Writing Linear Equations Review

1. Find the slope of the line containing the points $A(2, 2)$ and $B(6, 3)$.

$$x_1 \ y_1 \qquad x_2 \ y_2$$

Use the formula:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{3-2}{6-2} = \frac{1}{4}$$

Slope is $\frac{1}{4}$

2. Find the slope of the line containing the points $A(-1, -7)$ and $B(-6, -5)$.

$$m = -\frac{2}{5}$$

3. Find an equation, in slope-intercept form, of a line having slope 3 and y-intercept 2.

Slope-intercept form: $y = mx + b$ where m is the slope and b is the y-intercept

$m = 3 \qquad b = 2$

$$y = 3x + 2$$

4. Write an equation of the line with slope $\frac{1}{3}$ and y-intercept -4.

$m = \frac{1}{3} \qquad b = -4$

$$y = \frac{1}{3}x - 4$$

5. Write the equation $5y - 2x = 3$ in slope-intercept form.

Move all terms around so that y is alone.

$$5y - 2x = 3$$
$$5y = 2x + 3$$
$$y = \frac{2}{5}x + \frac{3}{5}$$

6. Write the equation $y - 2 = -\frac{2}{3}(x + 6)$ in slope-intercept form.

$$y - 2 = -\frac{2}{3}x + (-4)$$
$$+2 \qquad\qquad +2$$
$$y = -\frac{2}{3}x - 2$$

7. Write an equation of the line shown in slope-intercept form.

Slope $= -\dfrac{8}{4}$
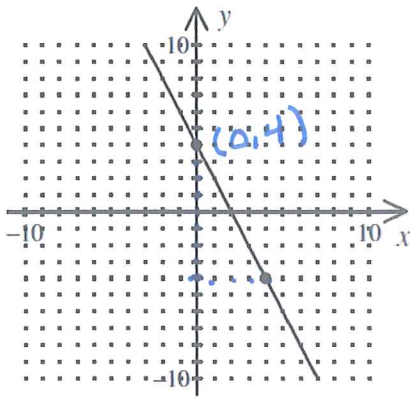
m = ___ -2 ___

b = ___ (0,4) ___ b = 4

Now place into
y = mx + b

$Y = -2x + 4$

8. Write the equation of the vertical and horizontal lines that pass through the point (7,-3)

← → Hor   ↕ vert

***Recall that vertical means a line going straight up and down. This means it will always have the same x value no matter the y value. Graph the point, then graph the vertical line.

***Recall that horizontal means a line going right to left. This means it will always have the same y value no matter the x value. Graph the point, then graph the horizontal line.

X = 7

Y = -3
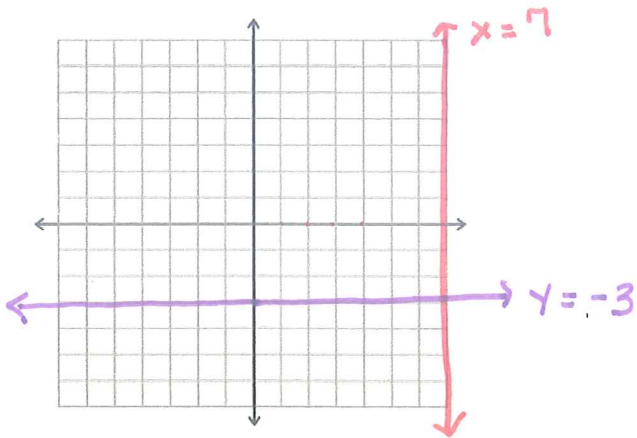
9. Write an equation of a line with slope 2 passing through the point (3, −5).

Use both slope intercept form and point slope form for practice.

$y = mx + b$
Plug in m, x, & y and solve for b.

$-5 = 2(3) + b$
$-5 = +6 + b$
$-6 \quad -6$
$-11 = b$

$Y = 2x - 11$

$y - y_1 = m(x - x_1)$
Plug in the point and slope!

$Y + 5 = 2(x - 3)$

10. Find an equation for the line with undefined slope and passing through the point (−2, 4).
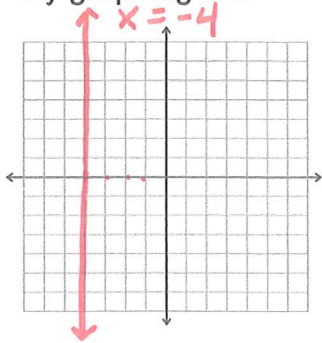
For a slope to be undefined, it must be $\dfrac{Rise}{0}$.   ↕ vert

$X = -2$

For a slope to be zero, it must be $\dfrac{0}{run}$.   ← → Horizontal

11. Find the *y*-intercept of the line containing the point (–4, 2) with undefined slope.
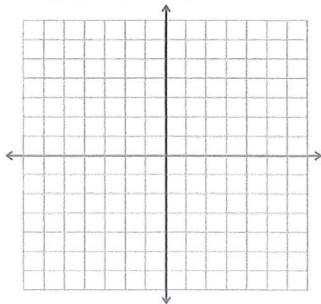
Hint- Try graphing it ☺

x = –4

no y intercept

12. Find the *y*-intercept of a line that passes through (5, 11) and has a slope of 5.

Hint- Try graphing it ☺

$$y = mx + b$$
$$11 = 5(5) + b$$
$$11 = 25 + b$$
$$-25 \quad -25$$
$$\boxed{-14 = b}$$