Table I.

	Ag	Water
Mass		
Initial Temperature		
Final Temperature		
Change in Temperature		
Heat Content		

Record your observations as you run the experiment.

Data Analysis and Interpretation

1. Which substance (Ag or water) loses heat when they are combined? Which substance gains heat when they are combined? Which process is endothermic and which is exothermic?

2. Calculate the heat transferred to or from Ag. Use the equation $q = mC_s\Delta t$ (q is heat in Joules, m is mass, C_s is the heat content, and Δt is the change in temperature).

3. Calculate the heat transferred to or from water ($q = mC_s\Delta t$).

4. Compare the heats associated with the Ag and water. Make a generalization concerning these heats.

5. How would your results have been different if you had used different amounts of Ag and water starting at different temperatures? Try this out by doing new experiments and record your data and conclusions below.

6. Draw a picture of the microscopic view of a piece of solid silver metal in liquid water.

7. Describe how heat was transferred between the two substances. What did you observe happening during the period just after the silver and water were added to each other? How about when the final temperature was reached? How does this help explain how heat is transferred?

	Al	Water	Cu	Water	Fe	Water
m						
t_i						
t_f						
Δt						
C_s						
q						
molar heat capacity						

Data Analysis and Interpretation

8. Calculate the heat lost or gained by each metal. Show your work for one of the calculations.

9. Compare the results for all four metals. How are they different?

10. Which metal would make the best cookware? Why?

11. Calculate the molar heat capacity for Al, Cu, and Fe in units of $\frac{J}{mol\ ^\circ C}$. Record the value on Table II.

	Unknown I	Water	Unknown II	Water
m				
t_i				
t_f				
Δt				

12. Calculate values for the specific heats for the two unknown metals.

13. Based on the values in question 11, estimate the molar heat capacity for each unknown metal.

14. Calculate the molar mass of each unknown metal.

15. Assuming the unknown metals are pure substances, identify them.