

8th hour

# Lesson 2 Slope

### What You'll Learn

Scan the lesson. Predict two things you will learn about slope.

- \_\_\_\_\_
- \_\_\_\_\_

### Essential Question

WHY are graphs helpful?

### Vocabulary

slope  
rise  
run

### Common Core State Standards

Content Standards  
Preparation for 8.EE.5  
Mathematical Practices  
1, 3, 4

## Vocabulary Start-Up

The term *slope* is used to describe the steepness of a straight line. Slope is the ratio of the rise, or vertical change, to the run or horizontal change.

Complete the graphic organizer.

$$\frac{\Delta y}{\Delta x} \quad \frac{\text{rise}}{\text{run}}$$

I think this word means...	How is this concept related to other math concepts? <i>Δ = change in</i>
<b>slope</b>	
Where have I heard this word in my life?	What makes this an important word for me to know?

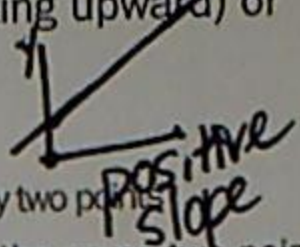
### Real-World Link

A ride at an amusement park rises 8 feet every horizontal change of 2 feet. How could you determine the slope of the ride?



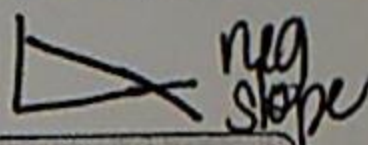
# Find Slope Using a Graph or Table

Slope is a rate of change. It can be positive (slanting upward) or negative (slanting downward).



$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

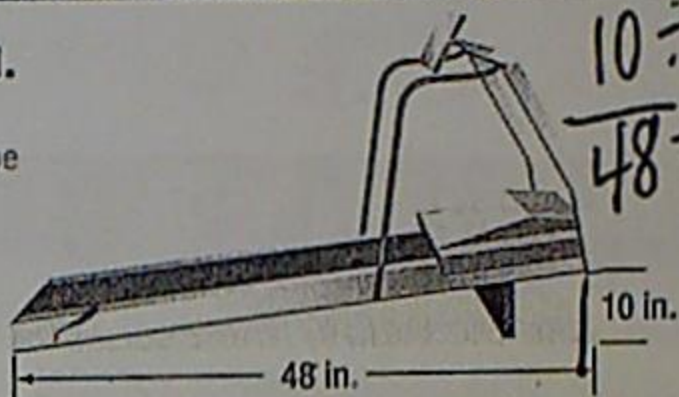
vertical change between any two points  
horizontal change between the same two points



## Example

1. Find the slope of the treadmill.

$$\begin{aligned} \text{slope} &= \frac{\text{rise}}{\text{run}} && \text{Definition of slope} \\ &= \frac{10 \text{ in.}}{48 \text{ in.}} && \text{rise} = 10 \text{ in.,} \\ &= \frac{5}{24} && \text{run} = 48 \text{ in.} \\ &&& \text{Simplify.} \end{aligned}$$



Handwritten work:  $10 \div 2 = 5$ ,  $48 \div 2 = 24$

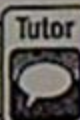
The slope of the treadmill is  $\frac{5}{24}$ .

## Got It? Do this problem to find out.

- a. A hiking trail rises 6 feet for every horizontal change of 100 feet. What is the slope of the hiking trail?

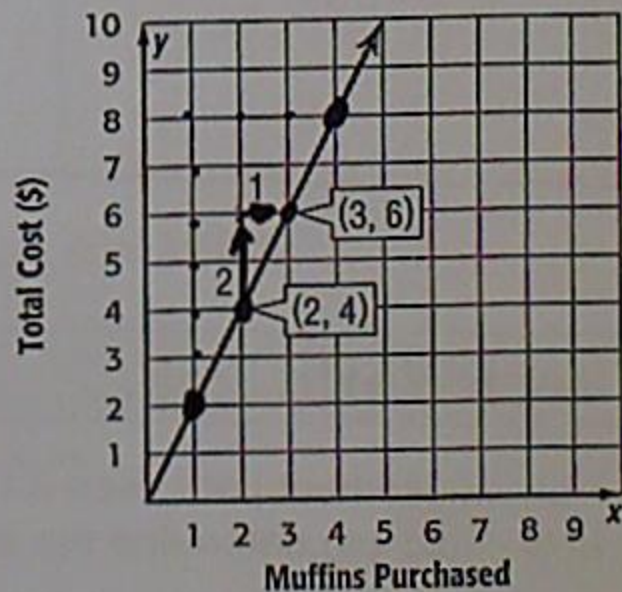
Handwritten work:  $\frac{6}{100} \div 2 = \frac{3}{50}$ . A speech bubble says "Show your work."

## Examples



2. The graph shows the cost of muffins at a bake sale. Find the slope of the line.

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



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

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

Handwritten work:  $\frac{2}{1}$ ,  $6 \div 3 = 2$ ,  $3 \div 3 = 1$

### Translating Rise and Run

- up → positive
- down → negative
- right → positive
- left → negative