Temperature Lab
with the TI-nspire

Heat up some water in a mug. Place the probe in the cup. Plug it into the calculator mini-USB port. Immediately, the calculator knows that a sensor is being used. "Auto Launch" asks how you would like the data to be recorded. Select Lists & Spreadsheets this time. Press tab to OK. Enter or .

- Menu, Sensors, Change units to switch from Celsius to Fahrenheit. Enter or .
- Menu, Experiment, Set up collection, Time graph. Time between samples: try 10 seconds, duration, 180 seconds.
- Menu , Experiment, Start collection. Enter. No data will appear until the first time increment has passed. At that point, the initial temperature will show, as will the first increment. (0 seconds and 10 seconds) The experiment will continue until the end of the total time duration that you chose. Mouse click will also end the experiment if you choose to. ****Save file as "data" here. Send to the teacher if you are in the Navigator network. The teacher will save the file to the portfolio and then return the file to the entire class.****
- Home 2: Graphs and Geometry will open a new page where you may plot the data. Press, Graph Type, Scatter Plot. Select dc01.time and dc01.temp1 as your x- and y- values.
- Press, Window, Zoom Data. Observe the shape of the data display. Does the data appear to be more linear or exponential?
- Return to your spreadsheet page, and place the cursor in an empty cell. Press, Statistics, Stat Calculations, A: Exponential Regression, or 3: Linear Regression (mx + b).
  If you do both, be sure to compare their "r" values, as that is an indication of which function is the "best fit" model for your data.
- Return to the graph page, press, Graph type, Function. Arrow up into f1 and press enter to see the graph. (curve or line)

Now, use the function to predict the temperature after 15 or 30 minutes: f1(900) = or f1(1800) = .

Or, use the nSolve function to predict how long it will take for the temperature to reach a certain mark like room temperature. (usually around 68 to 70 degrees)