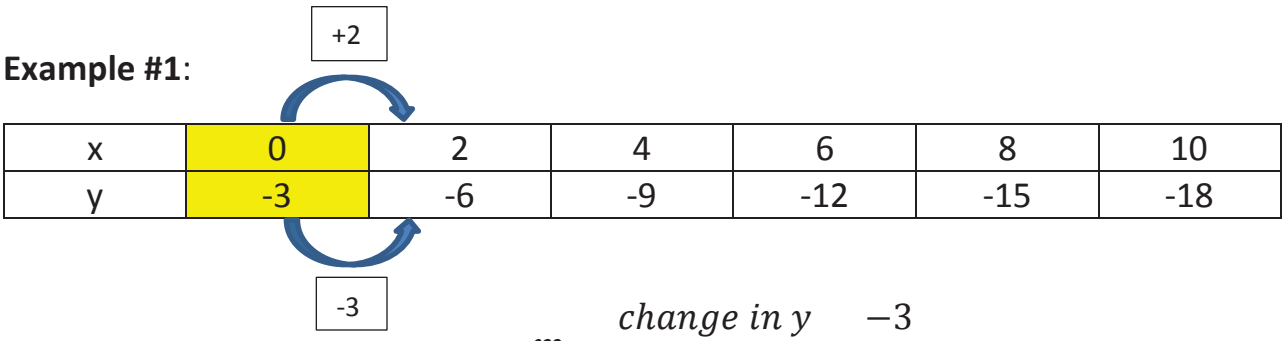
Represent Linear Patterns with Equations

Slope-Intercept Form: $y = mx + b$, where

m = slope ($\frac{change\ in\ y}{change\ in\ x}$) and b = y-intercept (y-value when x = 0)

*Remember, sometimes you will be given the b-value in the table, and sometimes you need to find the b-value by following the number sequence of both the x and y values in the table, working backwards or forward to obtain the b-value.

Example #1:



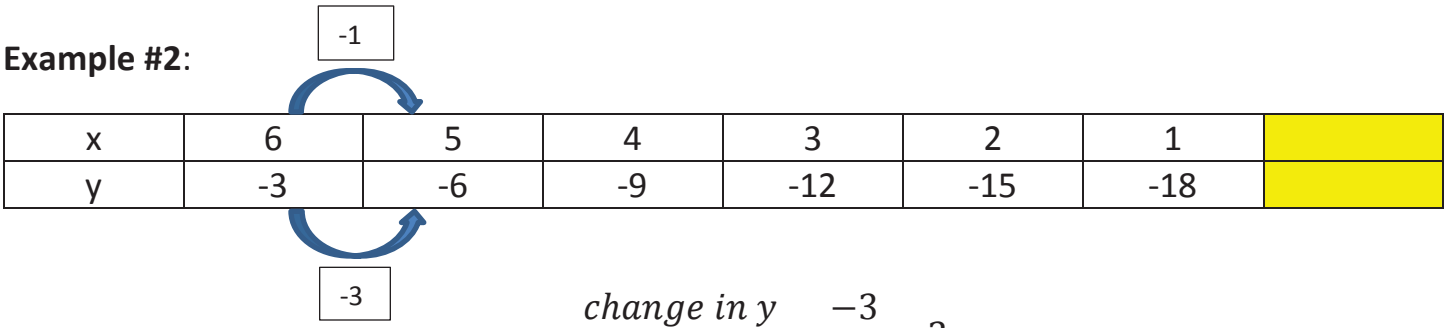
x	0	2	4	6	8	10
y	-3	-6	-9	-12	-15	-18

$$m = \frac{change\ in\ y}{change\ in\ x} = \frac{-3}{2}$$

$$b\ (y - value\ when\ x = 0) = -3$$

Therefore, $y = \frac{-3}{2}x - 3$ or $y = \frac{-3}{2}x + -3$

Example #2:



x	6	5	4	3	2	1	
y	-3	-6	-9	-12	-15	-18	

$$m = \frac{change\ in\ y}{change\ in\ x} = \frac{-3}{-1} = 3$$

$b\ (y - value\ when\ x = 0) = -21$ (to find this value, you must continue to follow the number sequence of both the x and y values in the table, by working forward, to create another ordered pair in the table of values)

Therefore, $y = 3x - 21$ or $y = 3x + -21$

Write an equation to represent the data pattern.

1.)

x	0	3	6	9	12	15
y	-1	-5	-9	-13	-17	-21

2.)

x	10	8	6	4	2	0
y	2	9	16	23	30	37

3.)

x	4	6	8	10	12	14
y	4	8	12	16	20	24

4.)

x	1	2	3	4	5	6
y	-10	-20	-30	-40	-50	-60

5.)

x	15	10	5	0	-5	-10
y	10	8	6	4	2	0

6.)

x	1	3	5	7	9	11
y	5	10	15	20	25	30

7.)

x	5	0	-5	-10	-15	-20
y	-3	-6	-9	-12	-15	-18

8.)

x	2	6	10	14	18	22
y	15	18	21	24	27	30