Name _____ Date _____

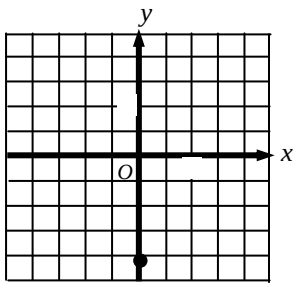
# Reporting Category 3 (A.6.B.) Notes

Linear equations are most often written in slope-intercept form. Slope intercept form is y = mx + b. In this equation, the m represents the slope of the line and the b represents the y-intercept. We can use the m and the b to determine what the graph of the function would look like.

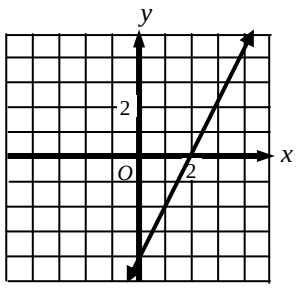
For example given the equation Y = 2x – 4

M is the slope and has to be written as a fraction. (2) or ( $\frac{2}{1}$ )
B is the y-intercept. (-4)

We *Begin* with the B. (-4) We plot (-4) on the y axis first.




Then we Move using the slope M. ($\frac{2}{1}$) This is the($\frac{\text{rise}}{\text{run}}$).
The rise moves up or down. The run moves left or right.
Since the slope is ($\frac{2}{1}$) we move up 2 and over 1.




The graph at right shows the linear equation graphed.

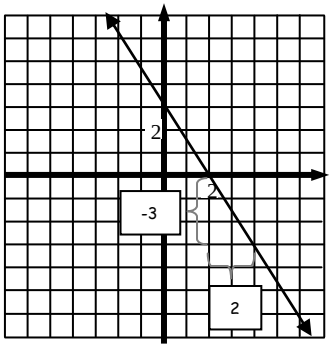
To find an equation given a graph you have to determine two things:

1. Where does the graph cross the y-axis? This will be the y-intercept or the "B".
2. What is the graph changing by each time? To determine the rate at which the graph is changing it is easiest to pick two points on the line and find the change in y over the change in x. You could also use the equation ($\frac{y_2 - y_1}{x_2 - x_1}$).

We can see that this graph crosses the y-axis at 3. (b = 3)

We can also tell that after picking two points on the line the graph is Moving down 3 and over 2 each time (m = $-\frac{3}{2}$)

The equation then is y = $-\frac{3}{2}$ x + 3



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# Reporting Category 3 (A.6.B.) Notes

So how do we determine slope and y-intercept in a given situation?

Slope is usually the rate at which the situation is changing. This could be represented by the price per person, the speed at which a car is traveling or the amount an object is being sold for just to give a few examples.

The y-intercept is always the beginning point on the graph or the starting point in the equation. This could be indicated by the initial distance you are from a given location or the initial amount you have to pay to rent/buy something just to give an example.

*Always determine where does the scenario start (y-intercept) and what amount does it change by each time (slope).*