

## Instruction Manual (Explain a Process) Activity

### Linear Equations & Graphs C2

We've discussed in class that there are two main strategies for sketching a graph of a line.

Strategies to graph a line:

1) Calculate x and y intercepts

2) Slope Intercept Form

Instruction Manuals  
on next 2 pages.

Your task is to create instruction manuals for the strategies listed above.

Your instruction manuals should have step by step instructions and should include an example. The goal is that someone who has never used these strategies before should be able to follow your instructions to solve a problem of their own.

You may work on your own or with a partner. Please hand in your instruction manuals on a separate sheet of paper once you are done. You will have approximately 35 minutes for this.

### Practice:

Test your instruction manuals by using both strategies to graph  $5x + 3y - 15 = 0$ .

① x and y intercepts

$$\text{y-int (x=0)}$$

$$3y - 15 = 0$$

$$3y = 15 \quad (0, 5)$$

$$y = 5$$

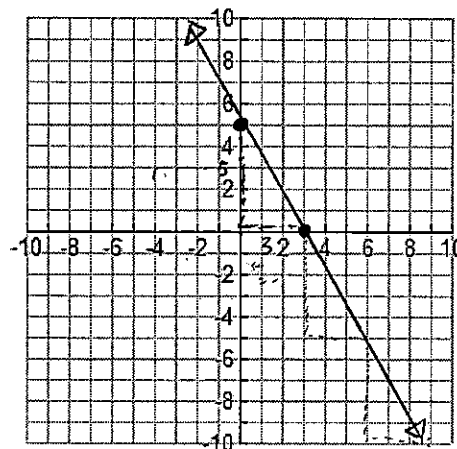
$$\text{x-int (y=0)}$$

$$5x - 15 = 0$$

$$5x = 15$$

$$x = 3$$

$$(3, 0)$$



② Slope Intercept Form

$$5x + 3y - 15 = 0$$

$$3y = -5x + 15$$

$$y = -\frac{5}{3}x + 5$$

$$m = -\frac{5}{3} \checkmark$$

$$b = 5 \checkmark$$

① Graphing a Line Strategy #1 - Calculate x and y intercepts

To explain this strategy I will show the steps required to graph  $2x - 3y - 6 = 0$ .

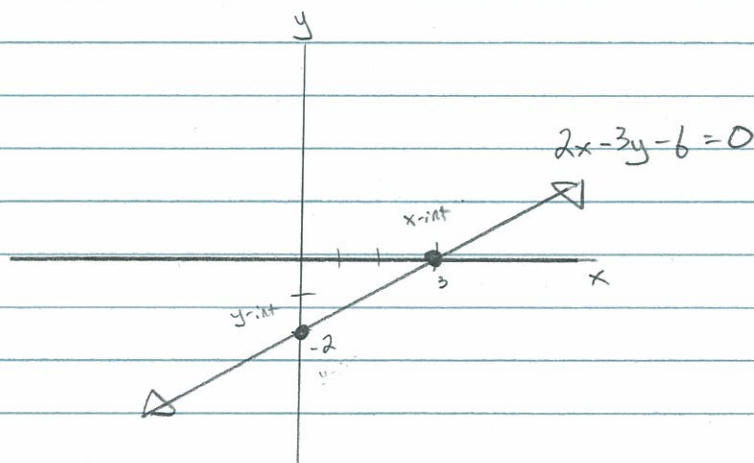
Step #1: Calculate y-int by making  $x=0$  and solving for y.

$$\begin{aligned} \text{y-int}(x=0) &\rightarrow 2(0) - 3y - 6 = 0 \\ &-3y - 6 = 0 \\ &-3y = 6 \\ &\boxed{y = -2} \end{aligned} \quad \begin{array}{l} \text{y-int} \\ (0, -2) \end{array}$$

Step #2: Calculate x-int by making  $y=0$  and solving for x.

$$\begin{aligned} \text{x-int}(y=0) &\rightarrow 2x - 3(0) - 6 = 0 \\ &2x - 6 = 0 \\ &2x = 6 \\ &\boxed{x = 3} \end{aligned} \quad \begin{array}{l} \text{x-int} \\ (3, 0) \end{array}$$

Step #3: Plot the x-int and y-int on a grid and use a ruler to draw a straight line through both points.



# Instruction Manual (Explain a Process) - Linear Equations and Graphs

KEY

## ② Graphing a Line Strategy #2 - Slope Intercept Form

To explain this strategy I will show the steps required to graph  $2x - 3y - 6 = 0$ .

Step #1: Rearrange equation into slope intercept form ( $y = mx + b$ ) and identify slope and y-int.

$$2x - 3y - 6 = 0$$

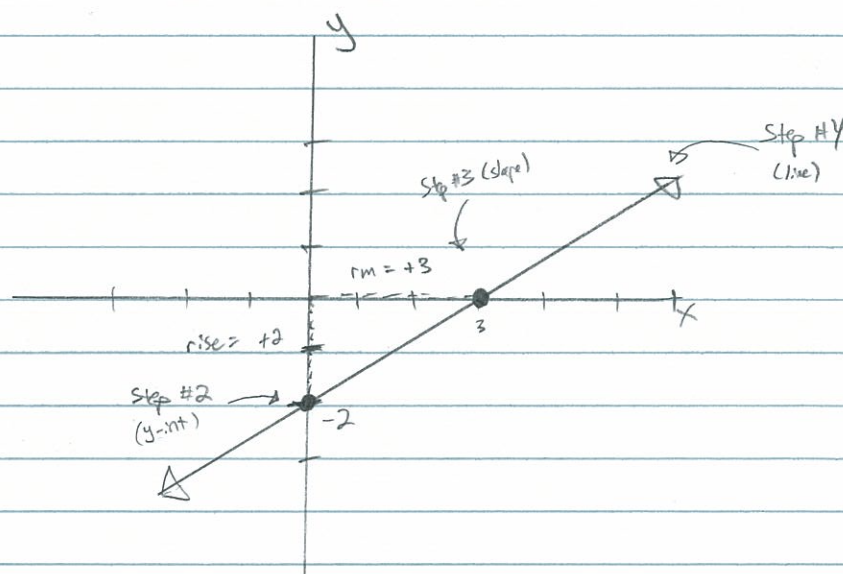
$$\frac{-3y}{-3} = \frac{-2x + 6}{-3}$$

$$y = \frac{2}{3}x - 2$$

$$m = \frac{2}{3}$$

$$b = -2$$

Step #2: Plot y-int on a grid.



Step #3: Start at the y-int and use the rise and run of the slope to plot another point on the line.

$$m = \frac{\text{rise}}{\text{run}} = \frac{2}{3}$$

rise = 2 (up 2)

run = 3 (right 3)

Step #4: Use a ruler to draw a straight line through the points.