

## Chapter 3 - Linear Equations and Functions

**3.2 Objective:** To graph a linear equation in two variables.

### **Agenda**

- 1) New seats!
- 2) In groups- answer HW questions *last night's HW*
- 3) Do Now *p. 104 #1, 3, 13, 15, 21, 25, 27, 33*
  - in groups
  - on board
- 4) **Standard Form** of a Line
  - Graphing with **Intercepts**
- 5) Graphing Two-Variable Equations & Horizontal & Vertical Lines
  - in groups
  - on board
- 6) Practice Problems

*HW: p. 111 #5, 9, 15, 19, 21, 23*

**\*\*Check answers in back. MUST SHOW CHECKS FOR FULL CREDIT**

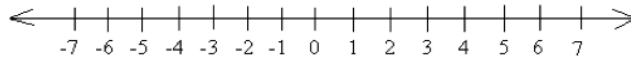
## Chapter 3 - Linear Equations and Functions

### 3.2 Objective: To graph a linear equation in two variables

# DO NOW

SOLUTIONS:

In Ch. 1 and Ch. 2 we represent **solutions** to equations and inequalities with **one variable** on a **number line**:



We represent **solutions** of equations with two variables, **Ordered Pairs**  $(x, y)$ , on two number lines called the **xy coordinate plane**.

1) Label The quadrants according to the definitions below

**Quadrant I:**

Both  $(x, y)$  coordinates are positive  $(+, +)$

**Quadrant II:**

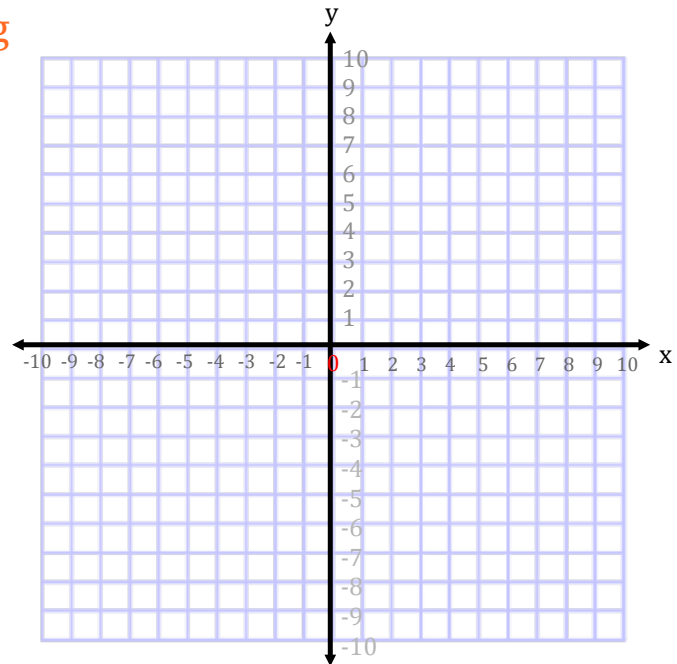
$x$ -coordinate is negative  $(-, +)$   
 $y$ -coordinate is positive

**Quadrant III:**

Both  $(x, y)$  coordinates are negative  $(-, -)$

**Quadrant IV:**

$x$ -coordinate is positive  $(+, -)$   
 $y$ -coordinate is negative



2) Plot the following solutions on the coordinate plane:

$(2, 5)$ ,  $(0, 4)$ ,  $(-4, 2)$ ,  $(-8, 0)$ ,  $(-10, -1)$

3) Decide on an answer (or two) to the following question:

What do you need to make a **line**?

## Standard Form of a Line

Standard Form:  $Ax + By = C$

Example:  $5x + 2y = 10$

Standard form is really useful for: **Graphing with Intercepts**

The **x-intercept** is where...

The **y-intercept** is where...

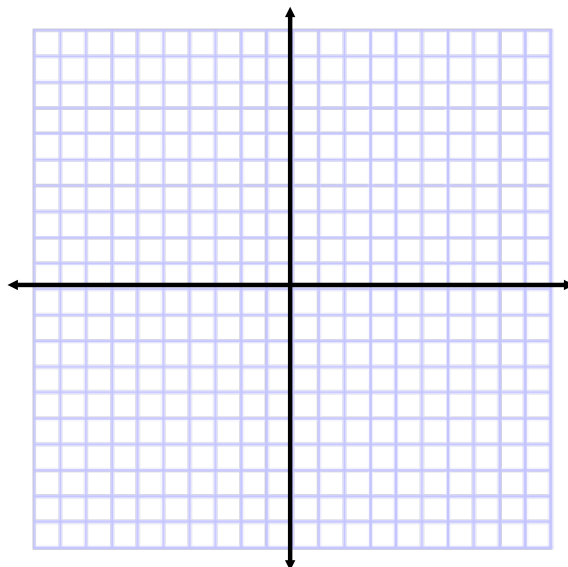
Given the following equation:  $5x + 2y = 10$

**Find the x and y intercepts:**

x intercept: (\_\_\_\_\_, 0)

y intercept (0, \_\_\_\_\_)

**Graph the line using the x and y intercepts.**





## Vertical and Horizontal Lines

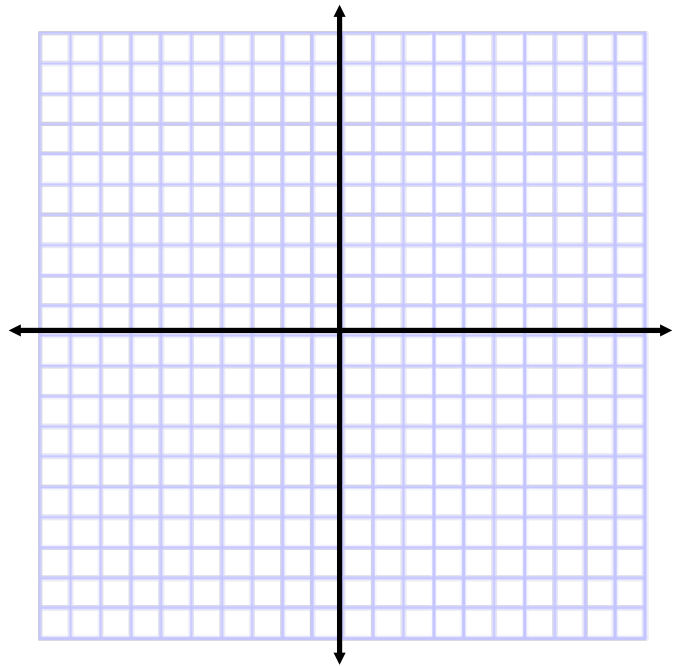
Solve and graph solutions on the coordinate plane.

What if  $A$  or  $B = 0$ ???  $Ax + By = C$

What if  $A = 0$ ?

Example:

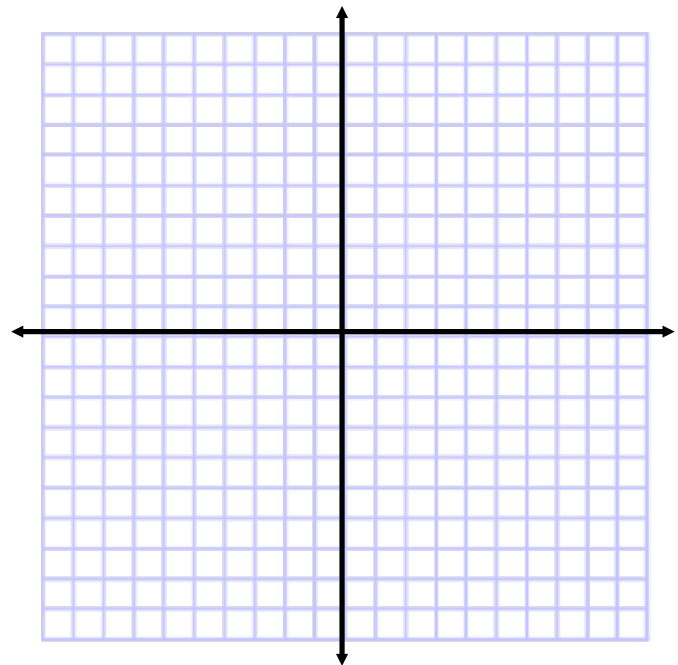
$$0x + 5y = 10$$



What if  $B = 0$ ?

Example:

$$2x + 0y = 10$$

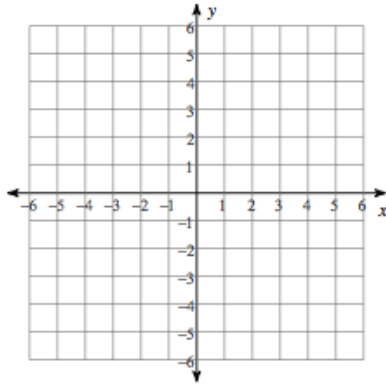


# Practice Problems

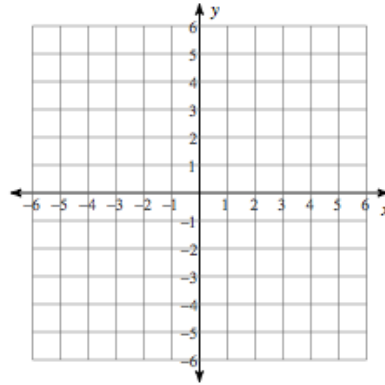
## Graphing Lines

Sketch the graph of each line.

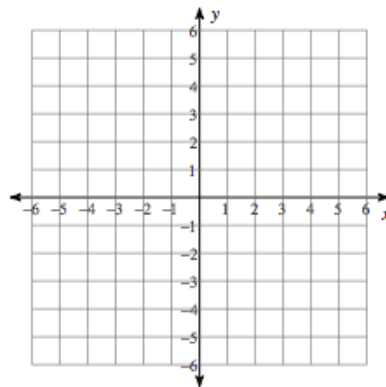
7)  $x + y = 3$



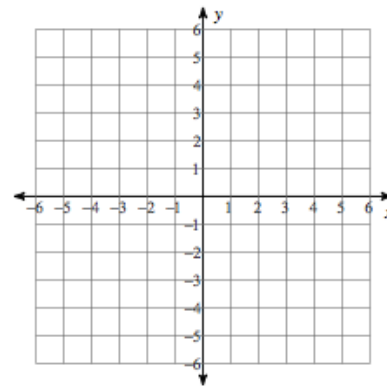
6)  $2x + y = 4$



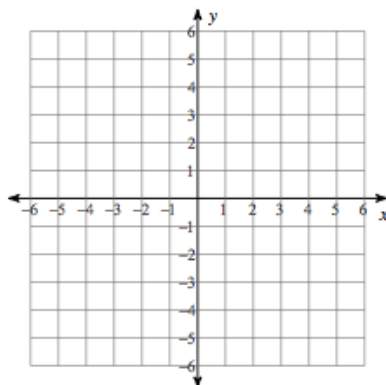
11)  $x + y = -3$



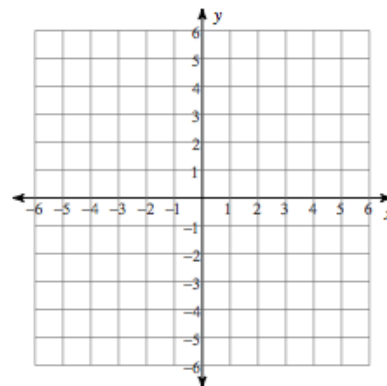
10)  $y = 0$



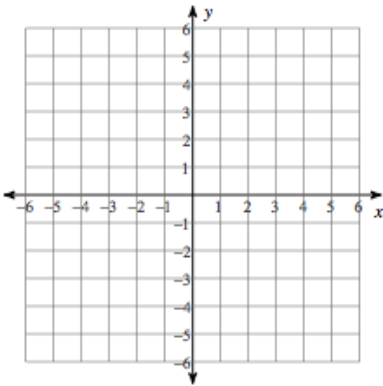
9)  $x - y = 3$



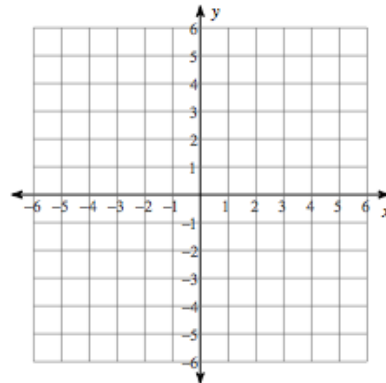
3)  $y = 4$



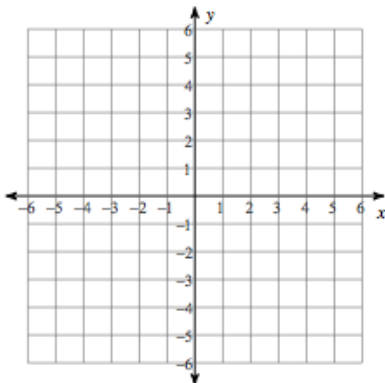
5)  $x = -3$



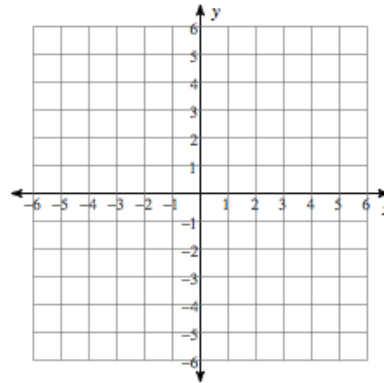
12)  $x + y = -1$



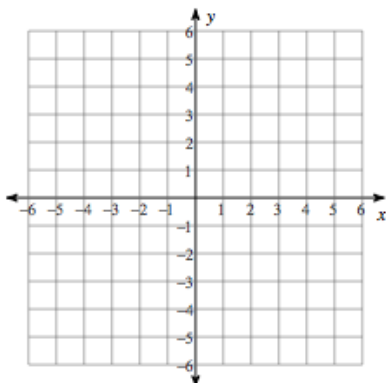
2)  $3x + 5y = -5$



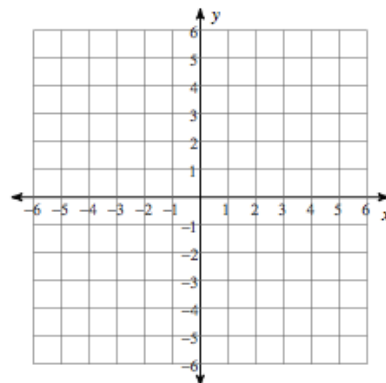
4)  $6x + 5y = 20$



1)  $7x + y = 5$



8)  $10x - 3y = 15$



***HW: p. 111 #5, 9, 15, 19, 21, 23***