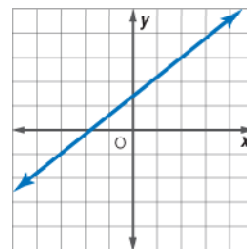


## Lesson 7-5

## Example 1

Find the slope of the line shown.

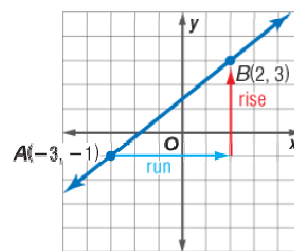


## Solution

Choose two points on the line, such as  $A(-3, -1)$  and  $B(2, 3)$ . Find the number of units of change from point  $A$  to point  $B$ .

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{4 \text{ units up}}{5 \text{ units right}} = \frac{4}{5}$$

A move up or to the right is represented by a positive number.



## Example 2

Find the slope of the line that passes through each pair of points.

a.  $R(4, 6)$  and  $S(-3, 8)$

b.  $X(0, 9)$  and  $Y(-3, 5)$

c.  $P(-5, 2)$  and  $Q(-5, 8)$

d.  $E(-1, 7)$  and  $F(8, 7)$

## Solution

Be sure to subtract the  $y$ - and  $x$ -coordinates in the same order.

a.  $\text{slope} = \frac{8 - 6}{-3 - 4} = \frac{2}{-7} = -\frac{2}{7}$

The slope is  $-\frac{2}{7}$ .

b.  $\text{slope} = \frac{5 - 9}{-3 - 0} = \frac{-4}{-3} = \frac{4}{3}$

The slope is  $\frac{4}{3}$ .

c.  $\text{slope} = \frac{8 - 2}{-5 - (-5)} = \frac{6}{0}$

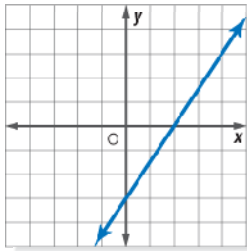
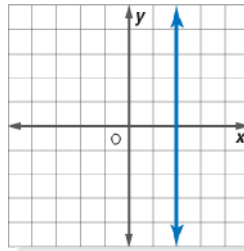
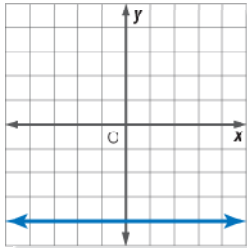
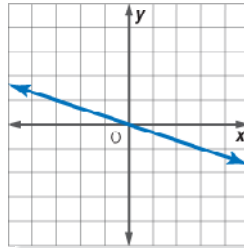
There is no change in the run. The slope is undefined because division by zero is undefined.

d.  $\text{slope} = \frac{7 - 7}{8 - (-1)} = \frac{0}{9} = 0$

There is no change in the rise. The slope is zero.

**Example 3**

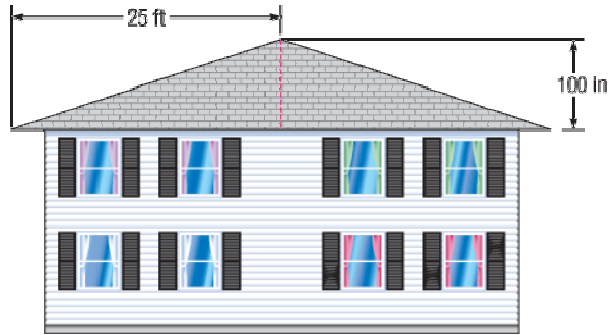
Identify the slope of each line as positive, negative, zero, or undefined.

**a.****b.****c.****d.****Solution**

- a. The slope of this line is positive since the line slants upward from left to right.
- b. The slope of this line is undefined since it is a vertical line.
- c. The slope of this line is zero since it is a horizontal line.
- d. The slope of this line is negative since the line slants downward from left to right.

**Example 4**

**CONSTRUCTION** The slope of a roof is called its pitch. What is the pitch of this roof?

**Solution**

First convert 25 ft to inches.

$$25 \text{ ft} \cdot \frac{12 \text{ in.}}{1 \text{ ft}} = 300 \text{ in.}$$

Then find the slope.

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{100 \text{ in.}}{300 \text{ in.}} = \frac{1}{3}$$

The pitch or slope of the roof is  $\frac{1}{3}$ .