Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**This is as fun as watching Ice Melt! Phase Change Lab: Creating a Heating Curve**

**Objective:** Students will investigate that the change from one phase of matter to another involves a gain or loss of energy. This will be done through measuring data and analyzing the constructed graph.

**Materials:**

Hot plate 250-mL beaker Thermometer Ice cubes

Thermometer clamp Ring stand 100 mL water

**Procedure:**

1. Set up a data table like the one provided to record both time and temperature. Record the temperature every 2 minutes. Start with 0 min.
2. Get approximately half a beaker full of ice and 100 ml of water into the 250 ml beaker. Place the thermometer in the center, so that it does not touch the glass. *Start recording time/temperature as soon as you get your ice!!*
3. Collect data every 2 minutes until you have at least 5 data points that measure 100°C and it does not change anymore.
4. Turn off the hotplate. Clean and organize your lab station.
5. Graph the data on the graph paper on the back of this page.

**Data:**

Create a Data Table like the one below on a separate piece of paper – you will need to figure out how many rows you will need as you gather data. *Make sure to include all parts of the data table! Remember DOUBT when reading the thermometer!*

|  |  |
| --- | --- |
| **Time (minutes)** | **Temperature (Co)** |
| **0 min** |  |
|  |  |
|  |  |

**Data Analysis:** Create a temperature versus time graph and plot the corresponding data.*Make sure your graph TALKS!*

**Discussion Questions:** *(answer on a separate sheet of paper in complete sentences)*

1. What is temperature?
2. Why is the temperature going up?
3. Why did the temperature remain constant around 100°C and create a plateau?
4. What is happening to the kinetic energy of the molecules as temperature rises?
5. What would happen to the kinetic energy of the molecules if the temperature would be lowered?
6. How does this lab relate to kinetic molecular theory?
7. Compare the difference in state of matter and kinetic energy for each graph below.



