Chapter 5: Writing Linear Equations
Study Guide

5.1: Write equations of lines given slope and *y* – intercept or two points

Ex: Slope: 0, *y* – intercept: ½

Substitute: $y = 0x + ½$

Simplify: $y = ½$

Ex: Passes through (0, 5) and (1, 7)

Find the slope: $\frac{7-5}{1-0} = \frac{2}{1} = 2$

*Remember if $x = 0$, you have the *y*-intercept!

$y = 2x + 5$

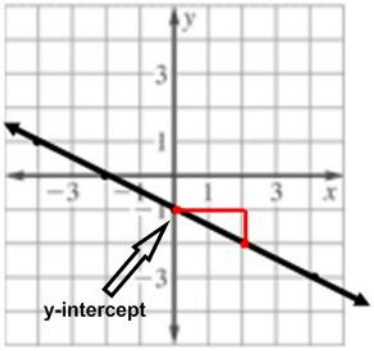
Ex: has the function values (1, −9) and (0, −11)

Find the slope: $\frac{-11-(-9)}{0-1} = \frac{-2}{-1} = 2$

*Recall that the *y*-intercept happens when $x = 0$ so $b = -11$

$y = 2x - 11$

Ex:



$y = -½ x - 1$

5.2: Write the equation of lines given slope and one point, or two points

Write the equation of the line with the given information:

Ex: Slope 3, passes through (1, 1)

$y = mx + b$
$1 = 3(1) + b$
$1 = 3 + b$
$-2 = b$

$y = 3x - 2$

Ex: Slope –5, passes through (–4, 7)

$y = mx + b$
$7 = -5(-4) + b$
$7 = 20 + b$
$-13 = b$

$y = -5x - 13$

Ex: Passes through (1, 4) (2, 7)

$m = \frac{7-4}{2-1} = 3$

$y = mx + b$

$4 = 3(1) + b$

$4 = 3 + b$

$1 = b$

$y = 3x + 1$

Ex: Passes through (–2, –2) (–1, –1)

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

$y = mx + b$

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

$-1 = \frac{1}{3} + b$

$-\frac{4}{3} = b$

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

Ex: Passes through (1, 5) (–7, 5)

1. Find the slope: $\frac{5-5}{-7-1} = \frac{0}{-8} = 0$

2. Write $y = mx + b$

$y = mx + b$

3. Replace m, x, and y.

$5 = 0(1) + b$

4. Solve for b.

$5 = 0 + b$

$5 = b$

5. Plug back into $y = mx + b$

$y = 0x + 5$

$y = 5$

Ex: Passes through (3, 1) (6, 4)

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

$y = mx + b$

$1 = 1(3) + b$

$1 = 3 + b$

$-3 \quad -3$

$-2 = b$

$y = 1x + -2$