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Regression Equations Using TI calculator

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Generic Lesson Plan Template

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: Stephen Ezell
Grade level(s)/Subject taught: 12Th grade, Problem Solving
Objectives: Students will be able to apply previously learned mathematics to a real life problem. Students will understand and be able to apply the use of regression equations to solve problems. Students will understand that mathematics is not just numbers on paper but really helpful in solving problems. Students will also understand the terms of domain and range and how they are used.

Please provide a rich **one-page, single-spaced**, description or a *vision* of your best thinking on a way or ways you might teach the planned lesson. (approximately ½ page for the teacher role, ½ page for the student role). Also, construct a tentative rubric that you might use with your students (see example)

Items to include in your lesson plan: (Choose your discipline/concepts from your own area).

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)

This activity can be used to:

1) Illustrate the use of curve fitting and regressions.
2) Develop student's visualization skills.
3) Develop the understanding of how mathematics is used to solve problems.
4) Increase the knowledge of graphing and interpretations of graphs.
5) Used to practice finding and applying regression equations.

Using the TI-83 I plan on my students doing a math lab applying the use and knowledge of regressinons.

The class will start out with a brief discussion (about 5 minutes) on regressions and their uses. Students will then be grouped into groups of 3 or 4 per group. Each student will be given a worksheet to show the work the group has performed. They will be given a 6 foot measuring stick and a tennis ball as well as a TI-83 calculator. I will now go over the assignment and what is expected of the students. This should take about another 5-7 minutes.

Students will now stark working on the assignment. The teacher will walk the room listening and assisting where needed. This should take about 20-25 minutes. Students should be quite happy when they realize the ball does indeed bounce to the height they predicted with their calculators.

I will then get the class back together for a discussion on regressions. We will discuss other uses for regressions and the limitations. (i.e. domain) The students will be given an assignment to come up with one experiment where regressions models could be used. I will collect the papers and assess the work that has been done. Basically those who worked on the assignment will receive class credit since as the teacher walking around I will be able to keep everyone on task and solve the problems as they arise

Worksheet for regression lesson..

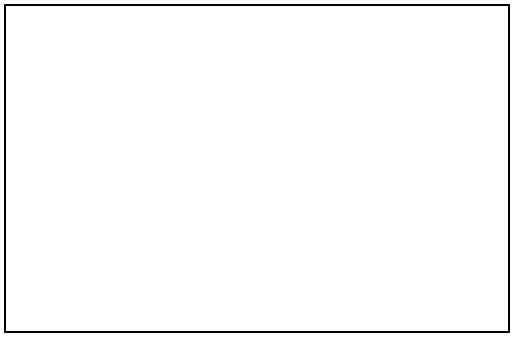
Name_____ Date_____ Period_____

Problem Solving Math Lab
Ball Bouncing

You are to drop a ball from the given heights and record the bounce height here.

Drop Height (X value or domain)	Bounce Height (Y value Or range
72 inches	
6 inches	
47 inches	
28 inches	

Graph the points above in your calculator and copy it onto the window below. (Do not forget to state your window dimensions.



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Now put your points into your lists in your calculator and find a linear regression equation that best fits this data. Write that equation here!

Now graph the equation you found onto your calculator over the points you have already graphed. Is this equation you found a good fit? Explain!

Now pick three points you would like to use to find the bounce height and put them into the above table. Do not drop the ball to find the bounce height but rather use your calculator's calculate function to find what the bounce height should be. Write what you found should be the bounce height below.
Now go bounce the ball from the heights you chose and record the actual bounce heights above in the table. How close were you able to get to the actual bounce heights without bouncing the ball.

State at least two reasons the bounce height were not exactly the same as the calculators using the formula you found. (although very close)

How can I determine how high I need to drop the ball from if I need the ball to bounce to a height of 31 inches? EXPLAIN hoe this can be done using the calculator. What height do I need to drop the ball from?