

## Slope Explorations

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### Activity overview

*The students will plot points, count the slope and work to discover the formula to calculate slope given two points. Students will also develop an understanding of the direction of a line and the relationship to the sign of the slope.*

### Concepts

$M = \frac{\Delta y}{\Delta x}$  or  $m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$

$M = 0$  horizontal;  $m = \text{undefined}$  vertical

Slope as a measurement of the steepness of a line.

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### Teacher preparation

*Down load the worksheet for students and put the tns file onto the student handheld units.*

### Classroom management tips

*Students should work with a partner and the class should be guided through the activity to ensure none of the groups discover the wrong formula. Make sure the initial points are not on an axis.*

### TI-Nspire Applications

*SlopeExplorations.tns*

*ExplorationSlope.tii*

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### Step-by-step directions

*Step-by-step activity directions with screenshots, sample data, etc. as needed. Screenshots should be created using the TI-Nspire handheld and resized to 70% for best visibility.*

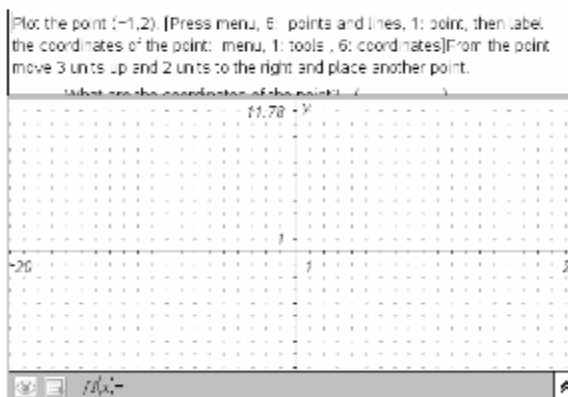
*The first slide states the objectives of the lesson.*

Writing equations of a line given a point and a slope.

Objectives:

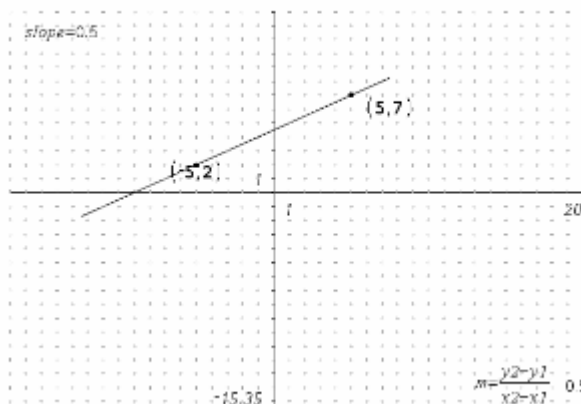
- (1) Understand that a unique line is drawn if you have a point and a slope.
- (2) Investigate what slope is.
- (3) Connect the graphical representation of a line going through a point with a unique slope to the equation of the line.
- (4) Explore the relationship between the table of values, the equation and the graph.
- (5) Discover the formula to calculate slope given two points.

On this screen the students will plot two points, measure the slope as rise over run then use the slope measurement tool to double check the slope.



The students will move the points to create a new line, write the points onto the worksheet and calculate the slope of the line. They will then double check their answer with the answer on the screen.

The students will finish the worksheet and turn in at the end of class.



#### Assessment and evaluation

- *Students will complete the worksheet and turn in.*
- *Follow up with a learn check or short quiz to assess.*

Student TI-Nspire Document  
*SlopeExplorations.tns*