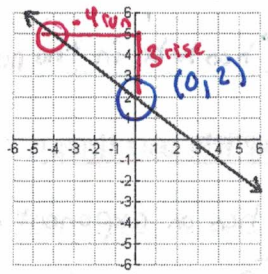
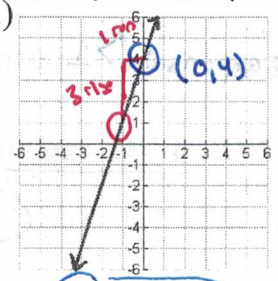
**Example 3:** Write a linear equation in slope-intercept form of each given graph or set of points.

a.) $m = -\frac{3}{4}$ $b = 2$




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

b.) $m = \frac{3}{1}$ $b = 4$




$y = 3x + 4$

c.) $(0, -3)$ and $(5, 7)$ $(x_1, y_1)$ $(x_2, y_2)$

$m = 2$ → $b = -3$

$m = \frac{7 - -3}{5 - 0} \rightarrow m = \frac{7+3}{5-0} = \frac{10}{5}$

$m = 2$

$y = 2x - 3$

d.) $(-6, 2)$ and $(4, -3)$ $(x_1, y_1)$ $(x_2, y_2)$

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

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

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

$m = \frac{-5}{10}$

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

$b =$

$y = mx + b$ $(-6, 2)$

$2 = -\frac{1}{2}(-6) + b$

$2 = 3 + b$

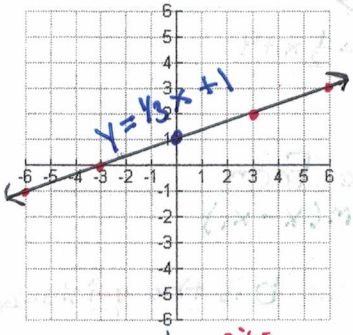
$-3 \quad -3$

$b = -1$

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

**Example 4:** Graph each linear equation. Identify the value of "m" and "b" below the graph.

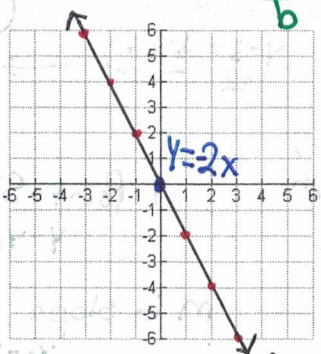
a.) $y = \frac{1}{3}x + 1$




$m = \frac{1}{3}$ rise / run

$b = 1$; $(0, 1)$

b.) $y = -2x$ $b$

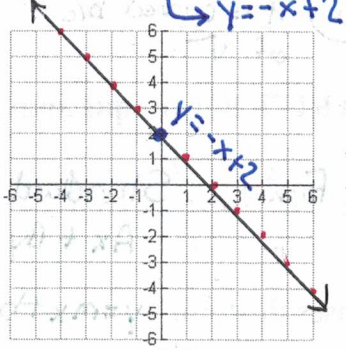



$m = -2$ or $\frac{-2}{1}$

$b = 0$; $(0, 0)$

c.) $y = 2 - x$ $y = mx + b$

$y = -x + 2$




$m = -1$ or $\frac{-1}{1}$

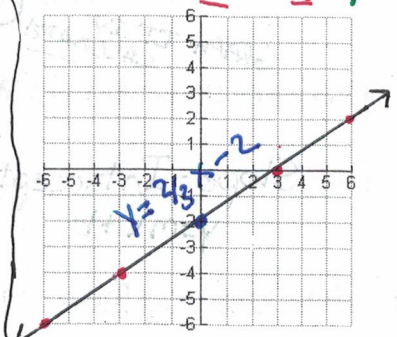
$b = 2$; $(0, 2)$

d.) $3y + 6 = 2x$ "Solve for y"

$-6 \quad -6$

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

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




$m = \frac{2}{3}$

$b = -2$; $(0, -2)$

**Examples:** Answer each multiple-choice question.

5.) Which equation has the same y-intercept as $y = 4x - 3$? $b = -3$

A.) $y - 3 = -3x$ $y = mx + b$ $+3 \quad +3$ $y = -3x + 3$

B.) $y = 8x + 3$

C.) $3 - y = 4x$ $y = mx + b$ $-3 \quad -1$ $-y = 4x - 3 \rightarrow y = -4x + 3$

D.) $y = -3 + 8x$ $y = 8x - 3$ ✓

6.) Which equation has the same slope as $2x + y = 1$? → $y = -2x + 1$ $m = -2$

A.) $y = 2x - 4$

B.) $y = 5 - 2x$ $y = -2x + 5$

C.) $y = -\frac{1}{2}x + 2$

D.) $y = 2x + 1$

7.) Which of the following is the equation of the line that has the same slope as $y = -\frac{3}{2}x + 2$ and the same y-intercept as $y = 3x - 2$?

Looking for $y = -\frac{3}{2}x - 2$

A.) $y - 2 = -\frac{3}{2}x$ $+2 \quad +2$ $y = -\frac{3}{2}x + 2$

B.) $-\frac{3}{2}x = y + 2$ $-2 \quad -2$ $y = -\frac{3}{2}x - 2$

C.) $y + 2 = -\frac{3}{2}$ $-2$ NOT $y = -\frac{7}{2}$ or $y = -3.5$

D.) $-\frac{3}{2}x = y + 3$ $-3 \quad -3$ $y = -\frac{3}{2}x - 3$

8.) A software company started with 2 employees. In 6 months, the company had 7 employees. The number of employees increase at a steady rate. Which equation models the relationship between the number of employees $n$ and the number of months $m$ since the company started? $(0, 2)$ $(6, 7)$ $(x_1, y_1)$ $(x_2, y_2)$

A.) $n = \frac{5}{6}m + 2$ $y$

B.) $m = 2n + \frac{5}{6}$

C.) $n = \frac{6}{5}m + 2$ $x$ $y$-int.

D.) $m = \frac{5}{6}n + 2$

$m = \frac{7-2}{6-0} = \frac{5}{6}$

$m = \frac{5}{6}$