

There is several ways to graph linear equations in two variables. For now we will focus on using the x and y intercepts to graph the lines which are in standard form.

Before we begin, let's quickly review what standard form looks like!

What is Standard Form?

$$Ax + By = C$$

Where A, B, and C are real numbers, A & B both not 0.

Examples: $2x + 4y = 8$

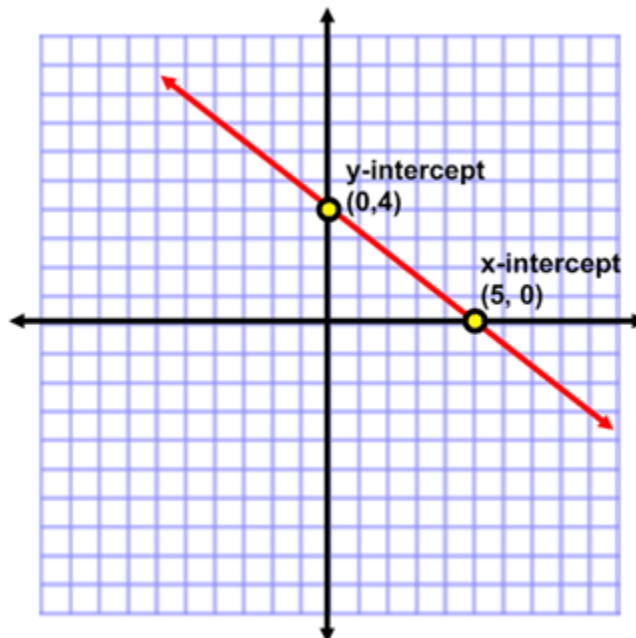
$$5x - 10y = -20$$

Now let's review what the term **intercepts** means! An intercept is where your line crosses an axis. We have an x intercept and a y intercept.

The point where the line touches the x axis is called the **x intercept**.

The point where the line touches the y axis is called the **y intercept**.

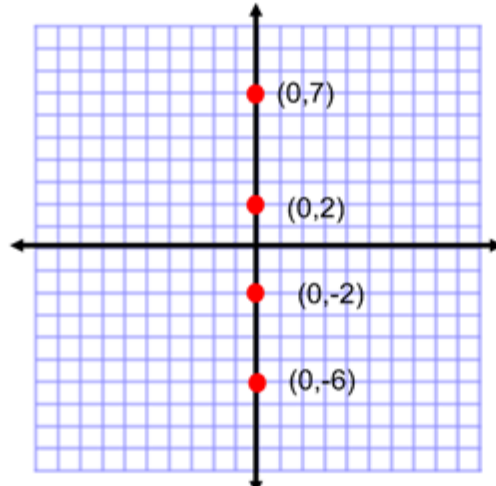
Take a look at the graph below.



If we can find the points where the line crosses the x and y axis, then we would have two points and we'd be able to draw a line. How many points determine a line? _____
When equations are written in standard form, it is preferred to find the intercepts. Take a look at this diagram, as it will help you to understand the process.

Y Intercept:

Any point on the y axis is going to have an x coordinate of 0. Take a look!

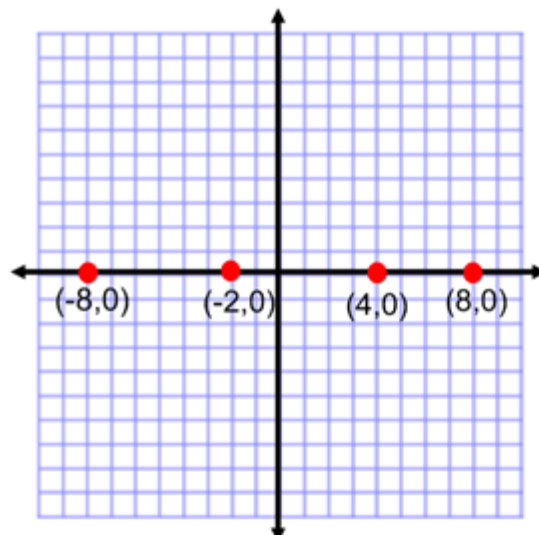


All of these points are y intercepts.

So, to find the **y intercept** within an equation, we are going to let **x = 0**.

X Intercept:

Any point on the x axis is going to have a y coordinate of 0. Take a look!



All of these points are x intercepts.

So, to find the **x intercept** within an equation, we are going to let **y = 0**.

Now, let's apply this. Just remember:

To find the X Intercept: Let $y = 0$

To find the Y Intercept: Let $x = 0$

Key: We organize our x and y intercepts in a table called a "T-Bar table" consistent with the above. We always begin with the following T-Bar and then we fill in the missing coordinates.

Let's look at an example 1.

Graph $2x + 4y = 8$ by first finding the x and y intercepts.

Let's complete the T-Bar table. (See page below for steps.)

Example 1. Graph $2x + 4y = 8$ by first finding the x and y intercepts.

The completed T-Bar is

Key: The x and y intercepts are the two points which determine the line!

$$2x + 4y = 8$$

x-intercept:
Let $y = 0$

$$2x + 4y = 8$$

$$2x + 4(0) = 8$$

$$2x + 0 = 8$$

$$\frac{2x}{2} = \frac{8}{2}$$

$$x = 4$$

The x intercept is:
 $(4, 0)$

y- intercept:
Let $x = 0$

$$2x + 4y = 8$$

$$2(0) + 4y = 8$$

$$0 + 4y = 8$$

$$\frac{4y}{4} = \frac{8}{4}$$

$$y = 2$$

The y intercept is:
 $(0, 2)$

