Name: _____

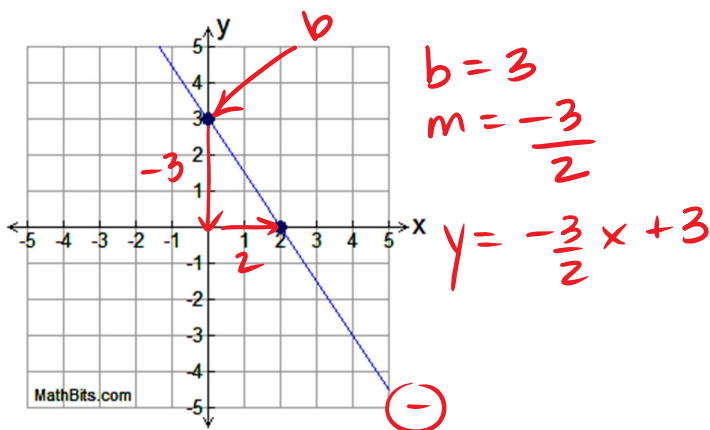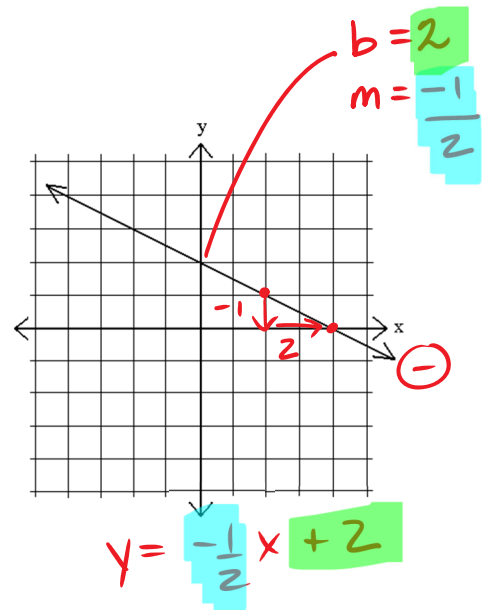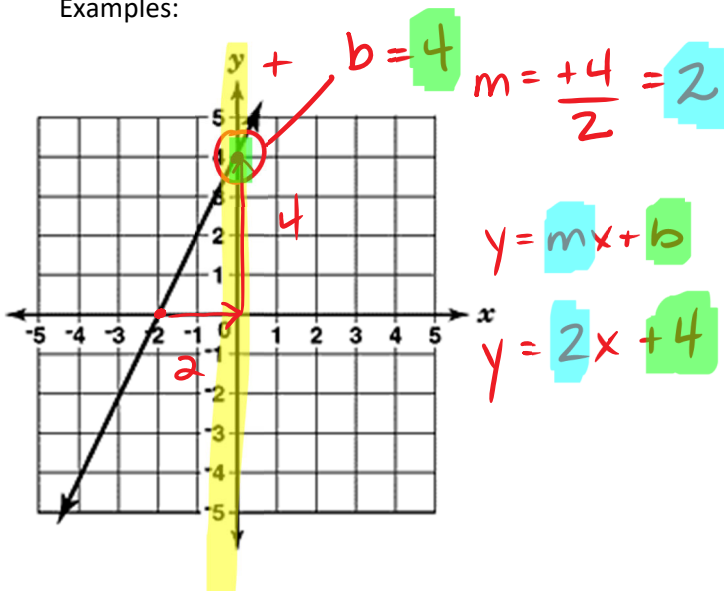## 3.5 Graphs and Linear Relationships - Part B

p. _____88_____

Using a graph, we can determine the relationship between two variables.

Method 1: Read the graph.

1. Find the slope of the line from the graph.
   - Lines that go up to the right are __positive__.
   - Lines that go down to the right are __negative__.
   - Use the formula: $m = \dfrac{rise}{run}$
2. Find the y-intercept
   - Where does the line cross the __y-axis__.

Examples:

$b = 4$

$m = \dfrac{+4}{2} = 2$

$y = mx + b$

$y = 2x + 4$

$b = 2$

$m = \dfrac{-1}{2}$

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

MathBits.com

$b = 3$

$m = \dfrac{-3}{2}$

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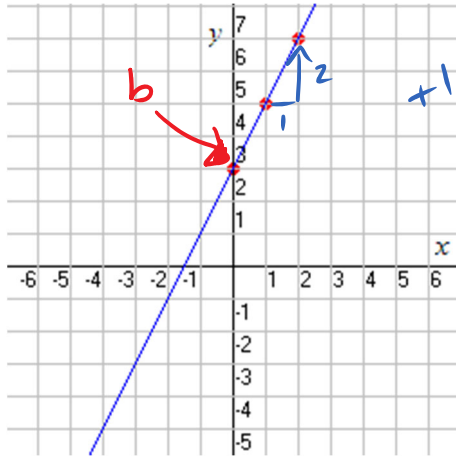

$b = -1$

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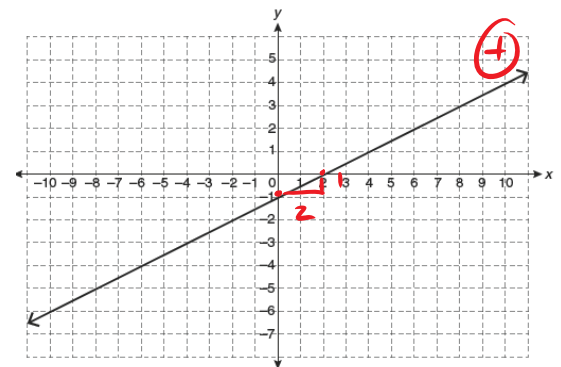
$y = \dfrac{1}{2}x - 1$

OR

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

Method 2: Create a Table of Values

1. Using the graph create a table of values.
2. Use the table of values to find slope (m) and the y-intercept (b).
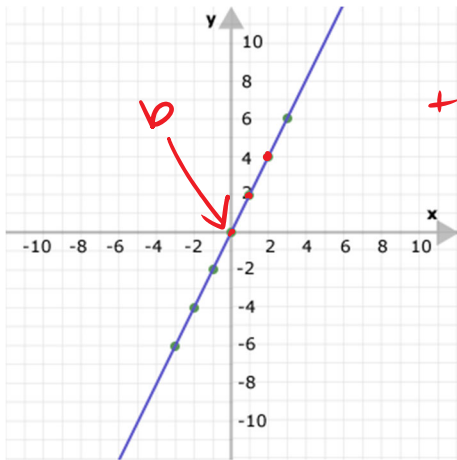3. Write the equation in slope-intercept form (y = mx + b)

Examples:

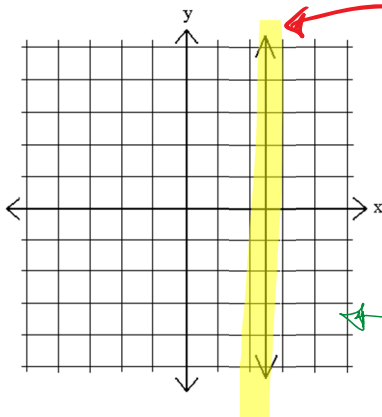$$\begin{array}{c|c} x & y \\ \hline 0 & 3 \\ 1 & 5 \\ 2 & 7 \end{array}$$

$+1 \,(\! \text{...} \!)+2$

$$m = \frac{2}{1}$$
$$= 2$$

$$y = mx + b$$
$$3 = 2(0) + \boxed{}$$
$$3 = 0 + \boxed{3}$$
$$y = 2x + 3$$

$$\begin{array}{c|c} x & y \\ \hline 0 & 0 \\ 1 & 2 \\ 2 & 4 \end{array}$$

$+1 \,(\! \text{...} \!)+2$

$$m = \frac{2}{1}$$
$$= 2$$

$$y = mx + b$$
$$y = 2x + 0$$
$$\boxed{y = 2x}$$

THIS LINE HITS THE X-AXIS @ 2.5

$$x = 2.5$$

REMEMBER:

HORIZONTAL LINE $y = \boxed{}$
VERTICAL LINE $x = \boxed{}$
OBLIQUE (DIAGONAL) LINE $y = mx + b$ (* both x & y)

Homework: p. _____89_____ #1a-g for novice, #1a-i for apprentice/expert