**Quadratic Regression**

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**Title**

Finding the equation of curves throughout life using quadratic regression

This lesson uses a graphing calculator and Geometer’s Sketchpad to find the function of curves throughout the world. This hands-on lesson allows students to explore quadratic regression using their calculators (quadratic regression applet). Students will use Geometer’s Sketchpad to record data points and their calculators or a website to generate a quadratic function using the data that represents the curve.

**Goal**

Students will generate a quadratic function given data that represents a parabola.

**Objectives**

* Given a picture of a curve, students will plot points of the curve and fill in a table.
* Given data points, students will input data into a graphing calculator and use the graphing calculator to perform a quadratic regression.

**Materials**

* Pictures from <http://tylerlaufersweiler.weebly.com/curves.html>
* Geometer’s Sketchpad
* Graphing Calculator
* Quadratic regression applet <http://science.kennesaw.edu/~plaval/applets/QRegression.html>

**Procedure**

1. Open geometer’s Sketchpad.
2. Pick a picture from <http://tylerlaufersweiler.weebly.com/curves.html>.
3. Copy and Paste the picture into Geometer’s Sketchpad.
4. Have students predict what their function might look like.
5. Using the graph menu in Geometer’s Sketchpad, have students insert a coordinate plane.
6. Move the origin to the appropriate spot of the curve. For example, move the origin to where the water is coming out of the spout, where the rainbow is coming out of the ground, etc.
7. Using the graph menu, have the students plot between 10 and 20 points on the curve. Have them record these points in a table.
8. What type of regression would you use for this? A quadratic regression…
9. Have students input data into the graphing calculator or quadratic regression applet.
10. Using quadratic regression, have students record their quadratic function.
11. Go back to Geometer’s Sketchpad. Under the graph menu choose plot new function. Have students plot their quadratic functions. The quadratic plotted should follow along the path of the curve in the picture.
12. Have students type their names on their graph and print them out.

**Works Cited**

*InterMath.* (2012, April 26). Retrieved from http://intermath.coe.uga.edu/