Write Linear Equations in Slope-Intercept Form.

Key

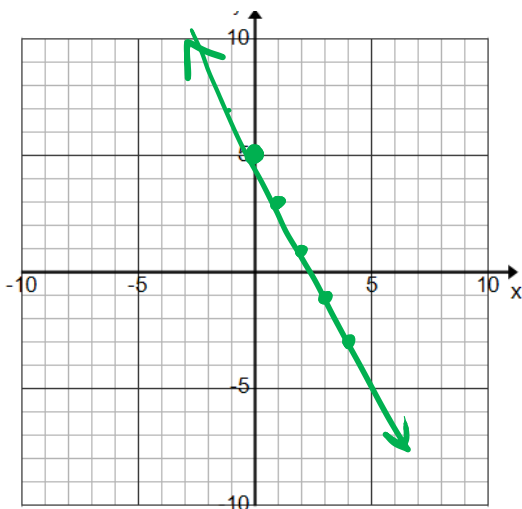How to write the equation of a line in **SLOPE-INTERCEPT** form:
1) Find the _slope (m)_.
2) Find the _y-intercept (b)_.
3) Write the equation in _$y = mx + b$_ form.

Example 1: Write the equation of a line in **SLOPE-INTERCEPT FORM** with given the following information.
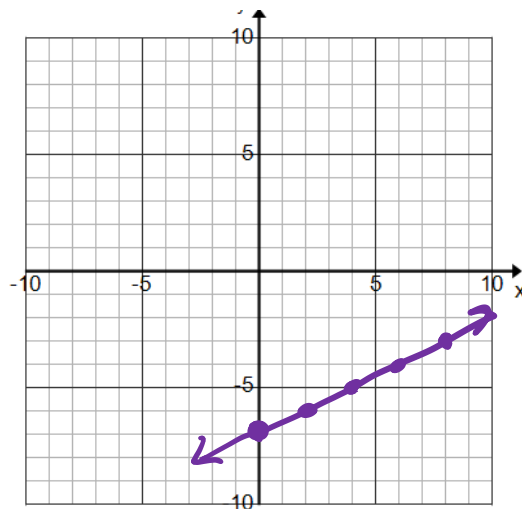
a. Slope of -2 and y-intercept of 5.

$$y = -2x + 5$$

b. Slope of $\frac{1}{2}$ and goes through (0, -7) ← y-int
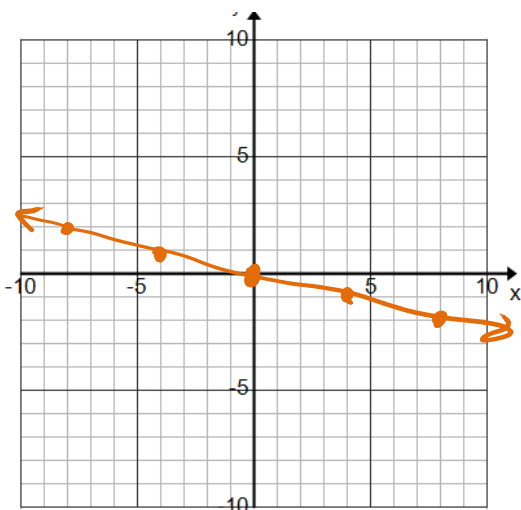
$$y = \frac{1}{2}x - 7$$

Graph:

Graph:

c. Slope of $-\frac{1}{4}$ and y-intercept of 0.

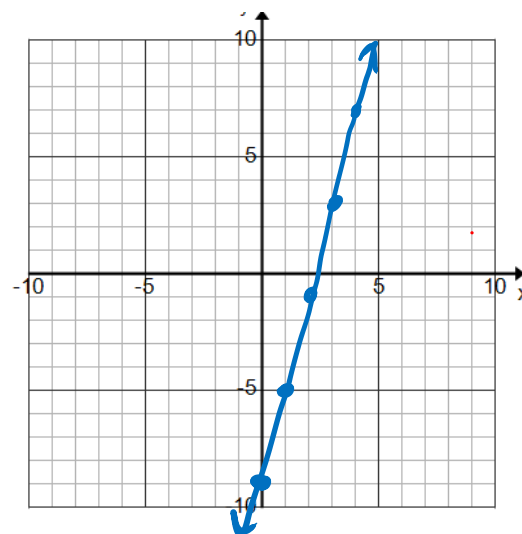$$y = -\frac{1}{4}x + 0 \quad / \quad \boxed{y = -\frac{1}{4}x}$$
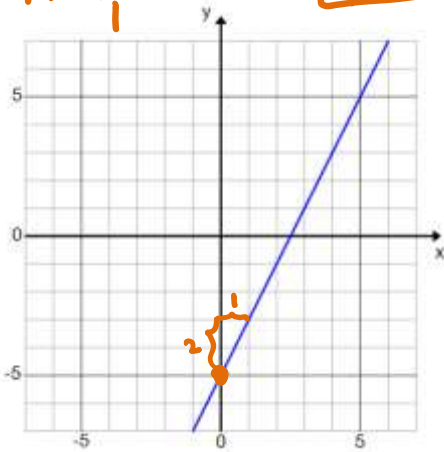
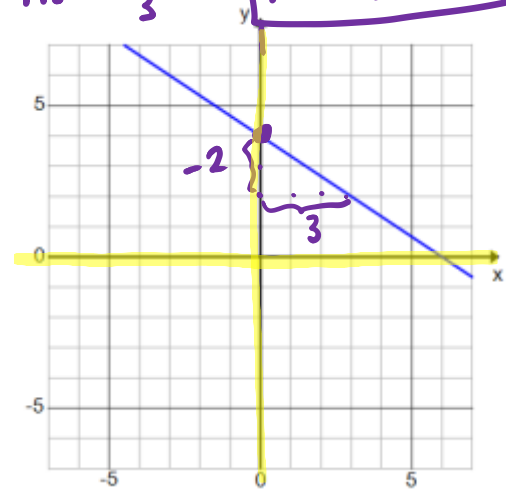d. Slope of 4 and goes through (0, -9) ← y-int

$$y = 4x - 9$$

Graph:

Graph:

Example 2: Write the equation of a line(s) below:

a. $b = -5$
$m = \frac{2}{1} = 2$ $\boxed{y = 2x - 5}$

b. $b = 4$
$m = \frac{-2}{3}$ $\boxed{y = \frac{-2}{3}x + 4}$

Example 3:

Write the equation that passes through the following points.   y-int (b)

a. (3, -1) and (0, -5).   ← y-int (b)

$m = \frac{-5 + 1}{0 - 3} = \frac{-4}{-3} = \frac{4}{3}$

$\boxed{y = \frac{4}{3}x - 5}$

b. (0, 6) and (5, 5)   ← y-int (b)

$m = \frac{5 - 6}{5 - 0} = \frac{-1}{5}$

$\boxed{y = \frac{-1}{5}x + 6}$

Example 4: **Do you remember FUNCTION NOTATION?** *Which number would represent x and which number would represent y?*

Write the equation for the linear function f, with the given values:

a. $\overset{x}{f(3)} = \overset{y}{2}$, $\overset{x}{f(0)} = \overset{y}{6}$

(3, 2)   (0, 6) ← y-int

$m = \frac{6 - 2}{0 - 3} = \frac{-4}{3}$

$\boxed{y = \frac{-4}{3}x + 6}$

b. f(0) = 6,   f(-6) = 15

(0, 6)   (-6, 15)
  ↑
  y-int

$m = \frac{15 - 6}{-6 - 0} = \frac{9}{-6} = -\frac{3}{2}$

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

Think about it: A sketch might help!

Write the equation of the line that has slope of 0 and goes through (0, -3)

horizontal $\boxed{y = -3}$