

HONORS CHEMISTRY
HOMEWORK 8c.

Name: _____

Specific heat capacities:

SHOW ALL WORK

Water	$1.00 \text{ cal / g } ^\circ\text{C} = 4.18 \text{ J / g K}$	$1 \text{ cal} = 4.18 \text{ J}$
Ethanol	$.584 \text{ cal / g } ^\circ\text{C} = 2.44 \text{ J / g K}$	
Aluminum	$.215 \text{ cal / g } ^\circ\text{C} = 0.897 \text{ J / g K}$	
Iron	$.107 \text{ cal / g } ^\circ\text{C} = 0.449 \text{ J / g K}$	
Gold	$.031 \text{ cal / g } ^\circ\text{C} = 0.129 \text{ J / g K}$	

1. Calculate the energy required to raise the temperature of:

a. 50.0 g of water from 10.0°C to 30.0°C

b. 40.0 g of water from 20.0°C to 75.0°C

2. How much energy is required to raise the temperature of 220. g of ethanol from 10.0°C to 30.0°C ?

3. A 75.0 g bar of iron is in equilibrium with boiling water at 100.0°C . It is placed in a container that holds 120.0 g of water at 20.0°C . Assuming that all the heat lost by the iron is gained by the water, find the final equilibrium temperature.

4. A 35.0 g copper rod is initially in equilibrium with boiling water at 100.0°C . It is placed in a container that holds 120.0 g of water at 20.0°C . The system reaches a final temperature 22.1°C when it achieves equilibrium. If no heat enters or leaves the container, find the specific heat capacity of copper.