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Team L

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## Lesson Plan For JULY 25, 2006

You should submit this form in addition to any computer generated files/documents/models to your group folder on Angel. Please create a .zip file and upload the group of files as a single archive.

Name: Fayne Winter
Grade level(s)/Subject taught: Math 7
Objectives: Further Exploration of linear equations and slope. This lesson is to go along with the first lesson plan I created for our 1 <sup>st</sup> assignment using Function Flyer in Interactivate.  Students will explore the slope of a line using the TI-83 calculator and will gain an understanding of how the slope of a line changes the look of a line.  Students will reinforce their understanding of how to find the slope of a line in different ways

1. Write the Mathematical Concept or "key idea" that modeling will be used to teach: (e.g. Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships)

Mathematical Modeling
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Materials: Graphing Calculators, TI Study Cards – SLOPE, pencils, graph paper, rulers

- Using TI-83 Calculator (or available equivalent) I plan on having my students...  
(software / modeling package(s))

**Warm-Up:** List the main ideas you learned about *Linear Equations* in the activity we did yesterday with Project Interactivate called Function Flyer. (We will go through what we learned about linear equations whole group)

**Mini-Lesson:** Students will use the TI-83 calculator to go through the Study Cards for Slope which I downloaded from the TI internet site. This will be a review of slope and the specifics of finding the slope from points given, from plotting points on a graph, reviewing the different ways of finding slope, and identifying which number in a linear equation is the slope of that line.

**Work Time:**

**ACTIVITY 1** - Students will use the points from the Study Cards and plot them on the TI-83 calculators to explore the different slopes of the lines they create. They will put the points into the L1, etc., screens, do a linear regression and then graph them on the calculator and describe the differences between the lines they are using. Students will graph 3 of these cards. They *must* do Card #10, but can choose two of the other 3 Cards to put into the *List* screen and do *Linear Regressions* for each of the lines, on the calculator.

Directions for putting these points into the LIST screen and doing a Linear regression.

- 1) Go to STAT and EDIT
- 2) Put the x values into L1 and the y values into L2
- 3) Go to STAT, CALC, LinReg(ax+b) and press enter
- 4) Push 2<sup>nd</sup>, L1 comma 2<sup>nd</sup> L2 comma – Push VARS, Y-VARS, and enter for Y1
- 5) Graph
- 6) Go to the Y= screen and **record the equation** in Y1.
- 7) For the 2<sup>nd</sup> card you must use L3 and L4 for the data and Y2.
- 8) For the 3<sup>rd</sup> card (Card #10) you must use L5 and L6 for the data and Y3.

For the 2<sup>nd</sup> and 3<sup>rd</sup> cards, before you do step 5, you will need to go to the y= screen first and change the form of the line.

For the 2<sup>nd</sup> card you chose, choose the thicker line for graphing.

For the 3<sup>rd</sup> card, Card #10, choose the thinner, dotted line for graphing.

Do steps 1 – 6 for 3 of the Cards below, (you must include Card #10 as 1 of the 3 cards you choose).

Card #2

Card #7

Card #8

Card #10 (must do and put in L5 and L6 and use Y3)

After graphing the 3 Card's data and recording the equations on the Y= screen, answer the following questions:

- A) Which line is the steepest? What is the slope of that line?
- B) Which line has the greatest slope? What is the slope of that line?
- C) Which line, or lines, is/are decreasing? Increasing? How can you tell?
- D) Write an equation that has a slope greater than the greatest slope of the lines you graphed.
- E) Write an equation that has a slope less than the lowest slope of the lines you graphed.

## **ACTIVITY 2** –

For Cards #11, 12, and 13:

- 1) Look at the equations on these 3 cards, write them down and make a prediction if the linear equations are positive (increasing), or negative (decreasing). Explain why you chose the answer you did for each equation.
- 2) Predict which of the lines you think has the steepest slope. Explain why you chose that equation.
- 3) Go to the Y= screen and delete the equations in Y1, Y2, and Y3
- 4) Put the equations on Cards# 11, 12 & 13 into Y1, Y2, and Y3.
- 5) Choose different thicknesses of lines for each equation like you did for Activity 1.

Answer the following questions based on the graphs from Cards #11, 12, and 13.

- A) Were your predictions for numbers 1 and 2 correct?
- B) How can you tell the slope of a line just by looking at the equation?
- C) How can you tell the slope of a line by looking at the points only?
- D) How can you tell the slope of a line by looking at its graph?

## **ACTIVITY 3** –

Choose 3 of the Cards you worked with and graph them on graph paper, labeling the linear equation that goes with the lines you graphed.

Create a presentation of your Cards where you will be showing the graphs you created by hand and answering the following questions:

- 1) Are your graphs increasing/decreasing and how can you tell?
- 2) Which of your graphs is the steepest and how can you tell?
- 3) Which of your graphs has the largest slope and how can you tell?
- 4) What part of a linear equation tells you what the slope of the line is?
- 5) How can you find the slope from looking at the:  
line  
equation  
the points

**CLOSING:** Presentation and explanations outlined in Activity 3.