**Graphing linear equations. ( it is called linear because all the powers of x or y are 1)**

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |

Given the equation, when asked to plot the graph

 Step 1: Make a table with x and y values.

 Step 2: Make up values for x (as it is the independent variable) in this case I just made up the values as -1, 0 and 1.

 Step 3: Now plug in the value of x in the equation to find the values of y

(your dependent variable)

 Step 4: Now you have 3 values of x and y, you can plot them on the graph!

**Remember, the (x, y) plot ….**

 Start from the 0,0 or the middle, move right for positive x values and left for negative x values.

 Then go up for positive y values and down for negative y values.

Example of linear functions in two variables are

Y= 4x + 5

 Y= -2x – 6,

In **standard form** the equations are written this way, Y-4x = 5 ( in **slope intercept** form Y= 4x+5, )

Y-~~4x~~=5

+~~4x~~ +4x

Y=5+4x

**How to find the equation from the graph.**

|  |  |
| --- | --- |
| x | y |
| 1 | 2 |
| 3 | 6 |
|  |  |

**Step 1:** Find two points on the line which lie on the **intersection** of the two lines in the graph. (so we know they exactly have those values and not some decimal)

Step 2: table the two values .

Step 3: we have the formula for the equation as **y=mx+b,**

m is the rate of change= ( remember bump bump)

 6-2= 4

3-1= 2

Now divide $\frac{4}{2}$ = 2

Step 4: b is the value of y when x=0, or the value of y when we begin the problem

(like the beginning of the race , you are at start line or at 0)

Or if we are emptying a can of water, we start with a cup of water, so 1 cup is the value of b.

|  |  |
| --- | --- |
| x | y |
| 0 | 4 |
| 1 | 5 |

In this case the line meets or intercepts the y axis at y=4,

In a table b can be found when x=0 !!

Now write down how to find the value of b when given only the points….\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_