

Name \_\_\_\_\_ Section # \_\_\_\_\_ Station # \_\_\_\_\_ Date \_\_\_\_\_

**A. Preparation of Standard Curve**

Attach a copy of your previously prepared standard curve with the equation of the best-fit line included on the plot.

**B. Vitamin Unknowns – Data & Calculations**

Tablet Name \_\_\_\_\_ Mass (on label) of iron per tablet (mg) \_\_\_\_\_

	<b>Trial 1</b>	<b>Trial 2</b>
<b>Measured Absorbance (Solution 3)</b>		
<b>Concentration of iron (Fe<sup>+2</sup>) in Solution 3, mg/L</b>		
<b>Concentration of iron (Fe<sup>+2</sup>) in Solution 1, mg/L</b>		
<b>Mass of iron in tablet (mg)</b>		

<b>Average mass of iron in tablet (mg)</b>	
<b>Relative Error (compared to mass on label)</b>	

*Attach sample calculations of each type necessary to obtain the results in the above table. These should include the equations used, substituted values, and results.*

**C. Class Data Analysis**

Class data for this experiment can be downloaded from a Blackboard file in which each student will have entered the brand of tablet studied, the mass of iron from the label, and the absorbance of Solution 3. For each brand, compute the average mass of iron per tablet as determined experimentally. Then compute the relative error compared to the mass of iron per tablet indicated on the label.

Complete the following detailing the results of your data analysis. The table has four columns: Tablet name, Mass iron per tablet, label (mg), Mass iron per tablet, experimental (mg), and Relative Error (%). Note any data points that were discarded in the averaging and justify their exclusion from your calculations.

Tablet Name	Mass iron per tablet, label (mg)	Mass iron per tablet, experimental (mg)	Relative error (%)
A			
B			
C			

**Excluded data points & justification:**

**D. Questions**

1. Comment on the relative error in your data and the class data. What are possible sources of error that could lead to the observed differences between the mass of iron per tablet listed on the label and the mass per tablet determined experimentally? Be specific, for example “human error” is not an acceptable. Your sources of error should be consistent with the observed differences.
  
2. Suppose that a student does not remove fingerprints from the cuvette before the absorbance of a test solution is measured. What would happen to the measured absorbance? Would the calculated mass of iron in the table for this trial be too large, too small, or unaffected by this error? Explain why.
  
3. Suppose a student analyzes an unknown tablet as described in the experimental procedure and the absorbance of the resulting Solution 3 is determined to be 1.250, which is higher than any value from your standard curve. What might the student do in order to determine the amount of iron in this sample without making new standard solutions?