Answer Key

Lesson 3.4

Challenge Practice

1. No, you can use any two points on a line to find the slope of the line. No, given two points on a line, you can label either one of them as (x_1, y_1) and the other as (x_2, y_2). When using the formula for slope, order of subtraction is important. Once you choose which point is (x_1, y_1) and which point is (x_2, y_2), the numerator and denominator must be formed using the same order of subtraction.

2. Slope is the change in y over the change in x.
For a horizontal line, the value of y does not change, so the change in y is zero. So, the slope equals zero. For a vertical line, the value of x does not change, so the change in x is zero. Because you cannot divide by zero, the slope is undefined.

3. No. The product of their slopes is -1, so one line will have a positive slope and the other line will have a negative slope.

4. $k = 11$ **5.** $k = -3$ **6.** $k = \dfrac{89}{86}$ **7.** $k = \dfrac{2}{3}$

8. a. Slope of $\overline{AC}$: $\dfrac{y - 2}{x - 4}$; slope of $\overline{BC}$: $\dfrac{y + 2}{x + 4}$

b. $x^2 + y^2 = 20$ **c.** The set of points C such that $\overline{AC} \perp \overline{BC}$, is represented by a circle centered at the origin with a radius of $\sqrt{20}$.

9. a. The car is traveling at an average speed of $\dfrac{1}{4}$ mi/min.   **b.** The car is stopped.

c. The car is traveling at an average speed of $\dfrac{1}{3}$ mi/min.   **d.** The car is stopped.

e. The car is traveling at an average speed of $\dfrac{1}{2}$ mi/min.   **f.** The car is stopped.

g. The car is traveling at 1 mi/min.