**Heat Transfer and Conductivity Lab
SAFETY: Goggles and Aprons**

**Lab One: Measuring Temperature Change**

**Problem**: What happens when thermal energy moves from one object to another and how is temperature is affected?

**Background Info**: Temperature is a measure of the average kinetic energy of the particles in an object. What other background info might be useful? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis**: See answer sheet.

**Experiment Materials**: test tube and test-tube holder, large foam cup with large prepared lid, cold water and hot water, 2 thermometers, stopwatch or Vernier LabQuest 2 device

**Experiment Procedures and Recording Data:**
**1.** Put on your safety goggles. Fill a foam cup with cold water until the water is about half full. Place a prepared lid on the cup and put a thermometer through the small hole in the lid.
**2. Come to Ms. Wasson to** pour hot water into a test tube until it is about 5 cm deep. Put a thermometer into the hot water.
**3.** Carefully twist the test tube through the large hole in the lid (to avoid tearing the foam) and have it rest near the bottom of the cup.
4. Record the initial temperatures in the test tube and the cold water cup.
5. Read the temperature of the water in the cup and the water in the test tube every minute for 10 minutes.
6. Record your data in the table on your answer sheet.

**Analysis and Conclusion Questions (answer on the Answer Sheet):**

1. Was your hypothesis supported? Why or why not? Use evidence/data to explain your reasoning.
2. What was your independent variable? What was your dependent variable?
3. How did the thermal energy of the cold water change with time? The hot water?
4. How did heat flow in this lab? From what type of area to what type of area?
5. Does heat always flow this way? Why?
6. Did both temperatures change at the same rate? Explain why or why not.
7. Construct a graph. Make sure you have ALL required components.