

2.2 Find Slope and Rate of Change

TEKS a.1, a.4, a.5



Before

You graphed linear functions.

Now

You will find slopes of lines and rates of change.

Why?

So you can model growth rates, as in Ex. 46.

Key Vocabulary

- slope
- parallel
- perpendicular
- rate of change
- reciprocal, *p. 4*

KEY CONCEPT

For Your Notebook

Slope of a Line

Words

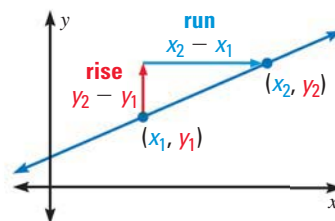
The **slope** m of a nonvertical line is the ratio of vertical change (the *rise*) to horizontal change (the *run*).

Algebra

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

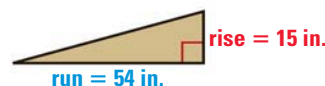
↑
slope

Graph



EXAMPLE 1 Find slope in real life

SKATEBOARDING A skateboard ramp has a rise of 15 inches and a run of 54 inches. What is its slope?



Solution

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{15}{54} = \frac{5}{18}$$

▶ The slope of the ramp is $\frac{5}{18}$.



EXAMPLE 2 TAKS PRACTICE: Multiple Choice

What is the slope of the line passing through the points $(-2, 1)$ and $(3, 5)$?

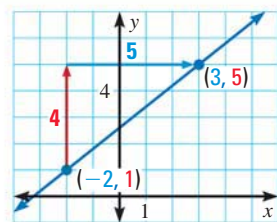
- (A) $-\frac{5}{4}$ (B) $-\frac{4}{5}$ (C) $\frac{4}{5}$ (D) $\frac{5}{4}$

Solution

Let $(x_1, y_1) = (-2, 1)$ and $(x_2, y_2) = (3, 5)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 1}{3 - (-2)} = \frac{4}{5}$$

▶ The correct answer is C. (A) (B) (C) (D)



AVOID ERRORS

When calculating slope, be sure to subtract the x - and y -coordinates in a consistent order.