Some terms to re-call:
- x-intercept (A) — where graph crosses x-axis (2,0)
- y-intercept (E) — where graph crosses y-axis (0,3)
- coefficient (D)
- point of intersection (POI) (B)
- equation (C)

Match the definition with the appropriate term above

A) The location where a graph crosses the x- axis.
B) The ordered pair (x, y) where two lines cross.
C) This states that two things (or two sides) are the same or "equal" to each other, using an equal sign (=)
D) A number that multiplies a variable. This number is located in front of the variable. $4x, 3p^2$
E) The location where a graph crosses the y- axis
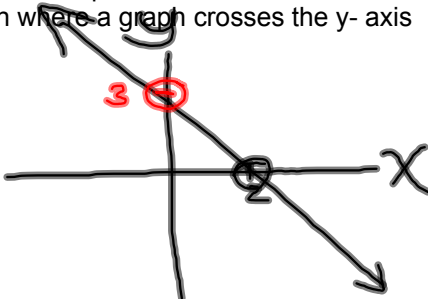
Graphing Linear Relations

There are several strategies we can use to graph a linear relation.

We can:
- Create a table of values
- Use the slope and *y*-intercept
- Use the *x*- and *y*- intercepts
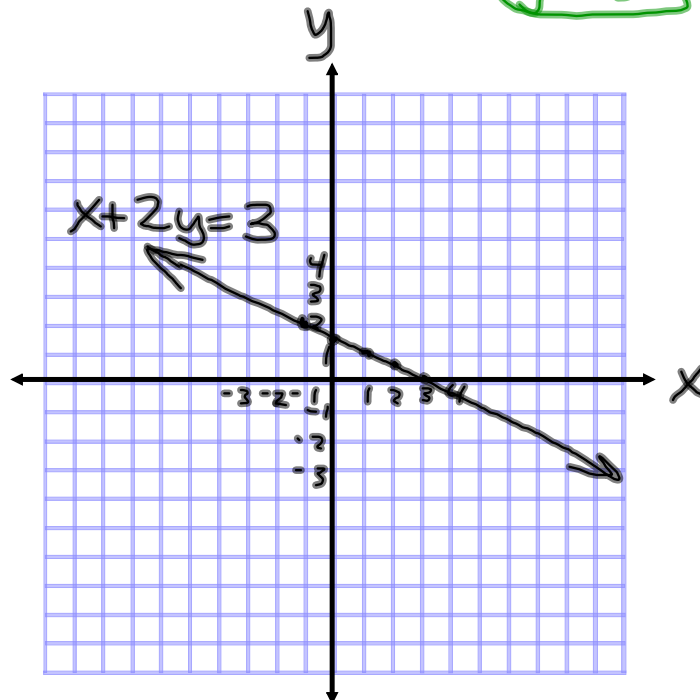
Graph the following relation using the three strategies.
x + 2y = 3

① Table of Values.

x	y
-1	2
0	1.5
1	1
2	0.5
3	0

$(+x + 2y = 3) \rightarrow \dfrac{2y}{2} = \dfrac{3-x}{2}$

$y = \dfrac{3-x}{2}$
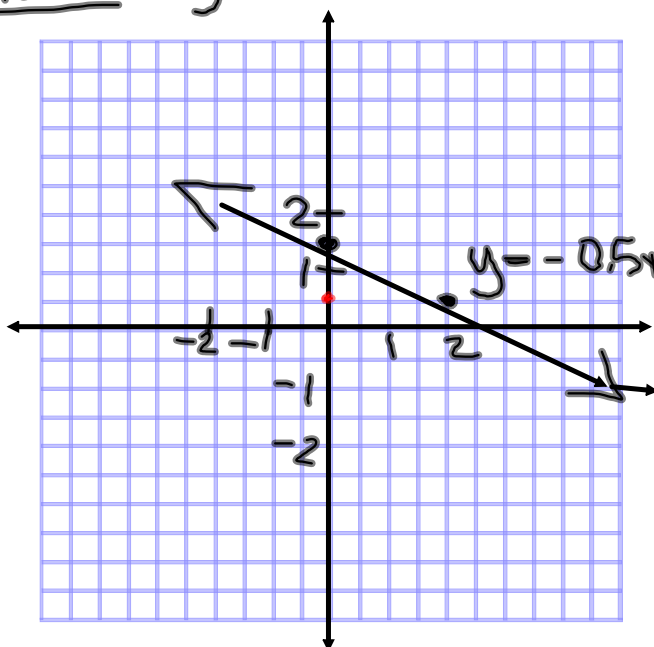
$y = \dfrac{3-(-1)}{2} = \dfrac{4}{2}$

$\boxed{y = 2}$

X+2y=3

$$x + 2y = 3$$

② <u>Slope form</u>: $y = mx + b$

where m = slope
b = y-int.

$m = \dfrac{rise}{run}$

* plot
y-int.
first

$y = -0.5x + 1.5$

(graph with axes, points plotted, line drawn, labels 2, 1, -1, -2 on y-axis and -2, -1, 1, 2 on x-axis)

$x + 2y = 3$

$\dfrac{2y}{2} = \dfrac{-1x + 3}{2}$

$y = \dfrac{-1}{2}x + \dfrac{3}{2}$

$y = -0.5x + 1.5$

3

$$x + 2y = 3$$

③ x- and y- intercepts :
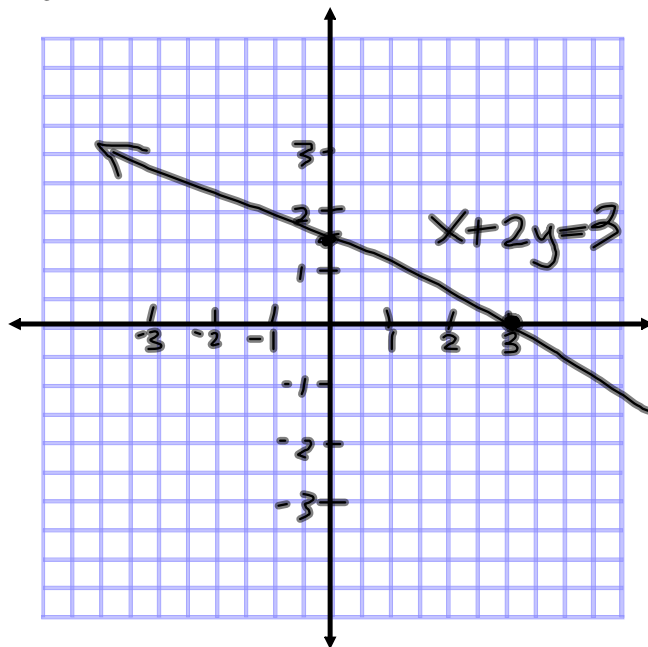
$x + 2y = 3$

To find the x-int :
Let y = 0

$x + 2y = 3$
$x + 2(0) = 3$
$x = 3$
$(3, 0)$

To find the y-int :
Let x = 0

$x + 2y = 3$
$(0) + 2y = 3$
$\dfrac{2y}{2} = \dfrac{3}{2}$
$y = \dfrac{3}{2}$
$(0, 1.5)$

Expanding and Simplifying algebraic expressions:

a) 3x + 10 - 4x - 15

$= -x - 5$

b) 6(2x - 4) + 3(2x - 1)

$= 12x - 24 + 6x - 3$
$= 18x - 27$

c) -2(5x + 2)

$= -10x - 4$

d) (8x - 14) - (7x + 6)

$= 1x - 20$