

Section Overview



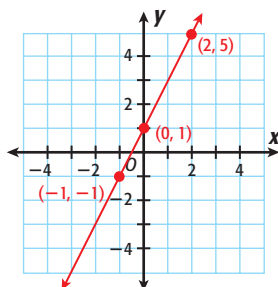
Rate of Change and Slope

Lessons 7-6, 7-7

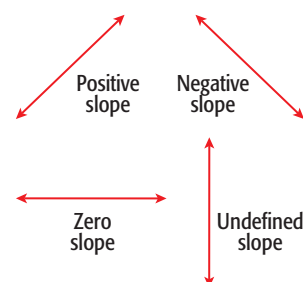
Why? Many relationships can be represented by linear equations. The slope of a linear graph is a measure of the rate of change of one variable with respect to the other variable.

Graph linear equation $y = 2x + 1$.

x	y
-1	-1
0	1
2	5



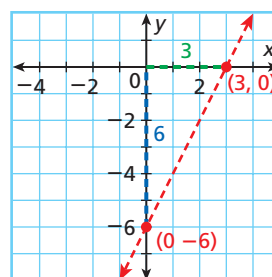
$$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$



Slope is the constant rate of change shown by a line. For two different points (x_1, y_1) and (x_2, y_2) on a line,

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-6)}{3 - 0} = \frac{6}{3} = 2$$

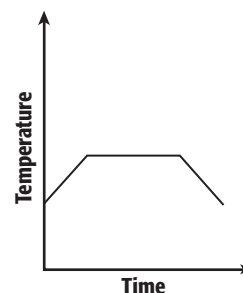


Interpreting Graphs

Lesson 7-8

Why? Interpreting the situations that graphed relationships represents prepares students for understanding and graphing functions.

The heat was turned on in the morning.
The temperature **increased** until it reached a comfortable level.
The temperature stayed **constant** throughout the workday.
Finally, the heat was turned off and the temperature **dropped**.



Direct Variation

Lesson 7-9

Why? Data sets may be related by direct variation.

y **varies directly** with x if there is some constant k such that $y = kx$.
 k is called the **constant of proportionality**.

Distance on map (in.)	x	3	5	8
Actual distance (mi)	y	36	60	96

There is direct variation. The constant of proportionality is 12.

$$y = k \cdot x$$

$$36 = 12 \cdot 3$$

$$60 = 12 \cdot 5$$

$$96 = 12 \cdot 8$$

What actual distance corresponds to a distance of 4 inches on the map?

$$y = k \cdot x$$

$$y = 12 \cdot 4$$

$$y = 48 \text{ miles}$$