Name _____ Date _____

Finding the rule when given a table.

Step 1: Find the change in *y*.

Step 2: Find the change in *x*.

Step 3: Divide the change in *y* by the change in *x*. $\frac{\Delta y}{\Delta x}$ or $\frac{change\ in\ y}{change\ in\ x}$

Step 4: This is the number that the input is being multiplied by. Find what is being added or subtracted if anything. Write the rule. Don't forget the *y*.

Example:

Steps 1 and 2: Find the change in *y* and the change in *x*.

		2	2	2	2
Input x	0	2	4	6	8
Output y	3	7	11	15	19
		4	4	4	4

This is the change in x

This is the change in y

Step 3: Divide the change in *y* by the change in *x*.

$$\frac{change\ in\ y}{change\ in\ x} = \frac{4}{2} = 2$$

Step 4: This is the number that the input is being multiplied by. Find what is being added or subtracted if anything.

Input x	0 x2	2 x2	4 x2	6 x2	8 x2
Output y	3	7	11	15	19

After multiplying each input by 2, I noticed that it does not equal the output. I must have to add or subtract something. Choose a set of values (not 0). 2x2=4. To get 7 I must add 3.

Rule: $y = 2x + 3$

Check to make sure it works for the other values.

$0 \times 2 + 3 = 3$ $4 \times 2 + 3 = 11$ $6 \times 2 + 3 = 15$ $8 \times 2 + 3 = 19$

These all work so I found the correct rule.

Try These:

Steps 1 and 2: Find the change in *y* and the change in *x.*

Input x	0	1	2	3	4
Output y	1	4	7	10	13

Step 3: Divide the change in *y* by the change in *x*.

$$\frac{change\ in\ y}{change\ in\ x} = \_\_$$

Step 4: This is the number that the input is being multiplied by. Find what is being added or subtracted if anything.

Input x	0	1	2	3	4
Output y	1	4	7	10	13

Rule:

Steps 1 and 2: Find the change in *y* and the change in *x.*

Input x	1	3	5	7	9
Output y	-2	4	10	16	22

Step 3: Divide the change in *y* by the change in *x*.

$$\frac{change\ in\ y}{change\ in\ x} = \_\_$$

Step 4: This is the number that the input is being multiplied by. Find what is being added or subtracted if anything.

Input x	1	3	5	7	9
Output y	-2	4	10	16	22

Rule: