Name: _____

HEAT TRANSFER ACTIVITY

How does heat energy flow from hot metal to room temperature water?

Objective: Determine flow of energy from hot metal to water.

Hypothesis:

Materials: 3 pipe cleaners, 30 washers, graduated cylinder, thermometer (measured in Celsius), 1 foam cup, stopwatch

Procedure:

1. Fasten the washers to the pipe cleaners.
2. Place each system (one at a time) in boiling water for 3 minutes.
3. Meanwhile pour 50 mL of water in a cylinder and then pour in a foam cup. Read and record the initial temp.
4. Remove the washers using tongs. Shake off excess water. Put in the water.
5. Every minute for five minutes read and record the temperature.

Data:

# washers	Mass water (m)	Specific heat of water (c)	Initial temp (°C)	1 min	2 min	3 min	4 min	5 min	ΔT (high – low)	Energy transferred = cm ΔT
30	.050 kg	4186								

Analysis:

1. Explain the flow of energy in this system.

2. Gather the energy transferred (for all three) from two other groups. How do their numbers compare with yours?

3. Average your value of energy transfer with the three you gathered from other groups.

4. What are some sources of error for this experiment?

5. Construct a line graph, on a separate sheet of graph paper, of temperature over time.

Conclusion: Does the data support the hypothesis? Explain.