

### Lesson 9-3

#### Example 1 Real-World Example

**SAFETY** Find the slope of a wheelchair ramp that rises 1.5 feet over a horizontal distance of 18 feet.

$$\begin{aligned}\text{slope} &= \frac{\text{rise}}{\text{run}} && \text{Definition of slope} \\ &= \frac{1.5}{18} && \text{rise} = 1.5 \text{ feet, run} = 18 \text{ feet} \\ &= \frac{1}{12} && \text{Simplify.}\end{aligned}$$

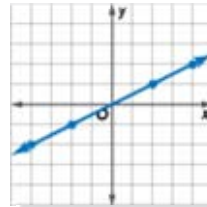
The slope of the wheelchair ramp is  $\frac{1}{12}$ .

#### Example 2 Find Slope Using a Graph

Find the slope of the line.

Choose two points on the line. The vertical change is 1 unit while the horizontal change is 2 units.

$$\begin{aligned}\text{slope} &= \frac{\text{rise}}{\text{run}} && \text{Definition of slope} \\ &= \frac{1}{2} && \text{rise} = 1, \text{ run} = 2\end{aligned}$$



The slope of the line is  $\frac{1}{2}$ .

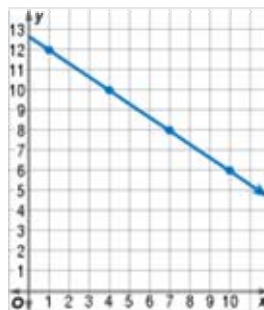
**Example 3 Find Slope Using a Table**

The points given in the table lie on a line. Find the slope of the line. Then graph the line.

<b>x</b>	1	4	7	10
<b>y</b>	12	10	8	6

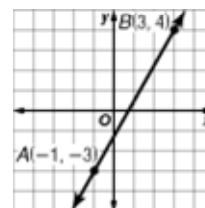
$$\begin{aligned} \text{slope} &= \frac{\text{change in } y}{\text{change in } x} \\ &= \frac{10 - 12}{4 - 1} \\ &= -\frac{2}{3} \text{ or } -\frac{2}{3} \end{aligned}$$

The slope is  $-\frac{2}{3}$ .

**Example 4 Find Slope Using Coordinates**

Find the slope of the line that passes through  $A(-1, -3)$  and  $B(3, 4)$ .

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} && \text{Definition of slope} \\ m &= \frac{4 - (-3)}{3 - (-1)} && (x_1, y_1) = (-1, -3), (x_2, y_2) = (3, 4) \\ m &= \frac{7}{4} && \text{Simplify.} \end{aligned}$$

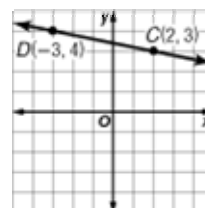


**Check** When going from left to right, the graph of the line slants upward. This is correct for a positive slope.

**Example 5 Find Slope Using Coordinates**

Find the slope of the line that passes through  $C(2, 3)$  and  $D(-3, 4)$ .

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} && \text{Definition of slope} \\ m &= \frac{4 - 3}{-3 - 2} && (x_1, y_1) = (2, 3), (x_2, y_2) = (-3, 4) \\ m &= \frac{1}{-5} \text{ or } -\frac{1}{5} && \text{Simplify.} \end{aligned}$$



**Check** When going from left to right, the graph of the line slants downward. This is correct for a negative slope.