In the first exercise we were calculating the **rate** that the **function's output (y-values)** were changing compared to the **function's input (or x-values)**. This is known as finding the **average rate of change** of the function. You might think you've seen this before. And you have.

Exercise #1: Finding the average rate of change is the same as finding the _____________ of a line.

There is, of course, a formula for finding average rate of change. Let's get it out of the way.

AVERAGE RATE OF CHANGE

For the function $y = f(x)$, the average rate that $f(x)$ changes from $x = a$ to $x = b$ is given by:

Consider the function given by $f(x) = x^2 + 3$. Find its average rate of change from $x = -1$ to $x = 3$. Carefully show the work that leads to your final answer.

X	x^2+3	Y
0	$(0)^2+3$	3
1	$(1)^2+3$	

← A TOOL !! :)

← A Strategy !! :)

Exercise #2: The function $h(x)$ is given in the table below. Which of the following gives its average rate of change over the interval $2 \le x \le 6$? Show the calculations that lead to your answer.

a = 2, b = 6

(1) $-\frac{3}{2}$ (3) $-\frac{7}{6}$

(2) $\frac{6}{4}$ (4) -1

x	$h(x)$ y
0	10
2	9
4	6
6	3

$\frac{f(b)-f(a)}{b-a}$ $\frac{\Delta y}{\Delta x}$

$\frac{3-9}{6-2} = \frac{-6}{4} = -\frac{3}{2}$

$\frac{9-3}{2-6} = \frac{6}{-4} = -\frac{3}{2}$

x	y

$\frac{\Delta y}{\Delta x} \rightarrow \frac{9-6}{2-4}$