Chem 121 Names:

AA Analysis of Copper Prelab Form

Refer to the Standards Table in the Atomic Absorption Spectroscopy handout and answer the following questions.

1. What are the concentration limits of the linear ranges for the following atoms?

	Lower Limit (ppm)	Upper Limit (ppm)
Calcium		
Cobalt		
Iron		
Copper		

2. Spectroscopic grade, highly pure AA standards are available commercially. The standards are solutions all of which have the same concentration of 1000 μ g/ml (1 microgram (μ g) = 10⁻⁶ g). A former DVC Chem 121 student, who was working in an international environmental chemistry firm, began an analysis of silver by pipeting 10.00 mL of silver standard solution to a 1.00 L volumetric flask and filling it to the mark with de-ionized water. A portion of this solution was set aside as *Standard #1*, A second portion of 25.00 mL was pipetted into a 50.00 mL volumetric flask.. The flask was filled with de-ionized water to the mark. This concentration was *Standard #2*; 25.00 mL of *Standard #2* was pipeted into a 50.00 mL volumetric flask.. The flask was filled with de-ionized water to the mark. This concentration was *Standard #3*.

Provide the correct concentrations of the respective Standard Solutions. Circle any of those that are NOT within the linear range for silver.

	Concentration (mg/L)
Standard #1	
Standard #2	
Standard #3	

What wave length should the student use? _____

3. One liter standard stock solutions of Calcium, Cobalt, and Iron are available along with pipets in 2 sizes: 10.00 mL and 25.00 mL, plus 2 sizes of volumetric flasks: 50.00 mL and 100.00 mL. Each standard stock solution is 10. ppm. Your group is to devise an efficient dilution scheme to prepare 3 standard concentrations for each of the metals. You may need 2 or 3 dilutions depending on the metal. Complete the illustrations for each metal on the back of this page with the volume of the amount pipeted above the arrows, the volume of the flask beneath it, and the calculated concentration in parts per million (ppm).

In each of your lab notebooks under the heading *Procedure* describe how to prepare three standard solutions of copper using a 10. ppm standard stock solution, a 25.00 mL pipet and 50.00 mL volumetric flasks. (The 10.ppm stock solution is not one of the standard concentrations.)

Chem 121

Calcium



Cobalt



Iron

