TI-73 Explorer

Graphing Calculator Lab

Investigating Slope

The rate of change of the steepness of a line is called the slope. Slope can be used to investigate the relationship between real-world quantities.

SET UP the Lab

- Connect the data collection device to the graphing calculator. Place on a desk or table so that the data collection device can read the motion of a walker.
- Mark the floor at a distance of 1 meter and 6 meters from the device.

ACTIVITY

Step 1 Have one group member stand at the 1-meter mark. When another group member presses the button to begin collecting data, the walker begins to walk away from the device. Walk at a slow, steady pace.

Step 2 Stop collecting data when the walker passes the 6-meter mark. Save the data as Trial 1.

Step 3 Repeat the experiment, walking more quickly. Save the data as Trial 2.

Step 4 For Trial 3, repeat the experiment by walking toward the data collection device slowly.

Step 5 Repeat the experiment, walking quickly toward the device. Save the data as Trial 4.

Analyze the Results

1. Compare and contrast the graphs for Trials 1 and 2.
2. Use the TRACE feature of the calculator to find the coordinates of two points on each graph. Record the coordinates in a table like the one shown. Then use the points to find the slope of the line.

Trial	Point A (x_1, y_1)	Point B (x_2, y_2)	Slope $\frac{y_2 - y_1}{x_2 - x_1}$
1			
2			

3. Compare and contrast the slopes for Trials 1 and 2.
4. The slope of a line describes the rate of change of the quantities represented by the x- and y-values. What is represented by the rate of change in this experiment?
5. MAKE A CONJECTURE What would the graph look like if you were to collect data while the walker was standing still? Use the data collection device to test your conjecture.