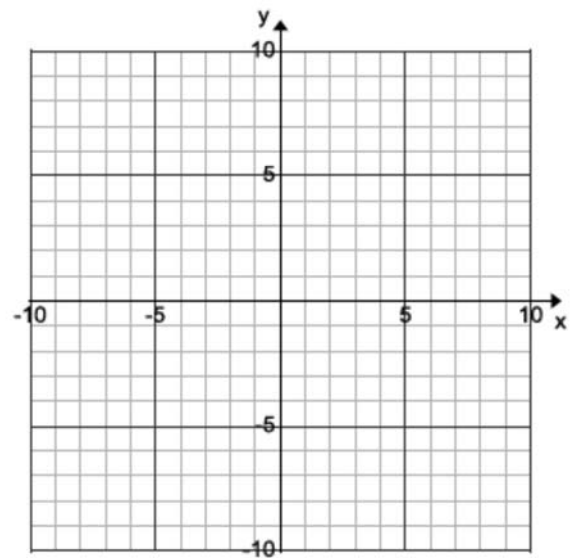


### Making Linear Patterns Visual

**Example:** 8, 5, 2, \_\_, \_\_, \_\_ ...

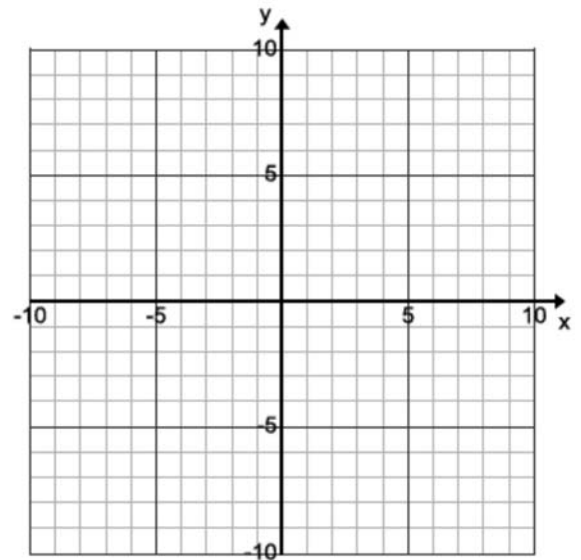
Converted into a table of values (t-chart) :

$x$	$y$



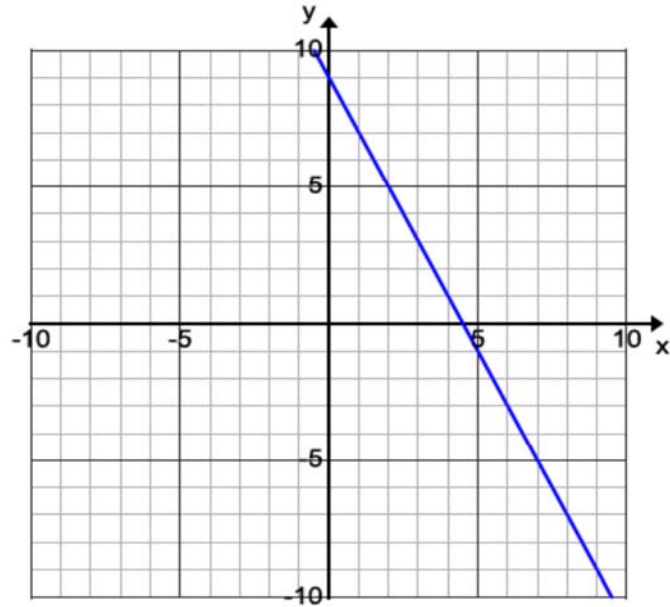
**Example 2:** Given the equation  $2x - 5 = y$ , fill in the table of values and then graph.

$x$	$y$



**Example 3:** Given the graph, fill in the table of values

$x$	$y$



A **linear relation** is a straight line relationship between two variables. When you plot their values on a coordinate grid, you get a straight line.

A **linear equation** is an equation whose graph is a straight line.

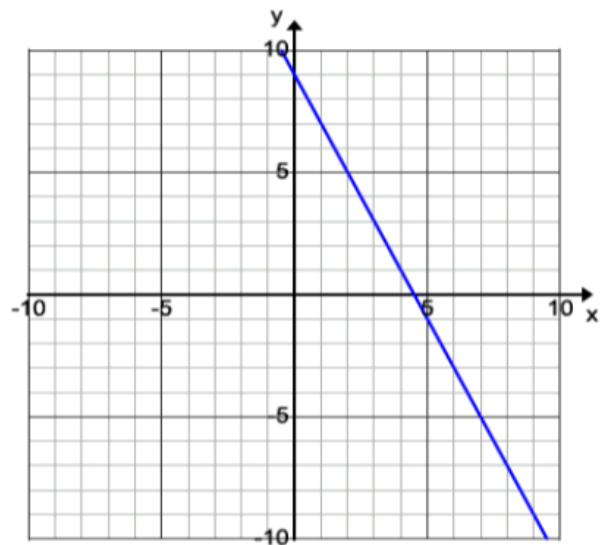
X axis - always independent variable.

Y axis - always dependent variable.

$$y = mx + b$$

(Creating an equation using the graph)

- $y$  = dependent variable
- $m$  = slope
  - Slope = rise/run
- $x$  = independent variable
- $b$  =  $y$  - intercept



$$y = mx + b$$

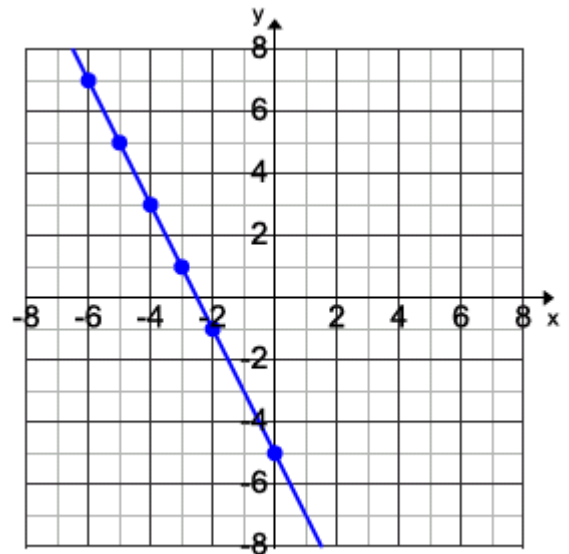
(Creating an equation using a table of values)

- $y$  = dependent variable
- $m$  = the positive or negative change in  $y$ 
  - if  $m$  is positive the slope will angle up to the right (positive graph)
  - if  $m$  is negative the slope will angle down to the left (negative graph)
- $x$  = independent variable
- $b$  = what you add or subtract to make the statement true

$x$	$y$

### Practice

Create an equation and table of values from the graph to the right. Is the graph positive or negative?



Homework: Complete *Graphing Linear Relations Worksheet* below

## Graphing Linear Relations Worksheet

Directions: *Create an equation, graph, and table of values using the information given for each question. Use the graphing template attached.*

1. slope: 1, y-intercept: -3

2. slope: 2, y-intercept: 3

3. slope:  $\frac{1}{2}$ , y-intercept: 5

4. slope:  $\frac{3}{4}$ , y-intercept: -2

5. slope: -1, y-intercept: 0

6. slope: 0, y-intercept: 4

Directions: *Create an equation, graph, and identify the slope and y-intercept for each question. Use the graphing template attached.*

7.

x	y
0	-1
1	2
2	5

8.

x	y
1	3
2	7
3	11

9.

x	y
1	15
2	10
3	5

10.

x	y
0	13
1	11
2	9