Name: _____

Date: _____

Electric Kettle

For this problem, you'll need an electric kettle with a digital temperature readout, and a stopwatch or timer.

Make a prediction: We're going to boil water in an electric kettle, and make a graph of the temperature of the water over time. We'll plot both the heating and cooling periods. Before you begin, make a sketch of what you think this graph will look like. Label the starting temperature, the boiling point, and the final temperature.

- Make a table with two columns, Time and Temperature.

- Make about 30 rows. Label the first row in the Time column "0 sec". Then fill in the next 20 rows of the Time column in 15-second increments; this should bring you to 5 minutes. From that point, label the rows at 1-minute intervals.

- Measure two cups of the coldest water you can get from your faucet, and pour the water into your kettle.

- Turn the kettle on, and start your timer or stopwatch. Record the starting temperature of the water.

- Every 15 seconds, record the temperature of the water in the kettle. (If you can't keep up, just fill in the 30-second intervals.)

- When 5 minutes has passed, make sure you transition to recording the temperature once every minute.

Make a graph of the temperature of the water over time.

- How does the actual graph compare to your prediction?

- Why do you think the actual graph is shaped like it is?

- What new questions does this bring up?

Further investigation:

- How does the amount of water in the kettle affect the shape of the heating and cooling graph?

- How does the starting temperature of the water affect the shape of the heating and cooling graph?

Show your work, and write your answer in a complete sentence.