Writing an Equation based on the information we have.

$y = mx + b$ — slope-intercept

m: slope

b: y-intercept

Example 1

slope = 4 y-intercept = 7

$y = 4x + 7$

y-intercept = -3 rate of change = $\frac{3}{4}$

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

operation = -5 start value = -10

$y = -5x - 10$

Example 2

$m = 5$ + goes through $(7, 6)$ (x, y)

$y = mx + b$

Plug in the coordinate to the x and y variables

$6 = 5(7) + b$

$6 = 35 + b$

$-35 \quad -35$

$\boxed{-29 = b}$

$y = 5x - 29$

b rate of change $= -\frac{1}{2}$ + goes through $(-4, -7)$ (x, y)

$-7 = -\frac{1}{2}(-4) + b$

$-7 = 2 + b$

$-2 \quad -2$

$\boxed{-9 = b}$

$y = -\frac{1}{2}x - 9$

roc $= \frac{5}{3}$ + goes through $(3, 0)$

$y = mx + b$

$0 = \frac{2}{3}(3) + b$

$0 = 5 + b$

$-5 \quad -5$

$\boxed{-5 = b}$

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

Example 3

$(\underset{x_1}{4}, \underset{y_1}{6}) + (\underset{x_2}{-3}, \underset{y_2}{5})$

Slope Formula $= \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{5-6}{-3-4} = \frac{-1}{-7} = \frac{1}{7}$ slope

$y = mx + b$

$5 = \frac{1}{7}(-3) + b$

$5 = \frac{-3}{7} + b$

$+\frac{3}{7} \quad +\frac{3}{7}$

$b = 5\frac{3}{7}$

$y = \frac{1}{7}x + 5\frac{3}{7}$