# How to Graph a Line <br> By Jeanne St. Onge 

Example is $2 x+3 y=6$
There are three different ways to graph a line. They are a table, $x$ and $y$ intercepts, and slope intercept.

## Table:

| $x$ | $y$ |
| :--- | :--- |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Insert five numbers into the table on the $x$ side. Example $-2,-1,0,1$, and 2 .
Now when that is done, put each of those numbers, one at a time, into the equation $(2 x+3 y=6)$ as $x$. Example $2(-2)+3 y=6$. Solve for $y$.

If you don't know how to solve for y , then follow these steps:

1. Follow the order of operations: P.E.M.D.A.S. [ $2 \bullet(-2)=-4]$
2. Your problem should look like this: $-4+3 y=6$. Your next steps are to get the $y$ by it's self. So you would add 4 to the -4 and to the 6 . Your equation will now look like this: $3 y=10$
3. The next step is again to get $y$ by it's self. You would divide the 3 by 3 and 10 by 3. Your finale equation is $y=\frac{10}{3}$
4. Now you have to put the numbers you got for $y$ into the table. It should look like this:

| $x$ | $y$ |
| :--- | :--- |
| -2 | $10 / 3$ |
| -1 | $8 / 3$ |
| 0 | 2 |
| 1 | $4 / 3$ |
| 2 | $2 / 3$ |

5. You must now graph the line using those points.

## *Don't forget these important rules for every line:

1. Label the axes $x$ and $y$.
2. Label the tick marks (1, 2, ect.)
3. Label the method used (table for this one)
4. Have at least 2 points on the graph. [ 0,2 ) and $(-1,8 / 3)$ for this equation]

## $X$ and $Y$ intercepts

First take the equation $2 x+3 y=6$ and write it down twice. On the first one put a 0 in for y . On the second one, put a 0 in for x , it should look like this:
$2 x+3(0)=6$ and $2(0)+3 y=6$. Then solve for the variable that is left. (If you are still confused, then follow the steps from above.)

## Slope Intercepts

Always remember $y=m x+b$. When your equation is not in this format, you need to put it into this format. Example: $2 x+3 y=6$. You need to get y by itself. Start with the x variable. Since it is a positive, you need to subtract 2 x from 2 x and from the other side of the equal sign (The 6). Your problem will now look like this: $3 y=6-2 x$ or $3 y=-2 x+6$. The problem is still not in the proper form, you need to get $y$ by itself still. You need to divide y by 3 and $-2 x+6$ by 3 too. Your problem will now
look like this: $y=\frac{-2 x}{3}+\frac{6}{3}$ or $y=\frac{-2 x}{3}+2$. To graph the line, you would start at b or in this case you would start at $(0,2)$. You will move according to $\frac{\text { rise }}{\text { run }}$. You will move down 2 (because the number on top is -2 ), and you will go over 3 to the right (because the number on the bottom is 3 ). You will keep doing this until you need to stop. Remember the four important rules.

