

# Algebra Activity 5: Slope of a Line

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CALCULATORS: Casio: *fx-9750G Plus* • Casio: *CFX-9850G Series*

## Teaching Notes/Lesson Plan Level: Algebra 1

### Objective

The students will be able to draw a line segment connecting two points on the Casio calculator and use this to locate the rise, the run, and the slope of the segment.

### Engage

Discuss with students what slope means to them. Have them give examples of slope from everyday life. Discuss why slope is important in different areas such as the home, amusement parks, and roadways.

### Explore

1. Using the calculator, model how to set up the calculator to graph a line segment.
2. Demonstrate how to enter the endpoints of a line segment in order for the calculator to draw the line segment.
3. Demonstrate how to determine if the slope is positive, negative, zero, or undefined by looking at the graph.
4. Demonstrate how to determine the length of the rise and run for the line segment by using the graphing calculator.

### Explain

Students will enter the coordinates into a table, and determine the rise, run, and slope of the line segment for the indicated coordinates.

### Elaborate

Students will determine how to find the rise and run from looking at the coordinates. Then they will be given several new pairs of coordinates, find the slope, and then check the results with the calculator.

### Evaluate

The student will be able to graph a segment, determine the rise and run, and check the results on the calculator.

### Extension

1. Have the students find the equation of the line using the slope and one of the points.
2. Have students determine lines that would be parallel to the given line and graph them to check the results.

**Algebra Activity 5: Problem Solving and Matrices**CALCULATORS: Casio: *fx-9750G Plus* • Casio: *CFX-9850G Series***Student Worksheet Activity 5****Objectives**

Given a pair of coordinates, the student will be able to find the rise, run, and slope of a line segment using a graphing calculator.

**Introduction**

Slope is defined as the "steepness" of a line. It is used in many areas such as ramps for wheel chairs, drops for roller coasters, and pitches of roof tops. It is also defined as the change in elevation divided by the horizontal distance. In this activity, you will discover how to find the slope of a line by graphing two points on the line and determining the rise and run.

**Materials****a. Table of Points**

Problem	Point 1	Point 2	+, -, 0,	Run	Rise or Undef.	Slope
1.	(-4, -2)	(1, 3)				
2.	(-1, -3)	(5, 6)				
3.	(-5, 4)	(6, -2)				
4.	(-3, 6)	(2, -4)				
5.	(4, 3)	(4, -5)				
6.	(-2, 5)	(4, 5)				

**b. Graphing Calculator****Problems**

- Describe the path of the graphs of the line segments for Problems 1 and 2.

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What conclusion can you come to about these line segments?

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## Algebra Activity 5: Problem Solving and Matrices

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<b>Student Worksheet Activity 5 (continued)</b>
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Describe the path of the graphs of the line segments for Problems 3 and 4.

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What conclusion can you come to about these line segments?

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2. Using only the coordinate points, how could you find the rise of a line segment?

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How could you find the run of a line segment?

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3. Describe the path of the graph for Problem 5.

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4. Describe the path of the graph for Problem 6.

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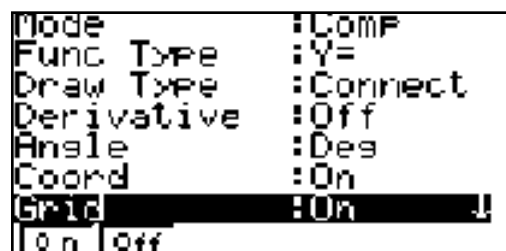
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## Calculator Notes for Activity 5: Slope of a Line

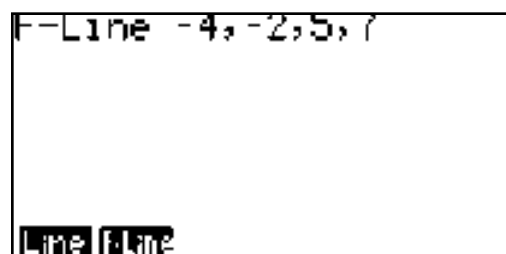
1. Turn the calculator on. Highlight the **RUN** menu and press **EXE**. Press **SHIFT** and **F3** to get to the View Window. Enter **-8 EXE 8 Down Arrow -8 EXE 8** and **EXE**. The screen should look like the one on the right. Press **EXE** again to get back to the RUN Menu.



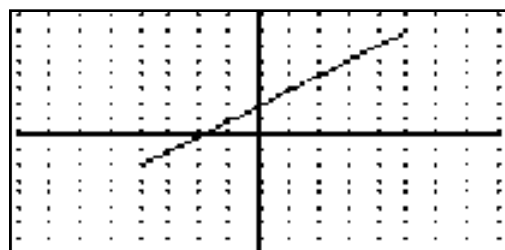
2. To set up the screen so that the grid shows, press **SHIFT** and the **Menu** key to get to the setup menu. Arrow down to highlight Grid and press **F1**. The screen will look like the one on the right. Press **EXE** to get back to the **RUN** Menu.



3. To enter in the points, press **SHIFT F4 F6 F2** and **F2**. Enter each of the coordinates separated by a comma. The comma key is located above the DEL key. For example, put in the ordered pairs of (-4, -2) and (5, 7) as **-4 , -2 , 5 , 7**. The screen should look like the one on the right.



4. Press **EXE** and, after a moment, the screen will look like the one at the right.



5. To get ready to draw the next line segment, press **AC/on SHIFT F4 F1** and **EXE**. The screen will look like the one on the right. You can now draw the next line segment.

