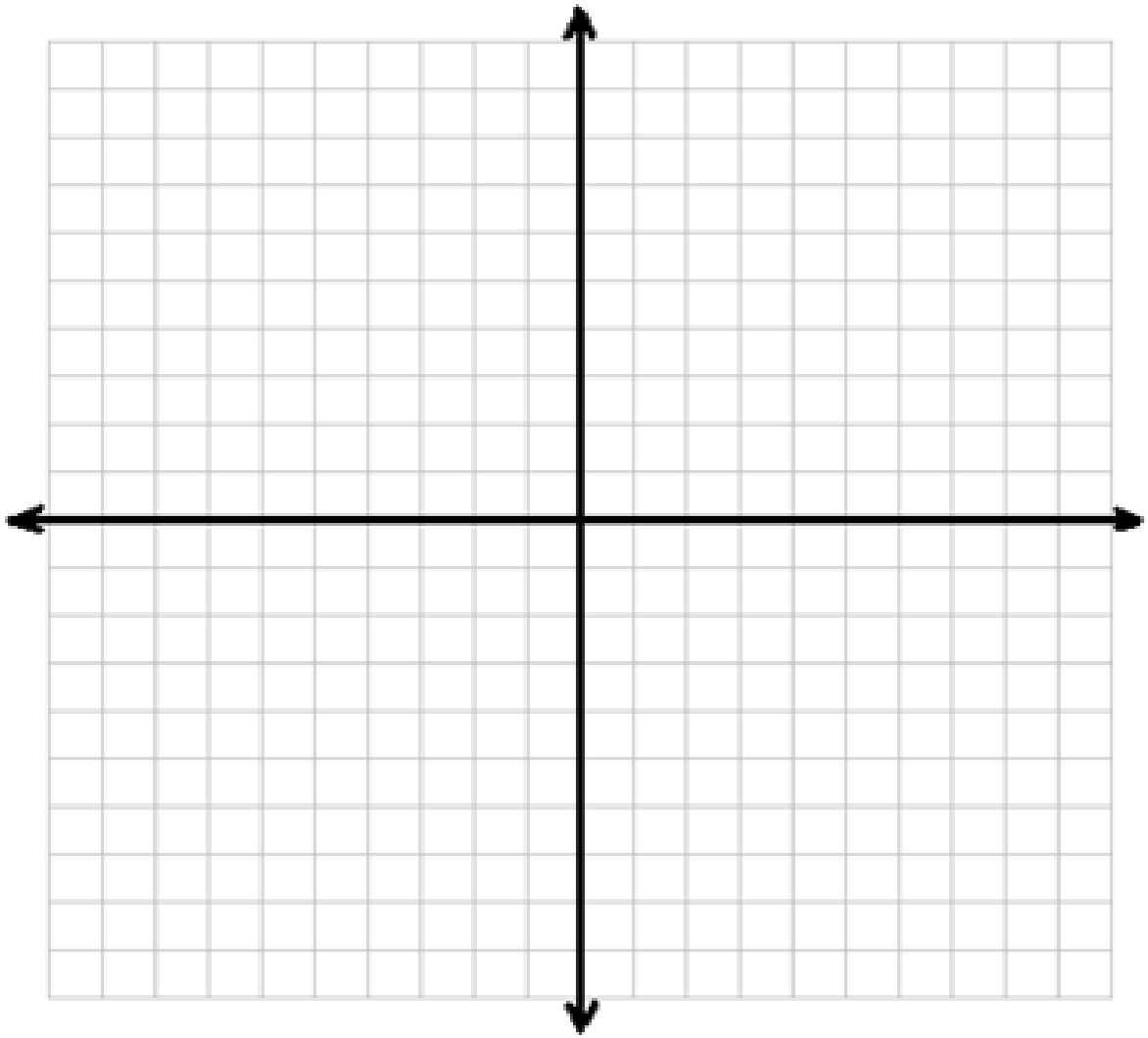
where $a$ is the x – intercept.

A Horizontal Line is given by an equation of the form

$$y = b$$

where $b$ is the y – intercept.

Example 7: Write an equation of a horizontal line that goes through the point (5,2) and graph.



## Definition:

A **Linear Function** is a function of the form

$$f(x) = mx + b$$

where $m$ and $b$ are real numbers. The graph of a linear function is called a *line*.

# Applications:

**Example 8:** Tony's weekly salary at Apple Chevrolet is 0.75% of his weekly sales plus $450. The linear function

$$S(x) = 0.0075x + 450$$

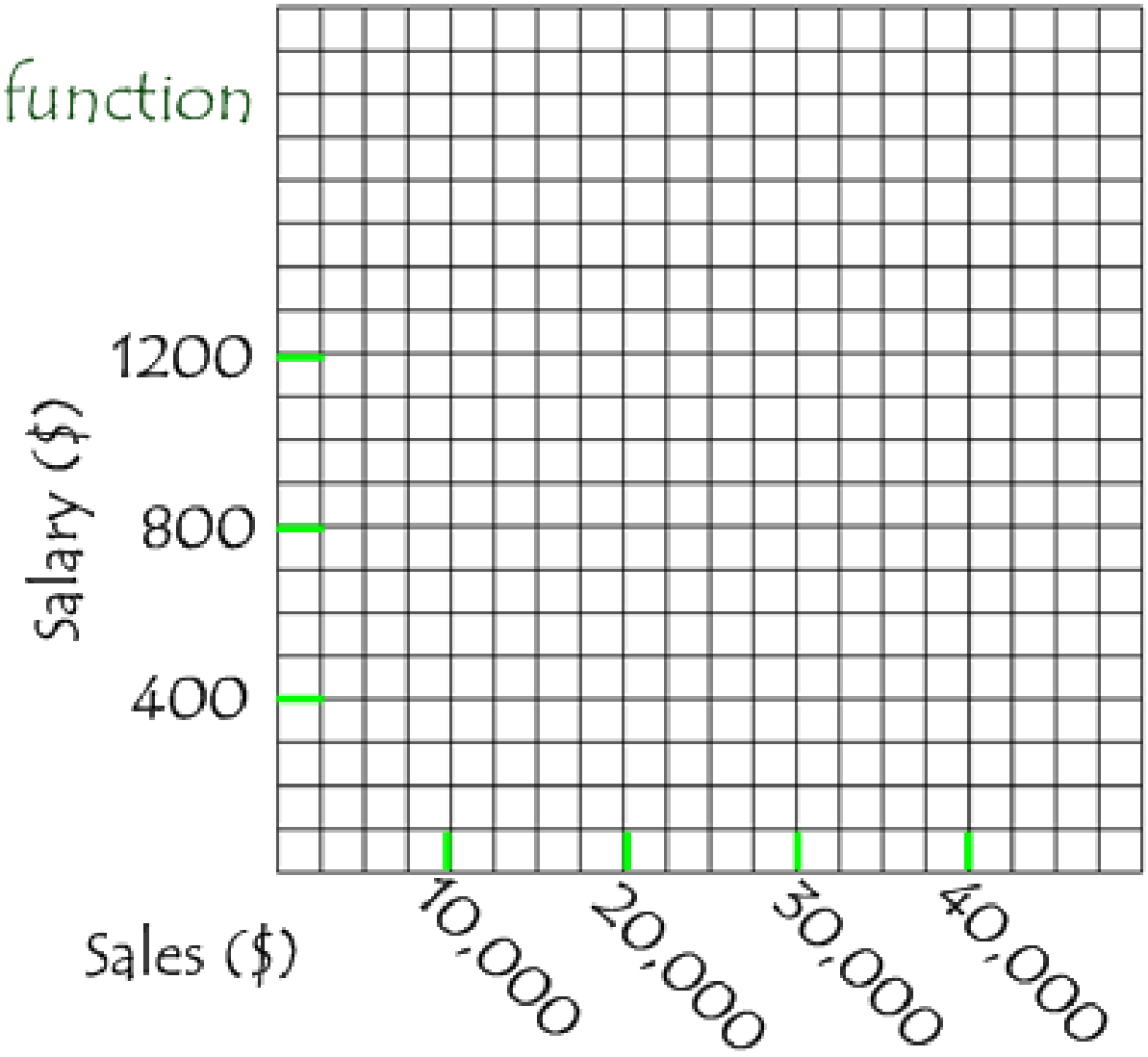
describes Tony's weekly salary, $S$, as a linear function of his weekly sales, $x$.

a.) What is the implied Domain?

## Example 8: Tony's weekly salary at Apple Chevrolet

$$S(x) = 0.0075x + 450$$

b.) Draw a graph of the function



## Example 8: Tony's weekly salary at Apple Chevrolet

$$S(x) = 0.0075x + 450$$

c.) If Tony sells cars worth a total of $42,000 in one week, what is his salary?

d.) If Tony earned $840 one week, what was the value of the cars that he sold?

Homework:

Pg. 196: #'s 4-8 all, 13, 15, 17, 21, 27, 31, 35-49 odds

(18 problems)