**Teacher:** Hester  
**Date:** June 28, 2012  
**Subject / grade level:** PreAlgebra/Algebra 1  

**Materials:** Computer, Projector, Student calculators, models of roofs, ramps, etc., differentiated handout of graph based activity, Alice Slope program

### NC SCOS Essential Standards and Clarifying Objectives

SID:7 (OCS Algebra1)  
Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

### Lesson objective(s): Develop and use the slope formula for finding the slope of a line using the coordinates of 2 points that are on the line.

### Differentiation strategies to meet diverse learner needs:  
Students have previously explored slope using  
- Models can be pictures, ramps made from slanted blocks  
- Students work in groups to explore steepness and slant  
- Student handouts have more or less detail depending on needs of student.

Students have graph handout with 2 points. Some students will have the graph completed with the right triangle needed to find slope and the coordinates of the points if needed. Students find the lengths of the legs of the triangle and computer rise/run. More capable students will complete the triangle, computer length of sides, add in coordinates, etc. Questions for the activity are the same no matter which handout the student receives.

### ENGAGEMENT  
Teacher using guiding questions to help students make the connection between the graphical representation of slope and the formula for finding slope. 
Use pictures/models of different types of roofs, hills, ramps, etc. to discuss "steepness" and slant. How do we measure steepness? How can we indicate the direction that the item slants? Include models that have no slope or undefined slope.

### EXPLORATION

- Describe hands-on/minds-on activities students will be doing.  
- List “big idea” conceptual questions the teacher will use to encourage and/or focus students’ exploration

Define slope as a rate of change (rise over run) and have students measure and record these values from the models. Students should calculate the slopes and compare the values to the steepness of the models. Students use a graph that contains 2 points to calculate the slope. Some students get a paper with only the points while other get a paper with the points connected to form a right triangle. Students collect data as a group and then share out with the class.

### EXPLANATION

- Student explanations should precede introduction of terms or explanations by the teacher. What questions or techniques will the teacher use to help students connect their exploration to the concept under examination?  
- List higher order thinking questions which teachers will use to solicit student explanations and help them to justify their explanations.

Explain how rise and run can be found given 2 points. Review how to find the distance between 2 points that are on the same vertical or horizontal line. Discuss the value of the slope and how it relates to the physical model: positive, negative, zero, and no slope. Explain that the value of a slope can be expressed as a fraction or as a decimal value. May need to review how to round values.

### ELABORATION

- Describe how students will develop a more sophisticated understanding of the concept.  
- What vocabulary will be introduced and how will it connect to students’ observations?
**5E Lesson Plan**

- How is this knowledge applied in our daily lives?
Use software from textbook to predict the direction and value of the slope of the lines through a set of two ordered pairs.

**EVALUATION**
- How will students demonstrate that they have achieved the lesson objective?
- This should be embedded throughout the lesson as well as at the end of the lesson
Use the Alice program to test for understanding either as a class or individually,