Warm-up:

Write the equation of the line in slope-intercept form. $y = mx + b$

1. $m = \dfrac{1}{5}$ and $(\overset{x}{-10}, \overset{y}{7})$

$y = \dfrac{1}{5}x + 9$

$$y = mx + b$$
$$7 = \tfrac{1}{5}(-10) + b$$
$$7 = -2 + b$$
$$\underline{+2 \quad\quad +2}$$
$$9 = b$$

2. $\boxed{m = -3}$ and $(\overset{x}{-5}, \overset{y}{-2})$

$y = -3x - 17$

$$y = mx + b$$
$$-2 = (-3)(-5) + b$$
$$-2 = 15 + b$$
$$\underline{-15 \quad\quad -15}$$
$$\boxed{-17 = b}$$

Find the slope.

3. $(\overset{x}{-3}, \overset{y}{4})$ and $(\overset{x}{5}, \overset{y}{-2})$

$$\frac{4 \;+2}{-3 - 5} = \frac{6}{-8}$$

$$\boxed{-\frac{3}{4}}$$

Review: $m =$ Slope $\dfrac{Rise}{Run}$ $b = y\text{-intercept}$

Write the equation for the line.

Ex. 1:

$m = \dfrac{1}{3}$

$b = 1$

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

Ex. 2:

$m = \dfrac{-2}{1}$
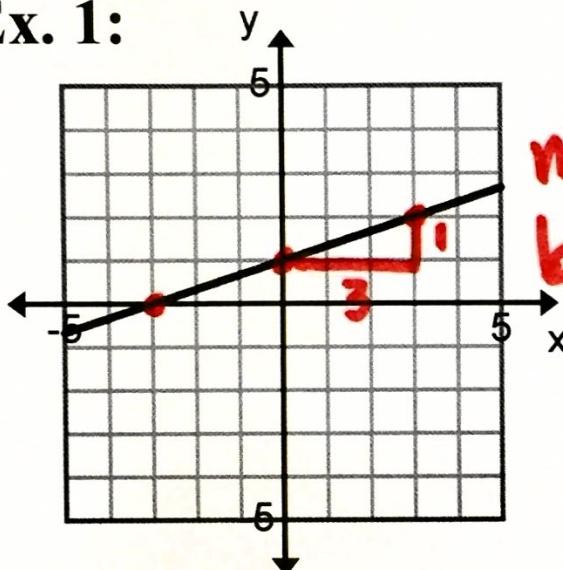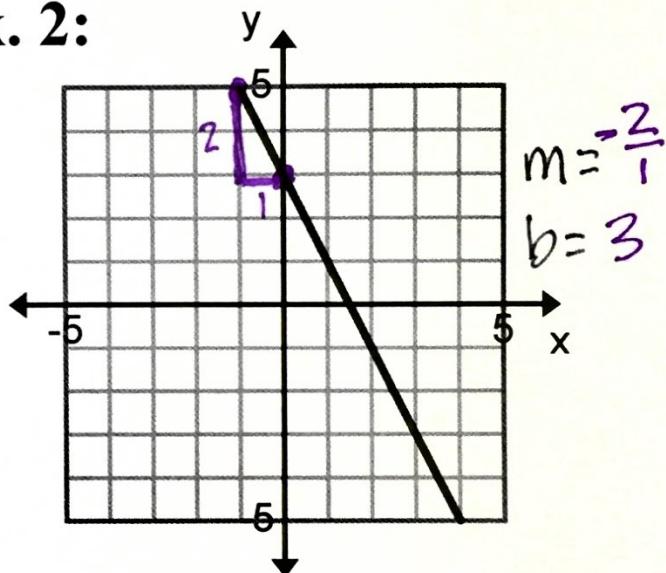
$b = 3$

$y = -2x + 3$

Write the equation for the line.

Ex. 3:
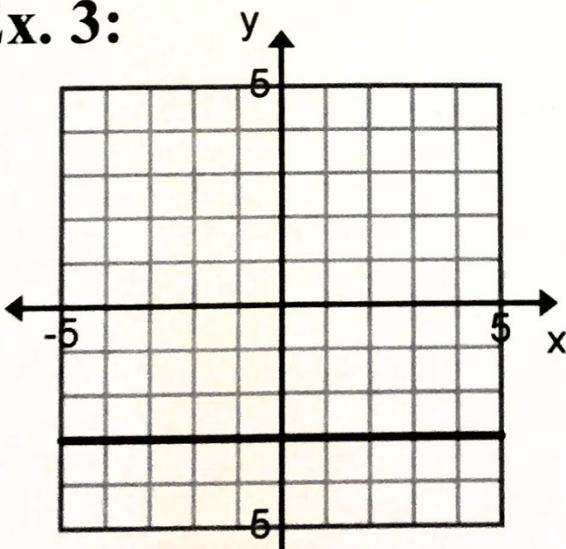
$y = -3$

Ex. 4:
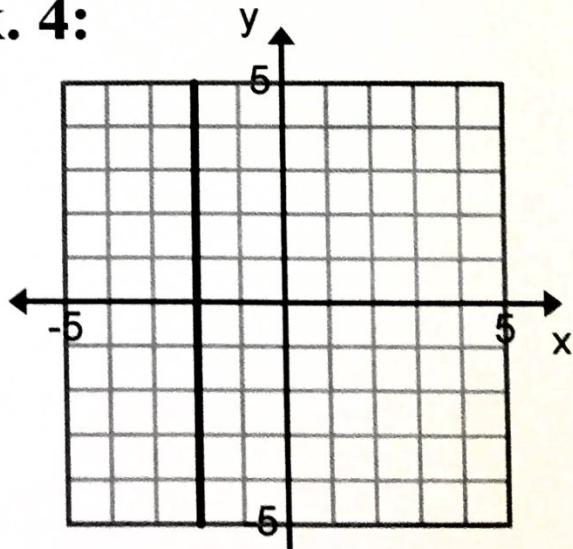
$x = -2$

Ex. 5: Write the equation of the line in <u>slope-intercept form</u> given the two points.

$$m = -2$$

$$\boxed{\overset{x\ \ y}{(2,\underline{-3})}} \text{ and } (-3,\underline{7})$$

$$\frac{-3-7}{2+3} = \frac{-10}{5} = -2$$

$$y = mx + b$$
$$-3 = (-2)(2) + b$$
$$-3 = -4 + b$$
$$\underline{+4 \qquad +4}$$
$$1 = b$$

$$y = -2x + 1$$

Steps:
① Find (m) slope　　use u fo $\frac{-}{-}$
② Identify x & y
③ choose either point
④ Plug in m, x, & y　　$y = mx + b$
⑤ Solve for b.
⑥ Write equation　　　x & $y \rightarrow$ variables
　　　　　　　　　　　　m & $b \rightarrow$ #'s

Ex. 6: Write the equation of the line in slope-intercept form.

$$m = -3$$

$$(6,-4) \text{ and } (2,8)$$

$$\frac{-4-8}{6-2} = \frac{-12}{4}$$
$$= -3$$

$$y = mx + b$$
$$8 = (-3)(2) + b$$
$$8 = -6 + b$$
$$\underline{+6 \qquad +6}$$
$$14 = b$$

$$\boxed{y = -3x + 14}$$

Ex. 7: Write the equation of the line in slope-intercept form.

$m = 0$ (3, –4) and (–9, –4)

$$\frac{-4 - +4}{3 - +-9} = \frac{0}{12}$$
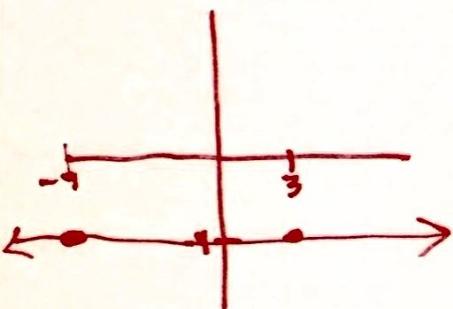
$y = mx + b$
$-4 = (0)(3) + b$
$-4 = 0 + b$
$-4 = b$
$y = 0x - 4$

$y = -4$

Ex. 8: Write the equation of the line in slope-intercept form.

(–8, –5) and (–8, –3)
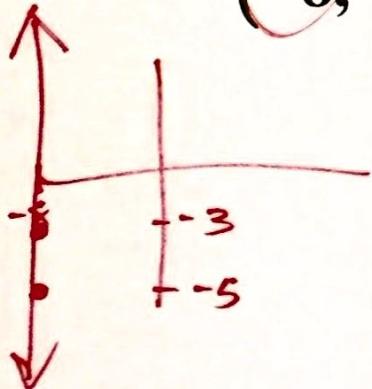
$x = -8$

Horizontal Lines: hits the y-axis
have the same # in both the y spots
$y = \#$

Vertical Lines: hits the x-axis
have the same # in both the x spots
$x = \#$