Graphing Linear Equations

Method 1: Graphing linear equations by plotting points

1. How to find points on a line

A) Make sure your equation is in slope-intercept form: _____

B) Choose 3 values for x

- Choose easy numbers to work with like ___ , ___ , ___ , or ___ . If the slope is a fraction ,choosing the denominator and negative denominator to be x-values can be helpful to cancel the fraction.

C) Plug your x-values into the equation and solve for ___

Example: y = 2x + 1

If x=0, then _____

If x=1, then _____

If x=2, then _____

X	Y
0	
1	
2	

2. How to graph the line

A) Plot the 3 points on the coordinate plane

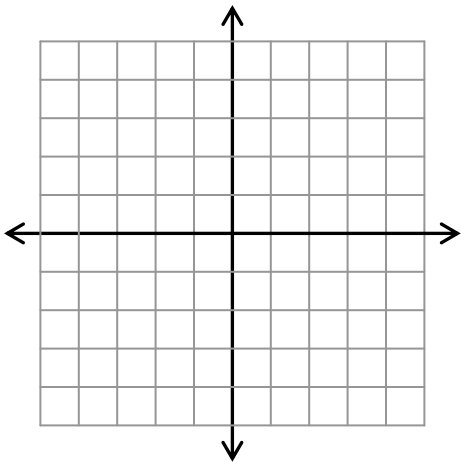
B) Check to be sure the points make a _____ _____ , if they don't check your work for mistakes.

- We use 3 points instead of 2 because any 2 points make a straight line. Using 3 points can show if there is a mistake.

C) Draw a _____ through the 3 points

Example: y = 2x + 1 (Fill in the table, graph the points on the grid, and draw the line)

X	Y
0	
1	
2	



Method 2: Graphing linear equations by plotting points

1. What are the intercepts of a line?

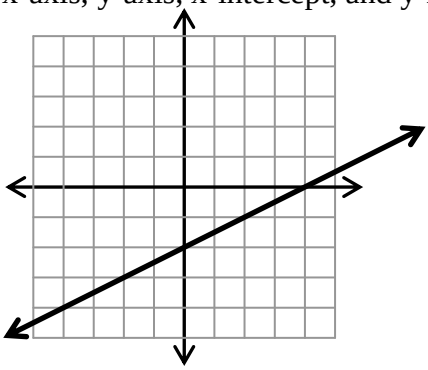
A) The x-intercept is the point where the line crosses the _____ .

- The x-intercept will always have a value of _____ .

B) The y-intercept is the point where the line crosses the _____ .

- The y-intercept will always have a value of _____ .

Example: Label the x-axis, y-axis, x-intercept, and y-intercept on the graph below.



2. How to find the intercepts from an equation

A) Finding the x-intercept

- Plug _____ into the equation for ____ and solve for ____ .

B) Finding the y-intercept

- Plug _____ into the equation for ____ and solve for ____ .

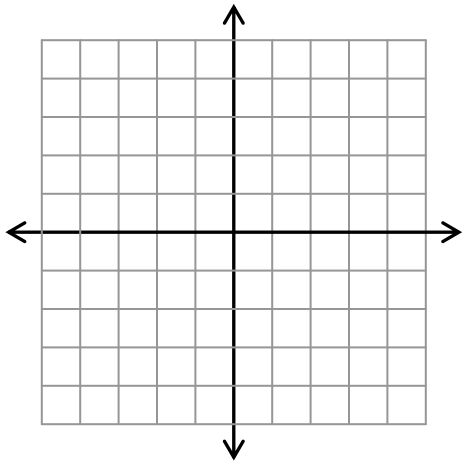
Example: $2x + 3y = 6$, find the x and y-intercepts in the area below.

3. **How to graph the line with the intercepts.**

   A) Plot the 2 _____ on the coordinate plane.

   B) Draw a straight _____ through the intercepts.

   Example: 2x + 3y = 6, use the intercepts you found above to graph the equation onto the grid below.



- Note: This method will not work if the line passes through the _____ . In that case the x and y intercepts are the same point so you only have 1 point to graph and will have to use a different method to find another point.

Method 3: Graphing linear equations by finding the slope and intercept

1. **How to find the slope and intercept**

   A) Solve the equation for ____ to put it into slope-intercept form: _____ .

   B) The slope is the ___ value, or the coefficient of x.

   C) The y-intercept is the ___ value, or the number added to the x term.

Example 1: y = 2x + 1	Example 2: y = (-2/3)x - 6
Slope: m = _____	Slope: m = _____
Y-intercept: b = _____	Y-intercept: b = _____

2. **Identifying Rise and Run**

   A) Write the slope as a _____ .

   B) The number on top is the _____ and the number on bottom is the _____ .

   Example: If m = (-2/3), then rise = _____ and run = _____

C) For graphing, it is helpful to convert positive/negative values to _____.

Example: A rise of -2 means to move _____ ____ units.
A run of 3 means to move _____ ____ units.

	+	-
Rise		
Run		

Example 1: Slope = 3, or 3/1

Rise:

Run:

Example 2: Slope = -(1/4)

Rise:

Run:

3. How to graph the line

A) Identify the slope as _____ over _____ and the y-intercept as a _____ .

B) Plot the y-intercept on the coordinate plane.

C) Starting at the y-intercept, use the rise and run to move to another point on the line.

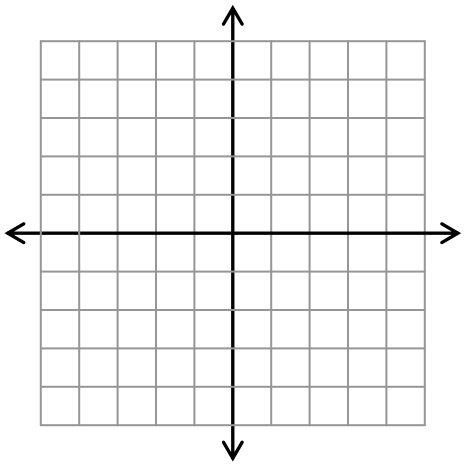
Example: y = 2x + 1

Slope : m = _____

rise = _____

run = _____

Y-int: b = _____



- Graph the point (___ , ___) and from there move _____ _____ units and _____ ____ units to the point (___ , ___).