“Unique & Compelling” Problem

Boil, Boil, Toil and Trouble

The International Boiling Point Project

Directions: Suspend a calibrated thermometer in distilled water. Record the initial temperature. Heat the water and record the temperature at 1 minute intervals. Continue recording until the water has boiled for 5 minutes. Determine the boiling point. Also record the heating device, volume of water, elevation of classroom, and room temperature and submit this data along with the boiling point to the project database. Analyze all participants’ data to determine which variable in the experiment has the greatest influence on boiling point.

Actual Plots of Student Data
Questions:

1. Draw a “line of best fit” for the data in each of the graphs. In which graph does the data tend to fit the line the best? (optional: calculate the correlation coefficient for each graph)

2. Which variable in the experiment has the strongest influence on boiling point? Why do you think that is?

3. Describe, in your own words, the relationship between boiling point and elevation.

4. What is the boiling point at sea level?

5. Why did so many schools report different boiling points for similar elevations?

6. Optional: Determine the equation of the line for the Boiling Point vs. Elevation graph and predict the boiling point of water at 3000 meters.