Flame Temperature --- A Really Hot Lab

Question: What is the Temperature of a Bunsen Burner Flame? (Come on admit it – you've been wondering about this and you know it – don't deny it!)

Purpose: To use our knowledge of thermochemistry to determine experimentally the temperature of a Bunsen burner flame.

Materials: calorimeter, water, bolt (Fe), Bunsen burner, nichrome wire, ring stand, temperature probe

Procedure: You need to determine the details of your procedure. In general, you should hang a bolt or nut on a wire and raise a styrofoam cup of water onto the hot bolt or nut. Remember that hot wire will melt Styrofoam. You could assume that the temperature of the flame is the same as the temperature of the hot nut. RECORD A GRAPH OF EACH TRIAL

Note: do six trials.

Data: Create a spreadsheet that includes the following columns and rows

DATA:

	TRIAL 1	TRIAL 2	TRIAL 3	TRIAL 4	TRIAL 5	TRIAL 6
Mass of Bolt	**48.2 g**					
Mass of Empty Cup	**1.95 g**					
Mass of Cup and Water(g)	**147.24**	**160.20**	**155.24**	**145.40**	**146.42**	**150.25**
Initial Temp of Water (C)	**22.4**	**23**	**25**	**24**	**23.2**	**22.1**
Final Temp of Water (C)	**44.6**	**39.2**	**43.0**	**46.0**	**48.2**	**45.2**
Cp of Water	4.18 J/gC					
Cp of Iron	.449 J/gC					

Calculations:

FOR TRIAL ONE, ON THE BACK SIDE OF THE PAPER, show the work for each of the following. After completing trial one, write formulas on the spreadsheet to perform all calculations. After the spreadsheet calculates all of the values, use the spreadsheet to find the average value.

WHAT YOU WILL TURN IN FOR THE LAB…..

1. **Handout with calculations and conclusion on the back**
2. **Graph with data for 6 trials.**
3. **Spreadsheet**

Calculations for Trial ONE

MASS of WATER

ΔT of water

Q of the water

ΔT of the metal

Ti of the metal

CONCLUSION: Write 3 – 4 sentences describing the logic of the lab. Be sure to include a comment regarding heat gained and heat lost.