

Name: _____

Banner ID: _____

Lab Group ID: _____

Number of Lab Partners: _____

Data Sheet

Lab 2H Latent Heat of Fusion for Water

Determine the latent heat of fusion for water using standard calorimetry techniques.

Note that only the inner cup of the calorimeter and the stirrer will participate in any heat exchange due to the insulation of the calorimeter. Both the inner cup and stirrer are made of Aluminum (Al). You may ignore any heat transfer associated with the temperature probe. Do not use the temperature probe as a stir rod.

Before adding any ice to the calorimeter, fill the inner calorimeter cup approximately half full of room temperature water from the coffee pot, and allow the calorimeter to reach an equilibrium temperature. The ice that you add to the calorimeter must be dried; you only want to add ice to the calorimeter. Slowly add ice until the temperature has dropped by approximately 7 degrees. Each cube of ice should be allowed to melt before adding additional ice. After the last ice cube has melted, continue to collect temperature data for several minutes to determine the final equilibrium temperature.

Questions:

Assume that the ice and water have been in the cooler a very long time. Without measuring the temperature of the ice, hypothesize what the temperature of the ice must be if it has been in the water for a long time, and explain your answer. (5 points)

Explain why the ice needs to be dried prior to being added to the calorimeter. (5 points)

Equation in Variable Form (25pts) [Hint: there should be a term for every item that is losing or gaining heat and a term for a phase change.]

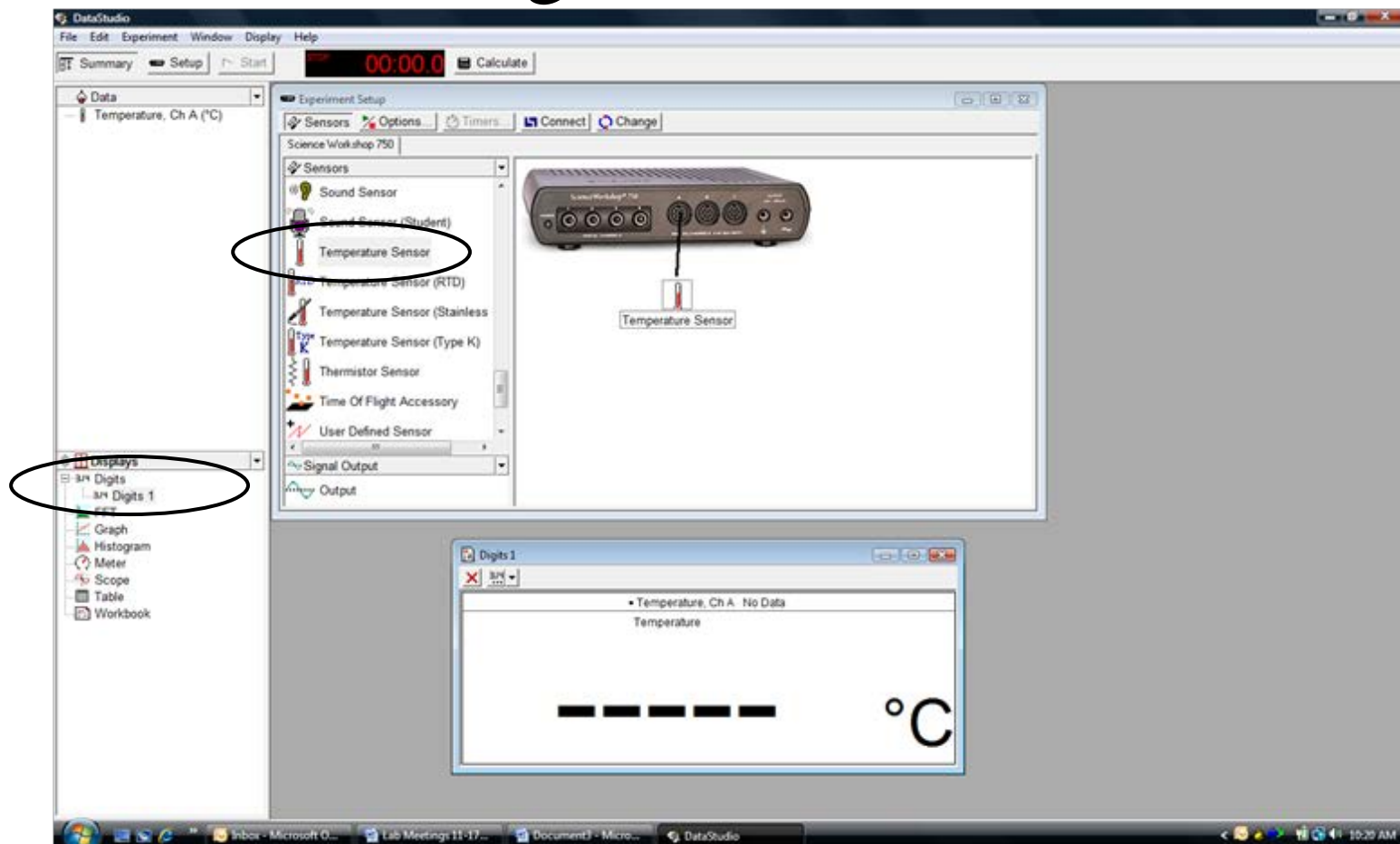
Data – Provide all necessary data that corresponds to your equation (25pts) Hint: You will need to collect temperature data so that you will be able to determine the equilibrium temperature prior to adding ice, and the final equilibrium temperature after ice has been added.

Latent Heat of Fusion for Water as determined experimentally _____

Percent Error = $\frac{|\text{Experimental Value} - \text{Standard}|}{\text{Standard}} \times 100\% = \underline{\hspace{2cm}}$

Percent Difference	<=10%	<=15%	<=20%	<=25%	<=30%	>30%
Points	40	35	30	25	20	15

Pasco Digital Thermometer



1. Physically connect the temperature probe to the Pasco Interface.
2. Open Data Studio.
3. Select the Temperature Sensor from the choice of Sensors.
4. Drag a Digits Display to the Temperature Sensor.
5. When ready to start monitoring the temperature, press the Start Button.
6. Press the Stop button when data collection has been completed.
7. Close Data Studio and logoff the computer.
8. You may add a graph of temperature versus time by dragging the graph icon to the Temperature sensor.

Note: Do not use the Temperature Sensor as a stir rod.