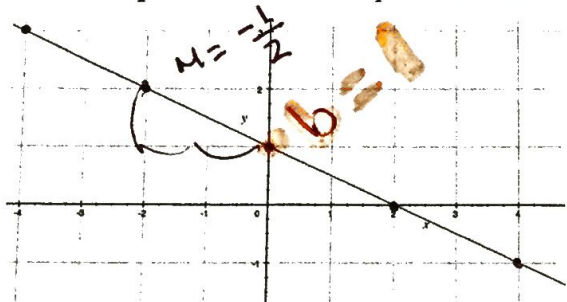


Notes - Multiple Representations of Linear Functions

**If you want to write the equation of a linear function in slope-intercept form ($y = mx + b$), you need to know:

- **slope** or rate of change (**m**) - $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x}$
- **y-intercept** (**b**) - always where $x = 0$

Example 1: Write the equation of the line from the graph.



$$y = mx + b$$

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

Example 2: Write the equation of the line from the table.

x	y
-1	4
0	6
1	8

$m = \frac{\Delta y}{\Delta x} = \frac{2}{1} = 2$
 $b = 6$

$$y = 2x + 6$$

Example 3: Write the equation of the line through the points $(0, 9)$ and $(-3, 7)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - 9}{-3 - 0} = \frac{-2}{-3} = \frac{2}{3}$$

$(0, b)$
 $b = 9$

$$y = \frac{2}{3}x + 9$$

Example 4: Write the equation of the line with a slope of 2 through the point $(3, 8)$

$m = 2$

$$y = mx + b$$

$$8 = 2(3) + b$$

$$8 = 6 + b$$

$$\begin{array}{r} -6 \\ \hline 2 = b \end{array}$$

$$y = 2x + 2$$