

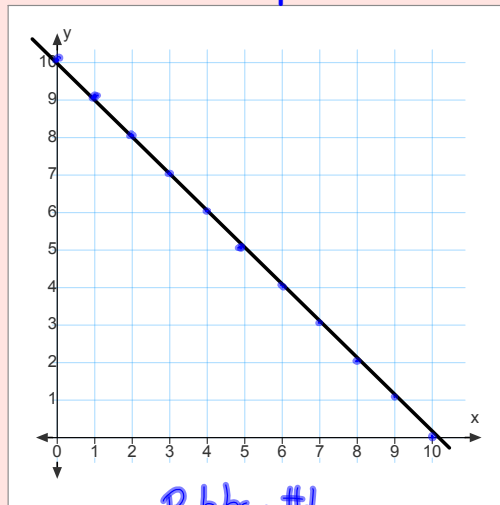
Section 4.3 Activity
 Variables: Let x = length of the first ribbon
 y = length of the second ribbon

Table

x	y
10	0
9	1
8	2
7	3
6	4
5	5
4	6
3	7
2	8
1	9
0	10

Ribbon #2 Length

Graph



Ribbon #1 Length

Words: The sum of the lengths of the two pieces of ribbon is 10

Equation: $x + y = 10$

Example #1: Determine the pattern using each table of values and expressing each pattern in words and using an equation.

(A)

x	1	2	3	4	5	6	7
y	5	7	9	11	13	15	17

Words: One number is two times another number increased by three.

Eqn: $y = 2x + 3$

(B)

x	1	2	3	4	5	6	7
y	1	5	9	13	17	21	25

Words: One number is four times another number decreased by three.

Eqn: $y = 4x - 3$

Section 4.3 Continued

There are three basic types of lines:

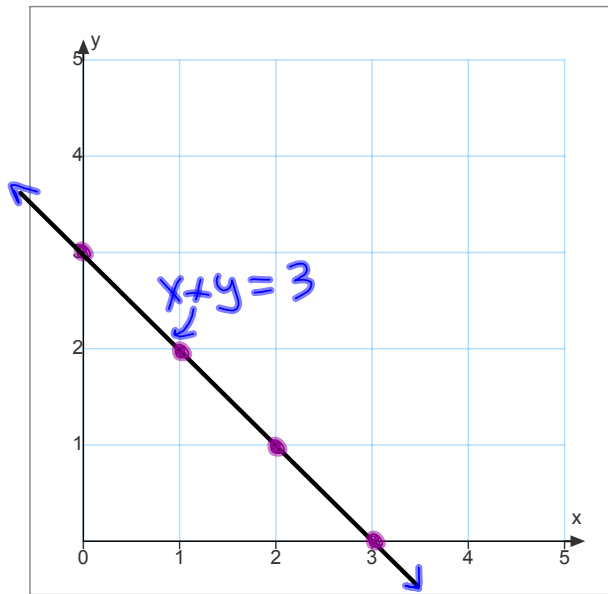
- (1) Horizontal
- (2) Vertical
- (3) Oblique

1. Oblique Lines: In general, oblique lines always contain two variables, usually x and y and its graph is on a slant (or angle)

(ex) $2x+3y=6$, $x-y=3$, $y=3x-9$, $y=5-2x$

* Make a sketch of the line $x+y=3$

x	y
0	3
1	2
2	1
3	0
4	-1



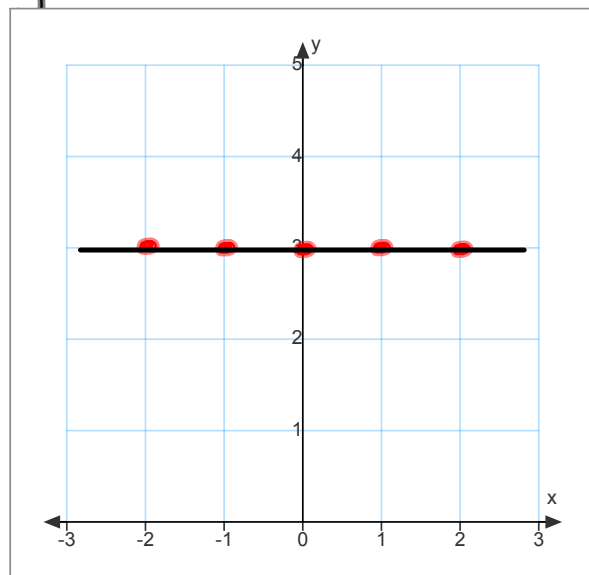
Working: $x+y=3$

$$\begin{array}{l}
 \textcircled{1} x=0 : x+y=3 \\
 \phantom{\textcircled{1} x=0} 0+y=3 \\
 \phantom{\textcircled{1} x=0} y=3 \\
 \phantom{\textcircled{1} x=0} \left. \vphantom{\begin{array}{l} 0+y=3 \\ y=3 \end{array}} \right\} \\
 \phantom{\textcircled{1} x=0} \textcircled{2} x=1 : x+y=3 \\
 \phantom{\textcircled{1} x=0} \phantom{\textcircled{2} x=1} 1+y=3 \\
 \phantom{\textcircled{1} x=0} \phantom{\textcircled{2} x=1} 1+y-1=3-1 \\
 \phantom{\textcircled{1} x=0} \phantom{\textcircled{2} x=1} y=2
 \end{array}$$

2. Horizontal Line: Suppose the x -term does not appear in the equation $x+y=3$
 $\rightarrow y=3$ is what remains.

Question: What does $y=3$ look like on a graph?

X	Y
-2	3
-1	3
0	3
1	3
2	3

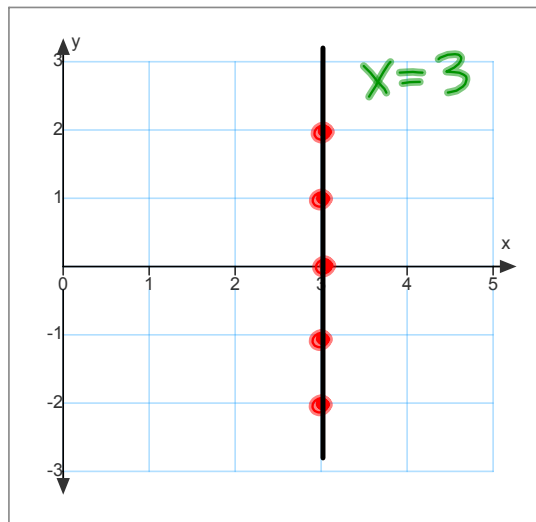


3. Vertical Line: Suppose the y -term does not appear in the equation $x+y=3$

$\rightarrow x=3$ is what remains.

Question: What does $x=3$ look like on a graph?

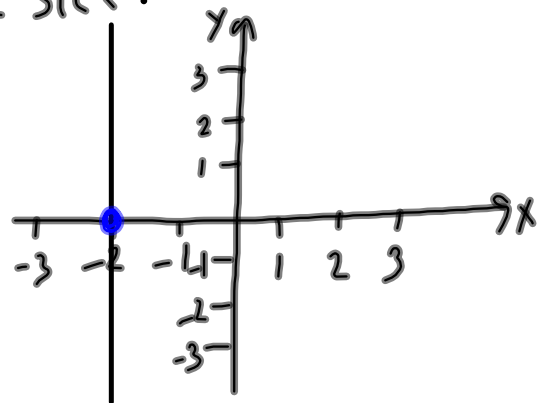
X	Y
3	-2
3	-1
3	0
3	1
3	2



Example : Graph the following linear relations:
(A) $x+2=0$ (B) $2y=8$ (C) $3x-2y=6$

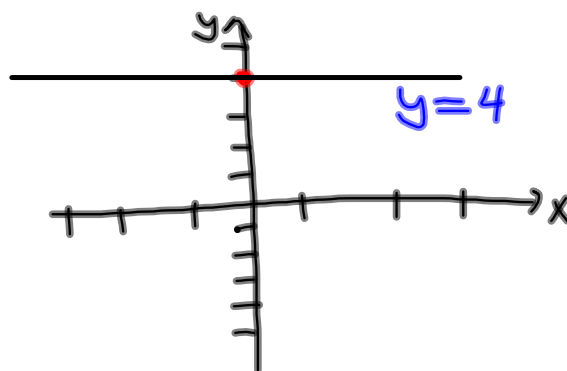
Ans) Make sure all equations that have one variable is simplified so the variable is by itself on one side.

(A) $x+2=0$
 $x+2-2=0-2$
 $x=-2$



$$(B) \frac{2y}{2} = \frac{8}{2}$$

$$y = 4$$



(c) $3x - 2y = 6$ Oblique Line.

- * Make a table of values.
- * Solve for y using different x-values.
- * Set up our graph and plot points.
- * Continuous data \therefore Join Points.

Workings

X	Y
-4	-9
0	-3
4	3

$$3x - 2y = 6$$

$$3(0) - 2y = 6$$

$$0 - 2y = 6$$

$$\frac{-2y}{-2} = \frac{6}{-2}$$

$$\therefore y = -3$$

$$3x - 2y = 6$$

$$3(-4) - 2y = 6$$

$$-12 - 2y = 6$$

$$-12 - 2y + 12 = 6 + 12$$

$$\frac{-2y}{-2} = \frac{18}{-2} \therefore y = -9$$

$$3x - 2y = 6$$

$$3(4) - 2y = 6$$

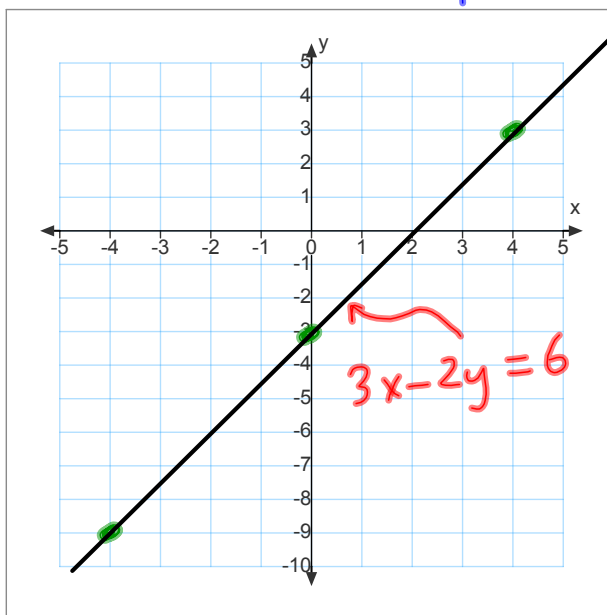
$$12 - 2y = 6$$

$$12 - 2y - 12 = 6 - 12$$

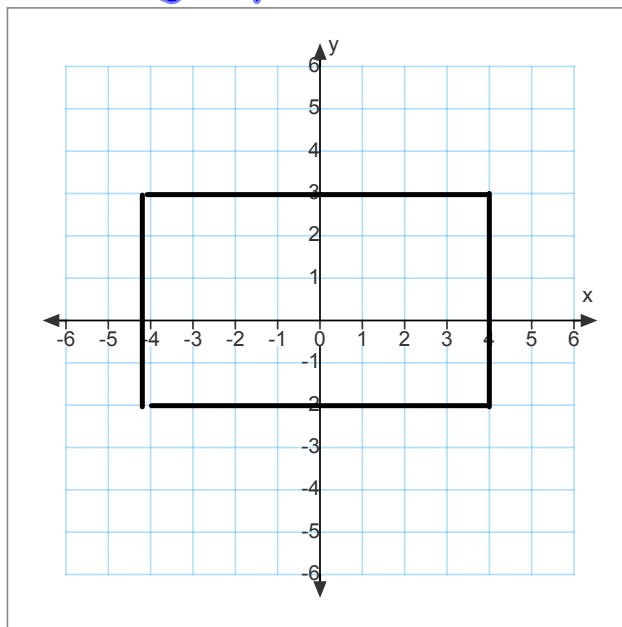
$$\frac{-2y}{-2} = \frac{-6}{-2}$$

$$\therefore y = 3$$

GRAPH:



Example #2: State the equations of the lines making up the following rectangle:



Answer

$$x = -4$$

$$x = 4$$

$$y = 3$$

$$y = -2$$

Homework:

p178-179

h 7, 11, 12, 18