Bell Work:
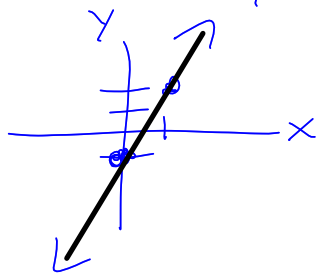
In Standard form (Ax + By = C), what two points on the graph does this form give us?

$x + y$ intercepts
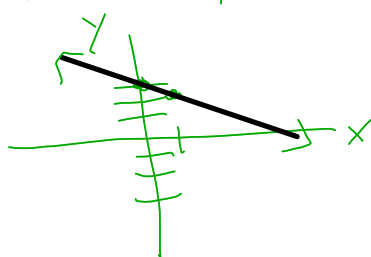
In point slope form ($y - y_1 = m(x - x_1)$), what does m, x_1, and y_1 mean?

$m = $ slope $(x_1, y_1) = $ given point

Graph
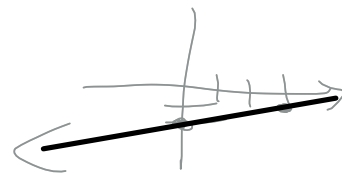
1) $y = 3x - 1$ $m = \frac{3}{1}$

$y\text{-int} = -1$

(2) $y = -x + 3$ $m = \frac{-1}{1}$

$y\text{-int} = 3$

3) $x = 3y + 6$

$-3y - 3y$

$-3y + x = 6$

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

$y = \frac{1}{3}x - 2$

More About Linear Equations

Write an equation of each line.

$$Point \; slope \quad y - y_1 = m(x - x_1)$$

$$x_1, y_1$$

1. slope 6; through (0, 4)

$$y - 4 = 6(x - 0)$$
$$y - 4 = 6x$$
$$+4 \quad +4$$
$$y = 6x + 4$$

2.

9. slope −5; through (9, −1)

$$y + 1 = -5(x - 9)$$
$$y + 1 = -5x + 45$$
$$-1 \qquad -1$$
$$y = -5x + 44$$

Write in point-slope form an equation of the line through each pair of points. To start, substitute values for (x_1, y_1) and (x_2, y_2) into the slope formula.

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

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

3**6.** (2, 7) and (−4, 1)

$$\frac{1-7}{-4-2} = \frac{-6}{-6} = 1$$

$$y - 7 = 1(x-2)$$

or

$$y - 1 = 1(x+4)$$

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

4**0.** $\left(\frac{6}{8}, \frac{5}{2}\right)$ and $\left(-\frac{7}{8}, \frac{3}{2}\right)$

$$\frac{\frac{3}{2} - \frac{5}{2}}{-\frac{7}{8} - \frac{6}{8}} = \frac{-\frac{2}{2}}{-\frac{13}{8}}$$

$$-\frac{2}{2} \div \frac{-13}{8} = -\frac{2}{2} \cdot \frac{-8}{13} = \frac{16}{26} = \frac{8}{13}$$

$$y - \frac{5}{2} = \frac{8}{13}\left(x - \frac{6}{8}\right)$$

4

$$Ax + By = C$$

Write an equation of each line in standard form with integer coefficients. To start, multiply each side by the least common denominator of all fractional coefficients.

$$3 = \quad 3, 6$$

$$5\ 0.\left(y = -\frac{4}{3}x + \frac{5}{6} \right)\frac{6}{1}$$

$$6y = \frac{-24}{3}x + \frac{30}{6}$$

$$\begin{array}{cc} 6y = -8x + 5 \\ +8x \qquad +8x \end{array}$$

$$8x + 6y = 5$$

6

6. Reasoning The line $y + 4 = \dfrac{3}{4}(x - 8)$ contains point $(a, 2)$. Find a. Show your work.

$$x \qquad y$$

$$2 + 4 = \frac{3}{4}\left(a - \frac{8}{1}\right)$$

$$6 = \frac{3}{4}a - \frac{24}{4} \qquad\qquad (4)\,12 = \frac{3}{4}a\,(4)$$

$$6 = \frac{3}{4}a - 6 \qquad\qquad \frac{48}{3} = \frac{3a}{3}$$
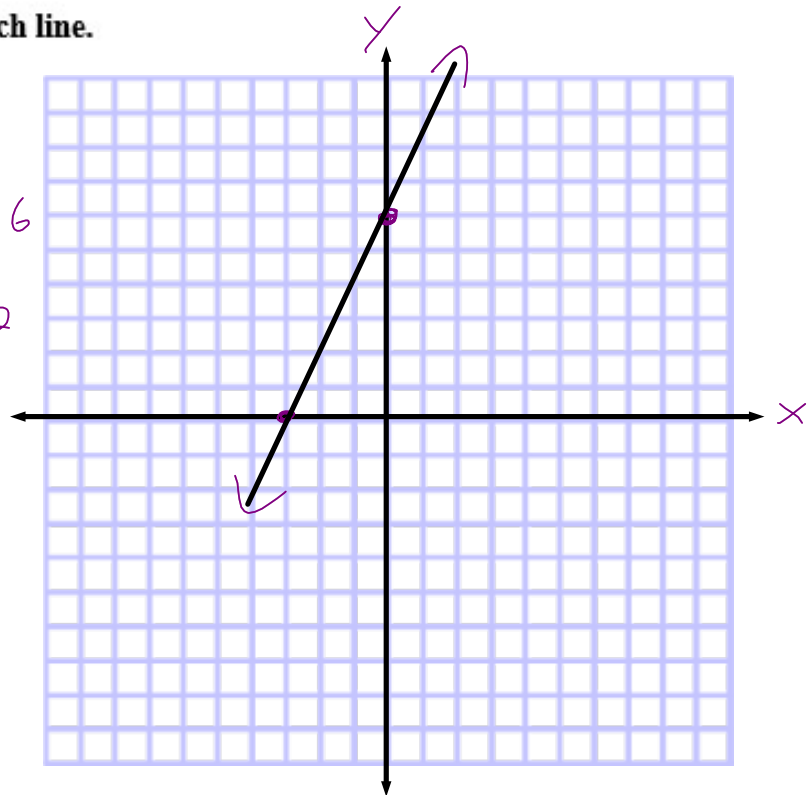$$+6 \qquad\qquad +6 \qquad\qquad 16 = a$$

Find the intercepts and graph each line.

7 9. $-2x + y = 6$

$-2(0) + y = 6$

$y = 6$

$(0, 6)$

$y\text{-int}$

$-2x + 0 = 6$

$-2x = 6$

$\dfrac{-2x}{-2} = \dfrac{6}{-2}$

$x = -3$

$(-3, 0)$

Write an equation in slope-intercept form for each line.

8. the line parallel to $y = 4x - 1$ through $(2, 7)$
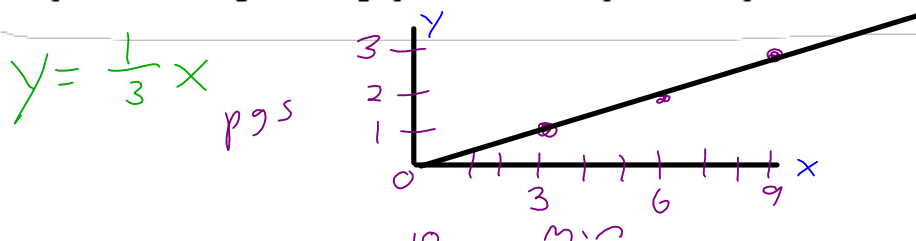
$m = 4$

Parallel lines
$y = 4x + 2$

$$y - y_1 = m(x - x_1)$$
$$y - 7 = 4(x - 2)$$
$$y - 7 = 4x - 8$$
$$+7 \qquad\qquad +7$$
$$y = 4x - 1$$

9. the line perpendicular to $y = -\frac{1}{3}x + 5$ through $(6, 3)$

$m = -\frac{1}{3} \rightarrow -\frac{3}{1} \rightarrow \frac{3}{1} \;\boxed{3}$

$$y - 3 = 3(x - 6)$$
$$y - 3 = 3x - 18$$
$$+3 \qquad\qquad +3$$
$$y = 3x - 15$$

$$\frac{30 \text{ pgs}}{90 \text{ min}} = \frac{1 \text{ pg}}{3 \text{ min}}$$

10) Rosa must read 30 pages of a book for English class. It will take Rosa about 90 minutes to complete her reading. Draw a graph and write an equation to represent the situation.

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

pgs

11) According to the information in Exercise 10, how long will it take Rosa to read 45 pages?

$$(3) \; 45 = \frac{1}{3} x \; (3)$$

$$145 = x$$

145 min to read 45 pgs