

$$\frac{y_2 - y_1}{x_2 - x_1} = m \quad (x, y)$$

Name & Class Block: KEY

### Independent Practice: Slope of Lines

**Directions:** Find the slope of the line passing through the given points. (Hint: Use the formula  $\frac{y_2 - y_1}{x_2 - x_1}$ )

1)  $(6, -4)$  and  $(1, 2)$

$$\frac{2 - (-4)}{1 - 6} = \frac{6}{-5} = -\frac{6}{5}$$

2)  $(-1, 0)$  and  $(0, 7)$

$$\frac{7 - 0}{0 - (-1)} = \frac{7}{1} = 7$$

3)  $(5, -3)$  and  $(5, 0)$

$$\frac{0 - (-3)}{5 - 5} = \frac{3}{0} = \text{Undefined}$$

→ cannot divide by 0!

4)  $(-6, 8)$  and  $(5, 8)$

$$\frac{8 - 8}{5 - (-6)} = \frac{0}{11} = 0$$

**Directions:** Find the slope of a line:

5) Parallel to the line through  $(3, -3)$  and  $(1, -2)$

Parallel lines have the same slopes!

$$\frac{-2 - (-3)}{1 - 3} = \frac{1}{-2} = -\frac{1}{2}$$

parallel slope is  $-\frac{1}{2}$  too!

6) Perpendicular to the line through  $(5, -4)$  and  $(4, 2)$

Perpendicular lines are opposite reciprocals

$$\frac{2 - (-4)}{4 - 5} = \frac{6}{-1} = -6$$

$+\frac{1}{6}$  is slope of  $\perp$  line

**Directions:** Answer each question below using complete sentences.

7) A student says the slope of a line passing through the points  $(-2, 5)$  and  $(4, 7)$  is equal to the ratio  $\frac{7-5}{4-2}$ . Is this correct? Justify your answer.

$$\frac{y_2 - y_1}{x_2 - x_1} \rightarrow \frac{7 - 5}{4 - (-2)}$$

The student is ~~not~~ incorrect! The 2 is negative, so must subtract a negative 2.

8) Suppose a line with a slope of 9 indicated the relationship between the altitude (in feet) and the time (in seconds) for an airplane. Explain what this could mean.

$$9 = \frac{9 \text{ ft}}{1 \text{ seconds}}$$

This slope represents the rate of change (speed of the plane). It increases (because it is positive) 9 feet each second.

9) Compare a line with a slope of 5 and a line with a slope of  $\frac{1}{5}$ . Explain how they are alike and how they are different. Which is steeper?