

5.4: Writing Equations in Slope-Intercept Form

[Algebra 1(X)]

Hawaii Content and Performance Standards (HCPS) III

- **Standard 10:** Patterns, Functions, and Algebra: SYMBOLIC REPRESENTATION: Use symbolic forms to represent, model and analyze mathematical situations..
- **Benchmark MA.AI.10.4:** Determine the equation of a line when given the graph of the line, the slope and a point on the line, or two points on the line.

Common Core State Standards (CCSS) for High School Mathematics

- **A.CED.2: Create equations that describe numbers or relationships.**
Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
- **S.ID.7: Interpret linear models.**
Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.*

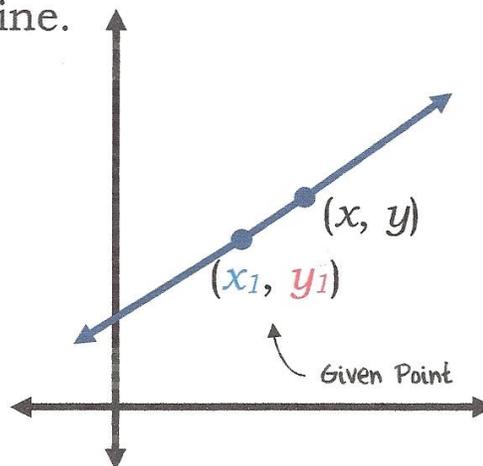
Objective(s):

- To write an equation of a line given the slope and one point on a line.
- To write an equation of a line given two points on the line.

Point-Slope Form

Point-Slope Form: a linear equation that uses the slope and one ordered pair of a nonvertical line.

$$y - y_1 = m(x - x_1)$$



Write an Equation Given the Slope and One Point

Example 1: Write an Equation Given Slope and One Point

Write an equation of the line that passes through each point with the given slope.

a.) $(2, -3); m = \frac{1}{2}$

b.) $(1, 5); m = 2$

c.) $(3, 7); m = -3$

Write an Equation Given Two Points

Example 2: Write an Equation Given Two Points

Write an equation of the line that passes through each pair of points.

a.) $(-3, -4); (-2, -8)$

b.) $(-3, -1); (6, -4)$

Example 3: Real-Life Problem

ECONOMY. In 2000, the cost of many items increased because the increase in the cost of petroleum. In Chicago, a gallon of self-serve regular gasoline cost \$1.76 in May and \$2.13 in June.

a.) Write a linear equation to predict the cost of gasoline in any month in 2000, using 1 to represent January.

b.) The Yellow Cab Company budgeted \$7000 for the July gasoline supply. On average, they use 3000 gallons of gasoline per month. Use the prediction equation to determine if they will have to add to their budget. Explain.