Unit 7 Day 3
7-3 The Linear Equation and its Graph

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

slope ↑   ↑ y-intercept

Sometimes called "Input/Output" form. By putting in a # for x, we calculate a # for y.

1) $y = 2x + 7$

↑ output "dependent"   ↑ input "independent"

$y = 2(-5) + 7$

x	y
-5	-3	← output
-2	3
0	7
1	9
4	15

y y-int.
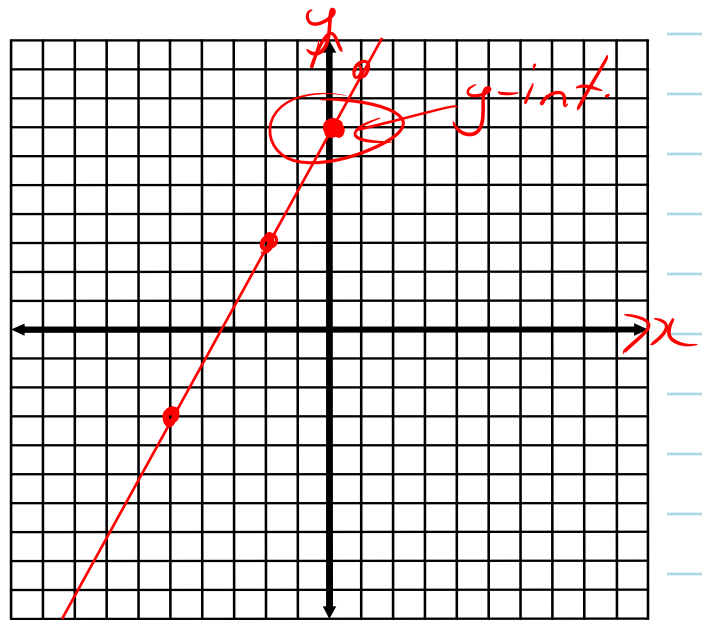
$m = \dfrac{\Delta y}{\Delta x} = \dfrac{15 - -3}{4 - -5}$

$m = \dfrac{18}{9} = 2$

$y = 2x + 7$

$b = y\text{-int} = 7$

slope $= 2$

Any linear equation can be rearranged into $y = mx + b$ (slope-intercept form).

$$y = mx + b$$

1) $3x + 2y = 6$

$-3x -3x$

$$\frac{2y}{2} = \frac{-3x}{2} + \frac{6}{2}$$

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

$m \,(\text{slope}) = -\frac{3}{2}$

$b\,(y\text{-int}) = 3$

2) $5x - 3y = 9$

$-5x -5x$

$$\frac{-3y}{-3} = \frac{-5x}{-3} + \frac{9}{-3}$$

$$y = \frac{5}{3}x - 3$$

$m = \frac{5}{3}, \quad b = -3$

Graph the lines above:
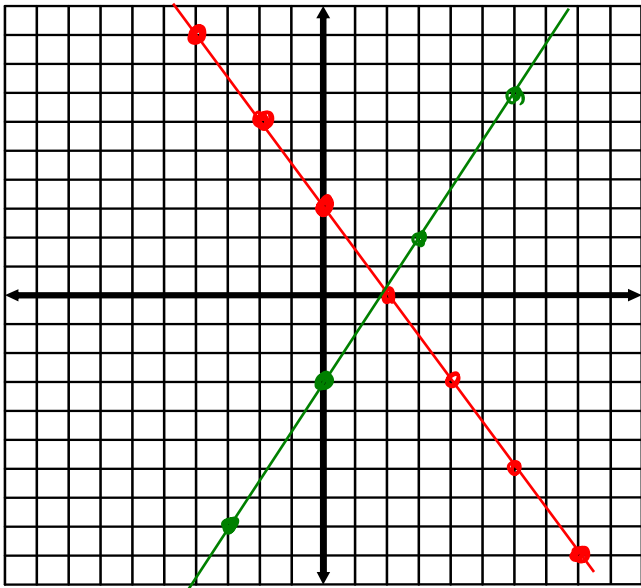
$$y = -\frac{3}{2}x + 3$$

a) start w/ y-int.

b) use slope to find other points

Practice 7-3