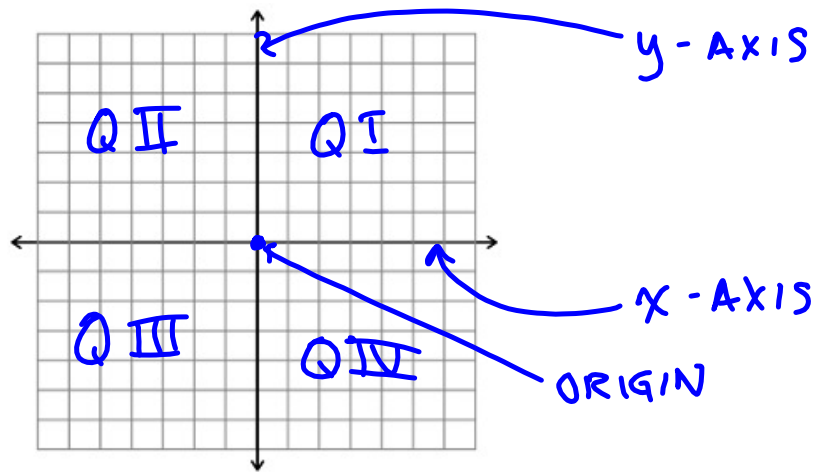
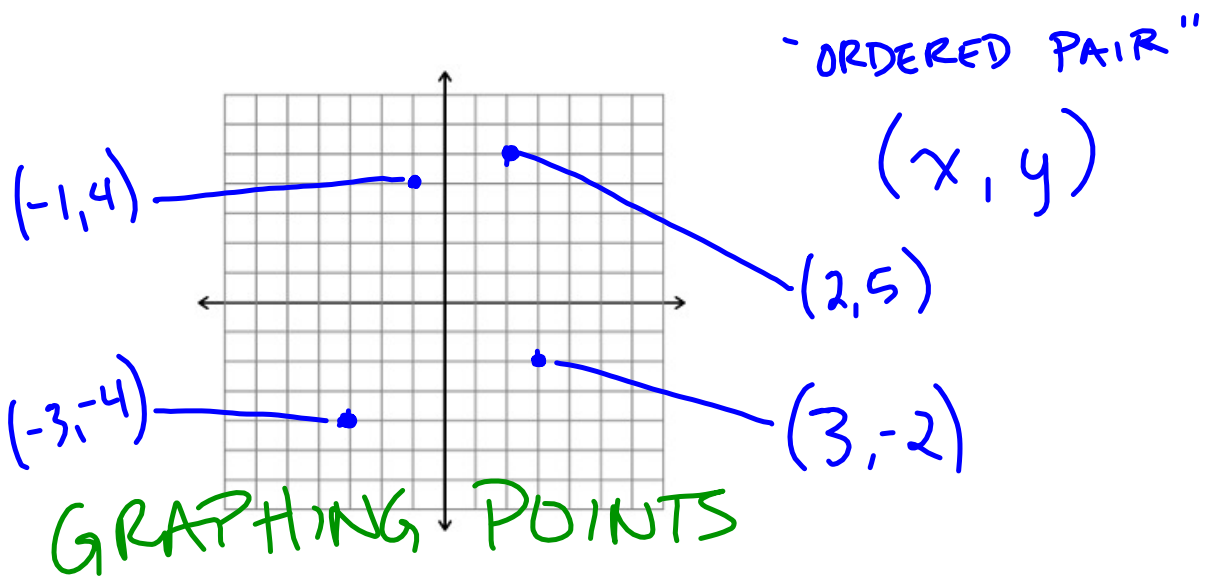


3.1 GRAPHING LINES ON THE COORDINATE PLANE

COORDINATE
PLANE





START AT THE ORIGIN

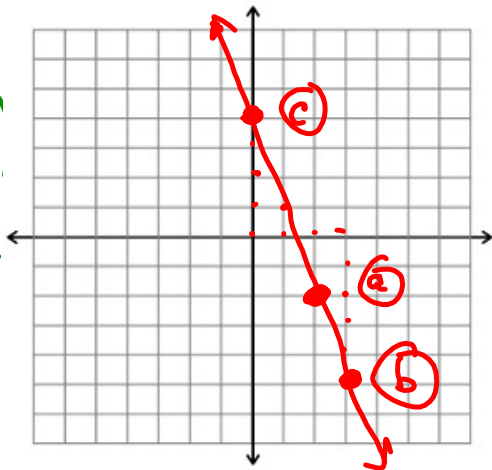
COUNT THE x VALUE ALONG THE x AXIS

COUNT THE y VALUE FROM THERE

Ex. 2 FINDING SOLUTIONS TO EQUATIONS

$$y = -3x + 4$$

Ⓐ $(2, -2)$ $y = -3(2)$
 $= -6 +$
 $= -2$



Ⓑ $y = -3x + 4$ $(-5) = -3x + 4$
 $(3, -5)$ $\frac{-4}{-3} = \frac{-3x}{-3}$
 $x = 3$

Ⓒ $y = -3x + 4$ $(0, 4)$ $y = -3(0) + 4$
 $y = 4$

LINEAR EQUATION IN TWO VARIABLES

$$Ax + By = C$$

WHERE A & B ARE NOT BOTH ZERO.

[STANDARD FORM IF $GCF(A, B, C) = 1$]

$y = mx + b$ - SLOPE-INTERCEPT FORM IN 3.3

- EQUATION OF THE LINE AS A FORMULA
FOR THE DEPENDENT VARIABLE

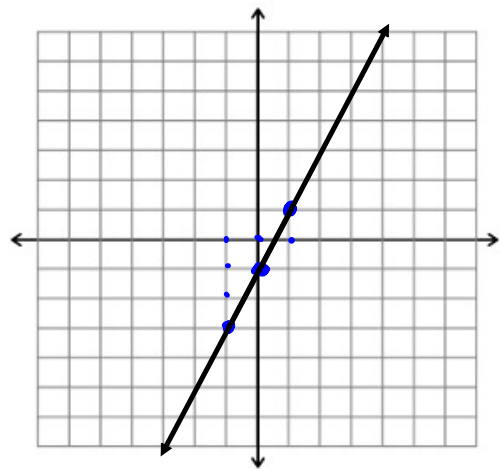
INDEPENDENT VARIABLE: x - GIVEN, USED TO FIND y VALUE

DEPENDENT VARIABLE: y - DEPENDS ON THE x VALUE

EX. 3 GRAPHING A LINE ON THE C.P.

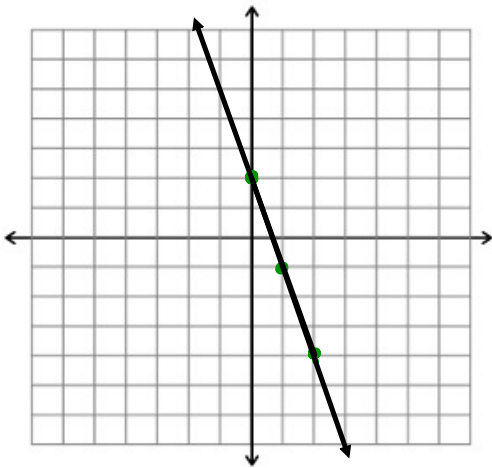
$$y = 2x - 1$$

x	$2x - 1$	y	
0	$2(0) - 1 = 0 - 1$	-1	$(0, -1)$
1	$2(1) - 1 = 2 - 1$	1	$(1, 1)$
-1	$2(-1) - 1 = -2 - 1$	-3	$(-1, -3)$



Ex. 4

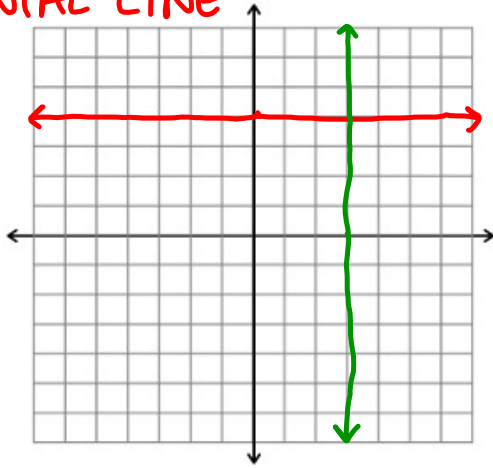
$$\begin{array}{r} 3x + y = 2 \\ \underline{-3x} \qquad \underline{-3x} \\ y = -3x + 2 \end{array}$$



x	$-3x + 2$	y
0	$-3(0) + 2 = 0 + 2$	2 (0, 2)
1	$-3(1) + 2 = -3 + 2$	-1 (1, -1)
2	$-3(2) + 2 = -6 + 2$	-4 (2, -4)

Ex. 5

$y = 4$
HORIZONTAL LINE



$x = 3$

VERTICAL LINE
- 2

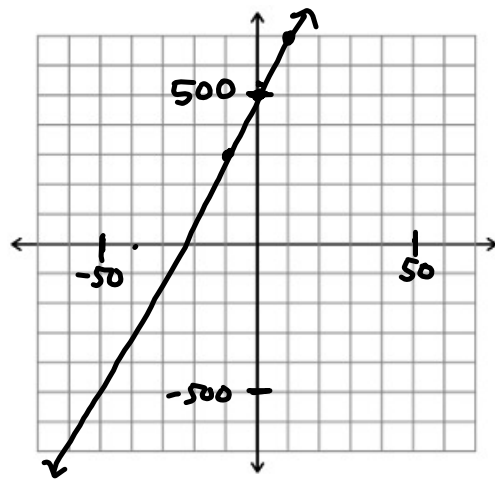
x	y
3	?
3	?

COULD BE ANYTHING

Ex. 6 ADJUSTING FOR SCALE

$$y = 20x + 500$$

x	$20x + 500$	y
0	$20(0) + 500$	500
10	$20(10) + 500 = 200 + 500$	700



INTERCEPTS

X-INTERCEPT: THE POINT(S) WHERE THE GRAPH
CROSSES THE X-AXIS (y-VALUE IS 0)

y-INTERCEPT: THE POINT(S) WHERE THE GRAPH
CROSSES THE y-AXIS. (x-VALUE IS 0)

EX. 7 GRAPHING WITH THE X & Y INTERCEPTS

$$2x - 3y = 6$$

X INT: $2x - 3(0) = 6$

$$\cancel{2}x = \cancel{2} \cdot 6$$

$$x = 3$$

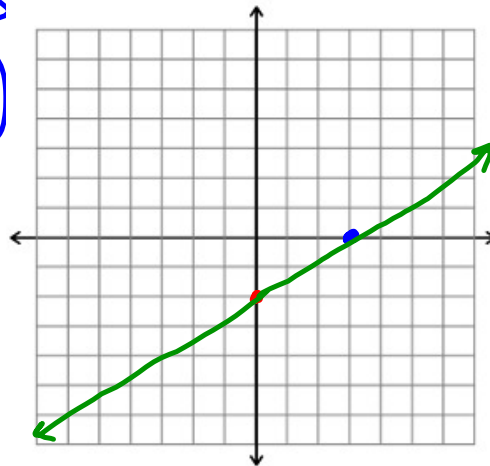
$$(3, 0)$$

Y INT: $2(0) - 3y = 6$

$$\cancel{-3}y = \cancel{-3} \cdot 6$$

$$y = -2$$

$$(0, -2)$$



FUNCTION NOTATION

- ASSIGNS A LETTER-NAME TO THE FUNCTION.

$$\underline{C(x)} = 30x + 900$$

NOT MULTIPLICATION

$$\begin{array}{l} y = C(x) \\ y = 30x + 900 \end{array}$$

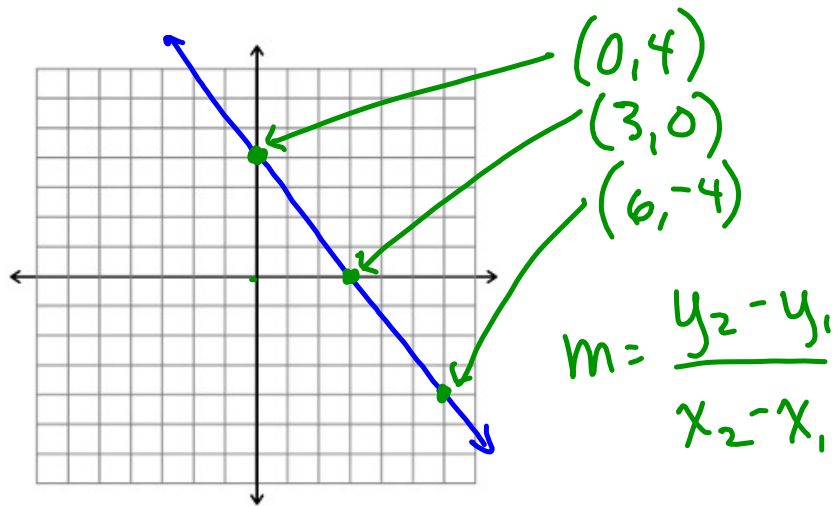
• NAME OF FYN IS C • VARIABLE IS X

3.2 SLOPE

$$\text{SLOPE} = m = \frac{\text{RISE}}{\text{RUN}} = \frac{\Delta y}{\Delta x}$$

Δ = CHANGE
OR DIFFERENCE

Ex. 1



$$m = \frac{4 - 0}{0 - 3} = \frac{4}{-3} = -\frac{4}{3}$$

$$m = \frac{4 - -4}{0 - 6} = \frac{8}{-6} = -\frac{4}{3}$$

RISE
RUN

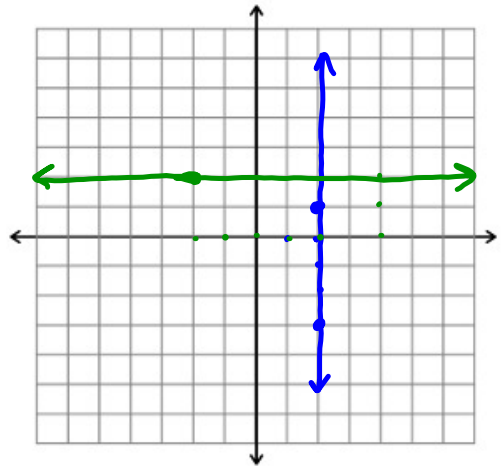
Ex. 4

Ⓐ $(2, 1) \text{ \& } (2, -3)$

$$m = \frac{1 - (-3)}{2 - 2} = \frac{4}{0} \text{ UNDEFINED (VERT)}$$

Ⓑ $(-2, 2) \text{ \& } (4, 2)$

$$m = \frac{2 - 2}{-2 - 4} = \frac{0}{-6} = 0 \text{ Horiz.}$$



PARALLEL LINES

HAVE THE SAME SLOPE.

$$y = m_1x + b_1 \quad y = m_2x + b_2$$

IF $m_1 = m_2$ THEN THE LINES ARE //

PERPENDICULAR LINES

HAVE OPPOSITE RECIPROCAL SLOPES

$$y = m_1x + b_1 \quad y = m_2x + b_2$$

IF $m_1 = -\frac{1}{m_2}$ THEN THE LINES ARE \perp

$$\begin{array}{r} m \\ \frac{3}{2} \\ 4 \\ \frac{1}{2} \\ -1 \end{array} \quad \begin{array}{r} -\frac{1}{m} \\ -\frac{2}{3} \\ -\frac{1}{4} \\ -2 \\ 1 \end{array}$$