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Thank you for your donation to Algebra-class.com. I hope the examples included in this e-book allow you to excel in Algebra! If you find that you are still having difficulty, you may consider purchasing a unit from the "Unlocking the Door to Algebra" series.

"Unlocking the Door to Algebra" is packed full of practice problems with a detailed, step-by-step answer key! You will also find a Chapter Test that mimics high school assessments and standardized tests! You can purchase "Unlocking the Door to Algebra" on Algebra-class.com

If you have any other questions or concerns, please feel free to contact me!

I wish you the best of luck in your studies,

Karin Hutchinson

Graphing a Linear Equation
Using Slope Intercept Form

Now that you've completed a lesson on graphing slope you are finally ready to graph linear equations.

There are several different ways to graph linear equations. You've already learned how to graph using a table of values. That's okay for the beginner, but it can be a little time consuming.

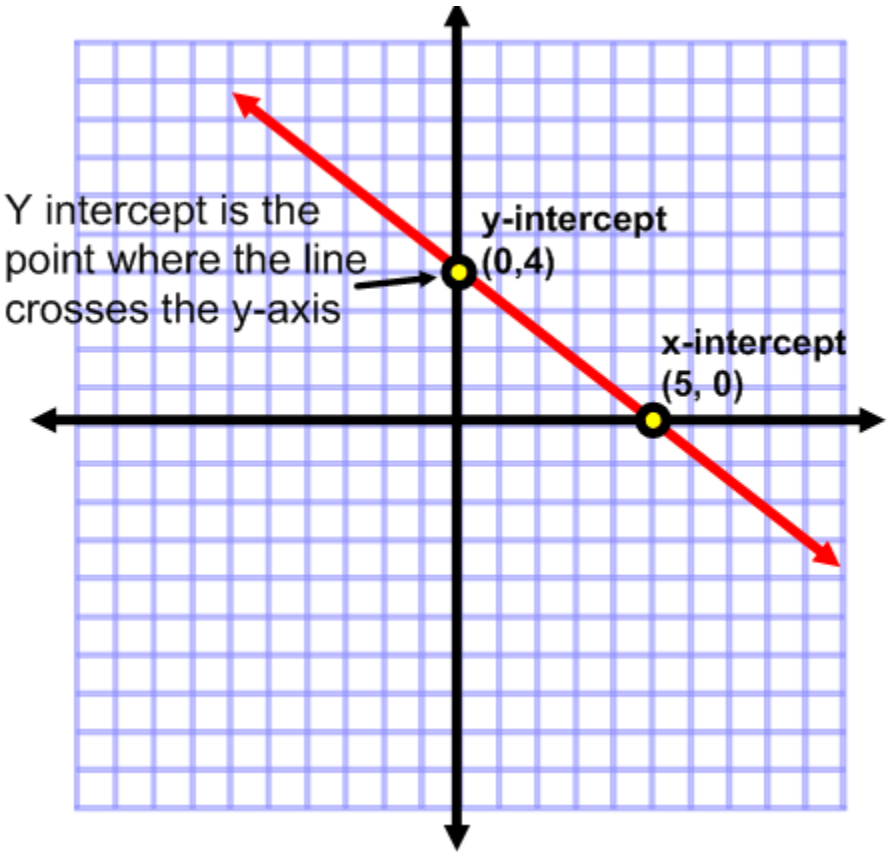
Using slope intercept form is one of the quickest and easiest ways to graph a linear equation.

Before we begin, I need to introduce a little vocabulary. We are going to talk about **x and y intercepts.**

An **x intercept** is the point where your line crosses the x-axis. The **y intercept** is the point where your line crosses the y-axis.

We are only going to focus on the **y intercept** in this lesson, but you'll need to know x intercept for later.

Let's look at an example:

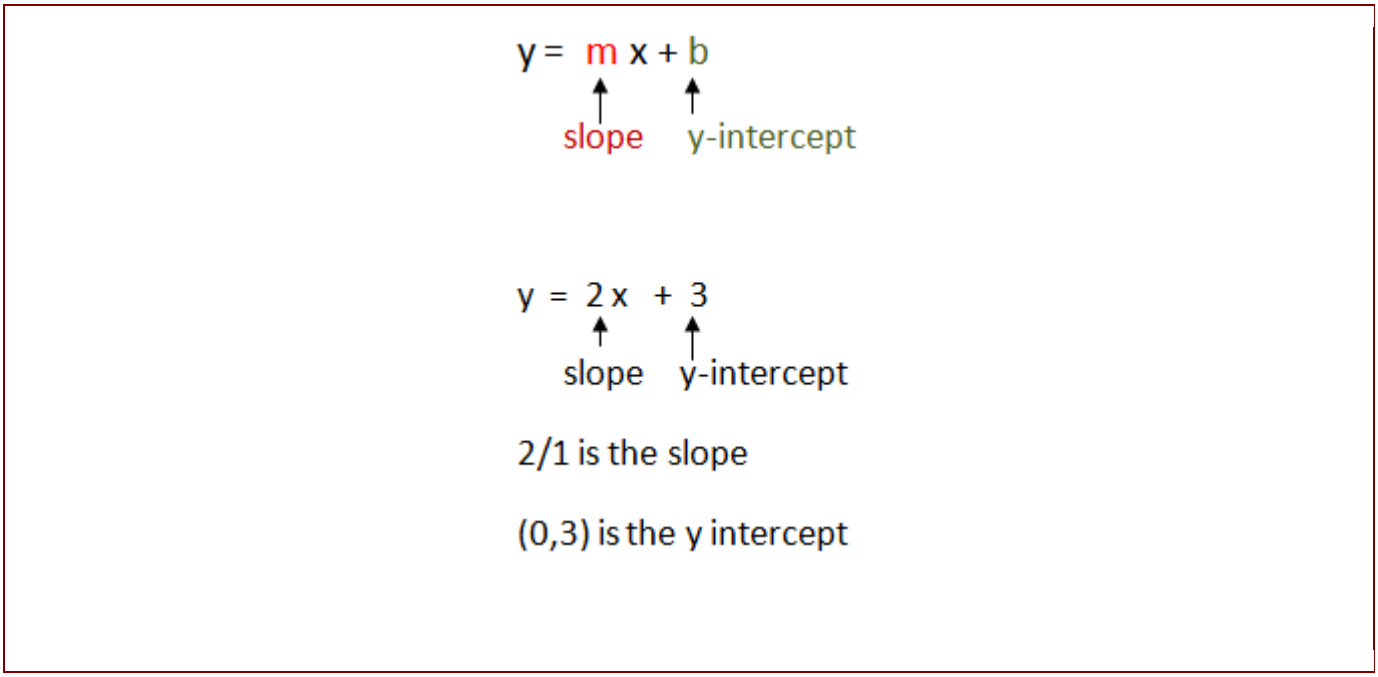


Slope intercept form is used when your linear equation is written in the form:

$$y = mx+b$$

x and y are your variables. m will be a numeral, which is your slope. b will also be a numeral and this is the y-intercept.

In this form only (when your equation is written as y = ...) the coefficient of x is the slope and the constant is the y intercept.



Let's look at a few examples and I promise that you'll LOVE this new way of graphing!

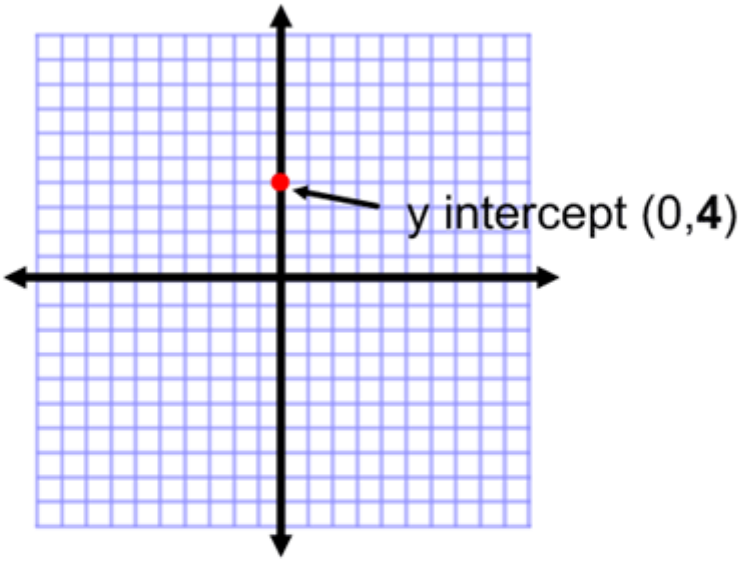
Example 1

Graph the equation: **y = 2x +4**

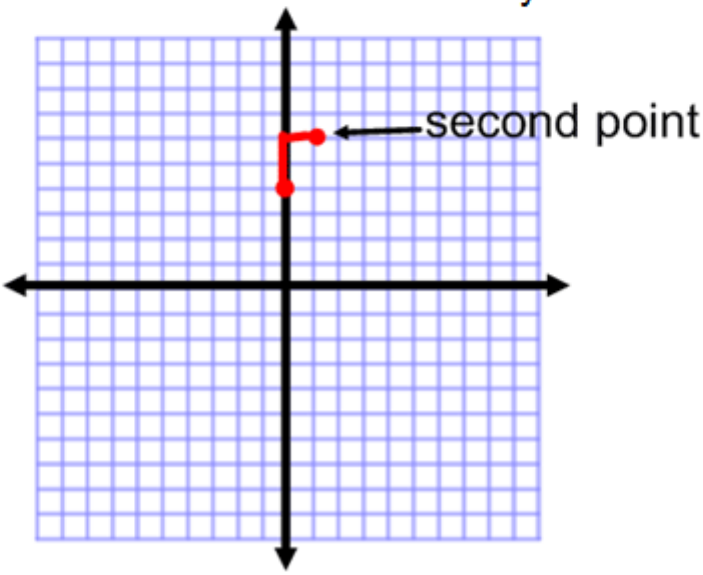
$y = 2x + 4$

Slope Y-intercept

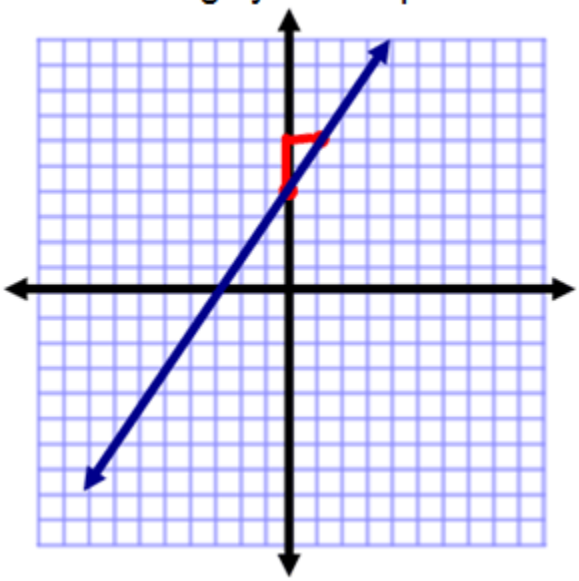
Step 1: Plot the y-intercept on your graph. 4 is the y-intercept, so I am going to plot the point (0,4).



Step 2: Identify the slope. (The coefficient of x is the slope.) The slope is 2. From the y-intercept, you are going to count a rise of 2 and a run of 1. Plot your second point.



Step 3: Draw a line through your two points.



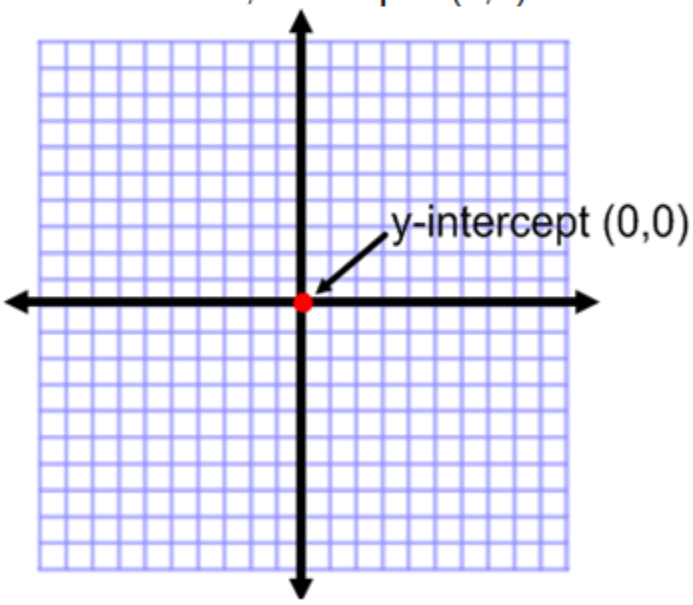
Example 2

Graph the equation: **y = -1/3x**

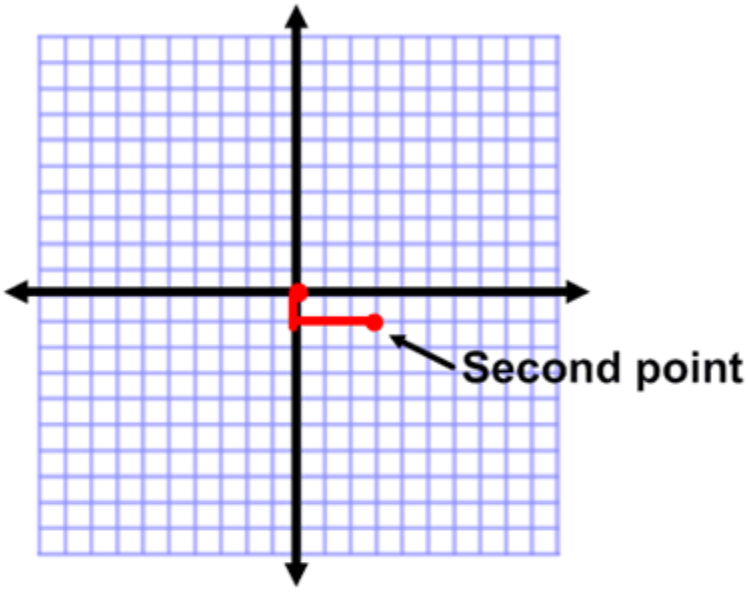
y = -1/3x

Slope **y-intercept**

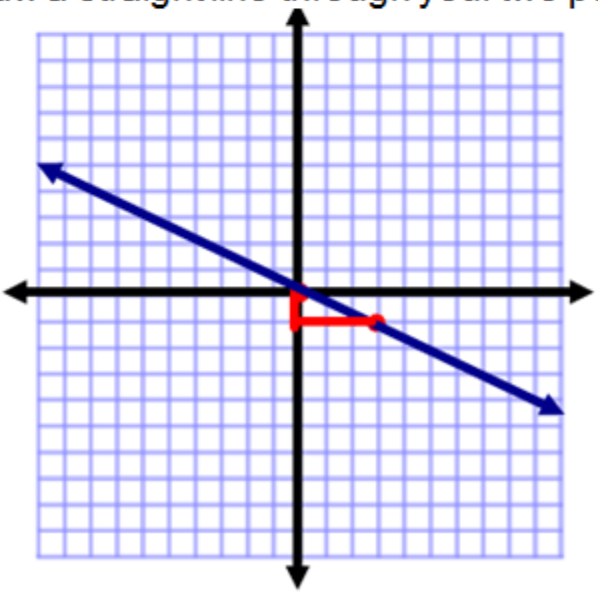
Step 1: Since there is no y-intercept in this problem, the y-intercept is 0. Therefore, we will plot (0,0) as our first point.



Step 2: Identify the slope. The slope is -1/3. From the y-intercept, I am going to count **down** 1 unit and **right** 3 units. Then plot your second point.



Step 3: Draw a straight line through your two points.



Here's a quick summary to help remind you of the steps for graphing in slope intercept form.

Rules for Graphing Using Slope Intercept Form

- Your **y intercept** is always the **first point** that you plot on the line. Your point will always be (0, b).
- Then use your slope to plot your next point.
- If you have two points, you can draw a straight line and this is the line that represents your equation. Any point on that line is a solution to the equation.

Tip: You have to be very accurate in plotting your points and drawing your lines in order to be able to read your graph to find other solutions!