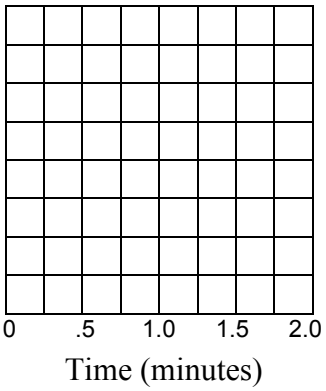
Name_____ Period _____ Date __/__/__

8 • Thermochemistry

C R A M S H E E T

1. A 35.0-mL sample of water at 95.0°C and mixed with 150. mL of water at 15.0°C in an insulated cup and the temperature is recorded after 30 seconds and every 30 seconds as shown. Plot the data and determine the theoretical temperature of liquids when they were mixed. This is your "final temperature" for ΔT.

Time (minutes)	Temperature (°C)
0.00	
0.50	28.3
1.0	27.6
1.5	26.8
2.0	26.0



2. a. Calculate the energy gained (Δq) by the cold water ($\Delta q_{cold} = m_{cold}C\Delta T_{cold}$)
   Recall that C = 4.184 J/g·°C

   b. Calculate the energy lost (Δq) by the hot water ($\Delta q_{hot} = m_{hot}C\Delta T_{hot}$)

3. Calculate the absolute difference between the energy lost by the hot water ((Δq_{hot}) and the energy gained by the cold water (Δq_{cold}). _____

4. Where did this energy go?

5. Calculate the calorimeter constant in J/°C by dividing the absolute difference in energy by the temperature change of the hot water.

$$\text{calorimeter constant} = \frac{|\Delta q_{hot} - \Delta q_{cold}|}{\Delta T_{hot}}$$

6. A pot of water (2.5 Liters of water) initially at 25.0°C is heated to boiling. How much energy is needed to heat the water?

7. 74.8 J of heat is required to raise the temperature of 18.69 g of silver from 10.0°C to 27.0°C.
   a. What is the **heat capacity** of the silver sample? (J/°C)

   b. What is the **specific heat** of silver? (J/g·°C)

   c. What is the **molar heat capacity** of silver? (J/mol·°C)