Unit 2: Solving Equations and Inequalities
Lesson 4: Writing Linear Equations

SLOPE:

The slope *m* of the line passing through (x_1, y_1) and (x_2, y_2) is given by:

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{where } x_1 \neq x_2$$

Find the slope between the points.

a. $(4,-1),\ (6,-6)$ b. $(4,9),\ (11,9)$ c. $(4,-2),\ (4,3)$

Two lines are _____ if the slope is the same.

Two lines are _____ when you "flip" the slope and change the sign.

Determine if the lines are parallel, perpendicular or neither.

a. Line 1: (2,3) and (0,7)
Line 2: (5,7) and (3,6)

b. Line 1: (6,5) and (3,7)
Line 2: (4,3) and (1,1)

Write an equation in slope intercept form that satisfies each set of conditions.

Recall: what is slope intercept form? _____

- Given the slope and a point.

a. slope: 3, passes through (0,-6) | b. slope: $\frac{-3}{4}$, passes through $(2, \frac{1}{2})$ | c. slope: 0.5, passes through (6,4)

- Given two points.

a. passes through (3,11) and (–6,5) | b. passes through (0,0) and (–4,3) | c. passes through (-1,4) and (–4,5)

- Given a point and an equation.

a. passes through (-4,3) and is perpendicular to the line whose equation is $y = -4x - 1$.

b. passes through (3,7) and is parallel to the line whose equation is $y = \frac{3}{4}x - 5$.

Example 1: As a salesperson, Eric is paid a daily salary plus commission. When his sales are $1000, he makes $100. When his sales are $1400, he makes $120. Write a linear equation to model this situation.

What are Eric's daily salary and commission rate?

How much would Eric make in a day if his sales were $2000?