Title: Mass and Heat

Materials: Burner, beaker, styrofoam cup, Al cube, crucible tongs, thermometer, balance

Purpose: To determine the mass of a piece of metal using heat.

Procedure:

1. Put a piece of Fe in a beaker of boiling water. Record the temp. of the boiling water.
2. Record the mass and temp. of cold water in a styrofoam cup.
3. After a couple of minutes, use tongs to put the metal in a cup of cold water.
4. GRAPH THE CHANGE, and record the temperature of the water after the metal has been submerged for about 30 seconds. PUT ALL SIX TRIALS ON THE SAME GRAPH.
5. Do six trials.
6. At the end of the hour, record the actual mass of the metal you used.

Data:

	1	2	3	4	5	6
Mass of cup	2.24 g	2.24 g	2.15 g	2.15 g	2.15 g	2.15 g
Mass of cup and water	135.07 g	118.08 g	106.83 g	138.26 g	158.58	149.77
Mass of water in cup	_____	_____	_____	_____	_____	_____
Initial temp. of water in cup	22.07 C	24.3 C	21.5 C	20.7 C	24.0 C	21.8 C
Final temp. of water in cup	24.5 C	26.4 C	24.3 C	23.2 C	25.6 C	24.1 C
Temp. of Boiling water	100.4 C	100.4 C	101.1 C	101.1 C	101.1 C	101.1C
Change in temp. of metal	_____	_____	_____	_____	_____	_____
Change in temp. of water	_____	_____	_____	_____	_____	_____
c Cp of water	4.18 J/gC	4.18 J/gC	4.18 J/gC	4.18 J/gC	4.18 J/gC	4.18 J/gC
Cp of metal	.449 J/gC	.449 J/gC	.449 J/gC	.449 J/gC	.449 J/gC	.449 J/gC

Actual mass of metal (measured at the END of the LAB) _____

Calculations: On the back side of this page....

1. Calculate the experimental mass of the metal for all trials. DO SIX CALCULATIONS.

2. Calculate percent error, using the actual mass as the known. $\% E = \frac{|\text{Experimental} - \text{Known}|}{\text{Known}} * 100\%$