The point−slope formula helps us find the equation of a graph when we only know at least one point and a slope. The point−slope formula is in the following:

$y-y_1=m(x-x_1)$

where y_1 is a y coordinate and x_1 is the x coordinate and m is the slope.

Ex.1: *Find the equation of the line that passes through the point* $(3,6)$ and $(5,2)$.

First we have to find the slope, which is $m=\frac{y_2-y_1}{x_2-x_1}$

plugging in the y's and x's we get: $m=\frac{2-6}{5-3} \blacktriangleright -2$

So the slope of the function is −2.

Now that we have a **slope** and we have at least **one point**, we can use the point−slope formula to find the equation of the line.

I would like to pick the point $(3,6)$ because it is fairly smaller than the other point, but it doesn't matter which point you pick because you will still get the same answer, assuming that you did it correctly.

We do not change the y and x, only the y_1 and x_1.

$y-6=-2(x-3)$

Distribute the −2

$y-6=-2x+6$

Bring the −6 from the left side to the right side.

$y=-2x+6+6$

$y=-2x+12$ is the answer.

If you check the graph/table on the right, you can see that it passes through $(3,6)$ and $(5,2)$