Name:_____ Section:_____ Date:_____

Mass of aspirin tablet= _____ g = _____ mg

TABLE 1

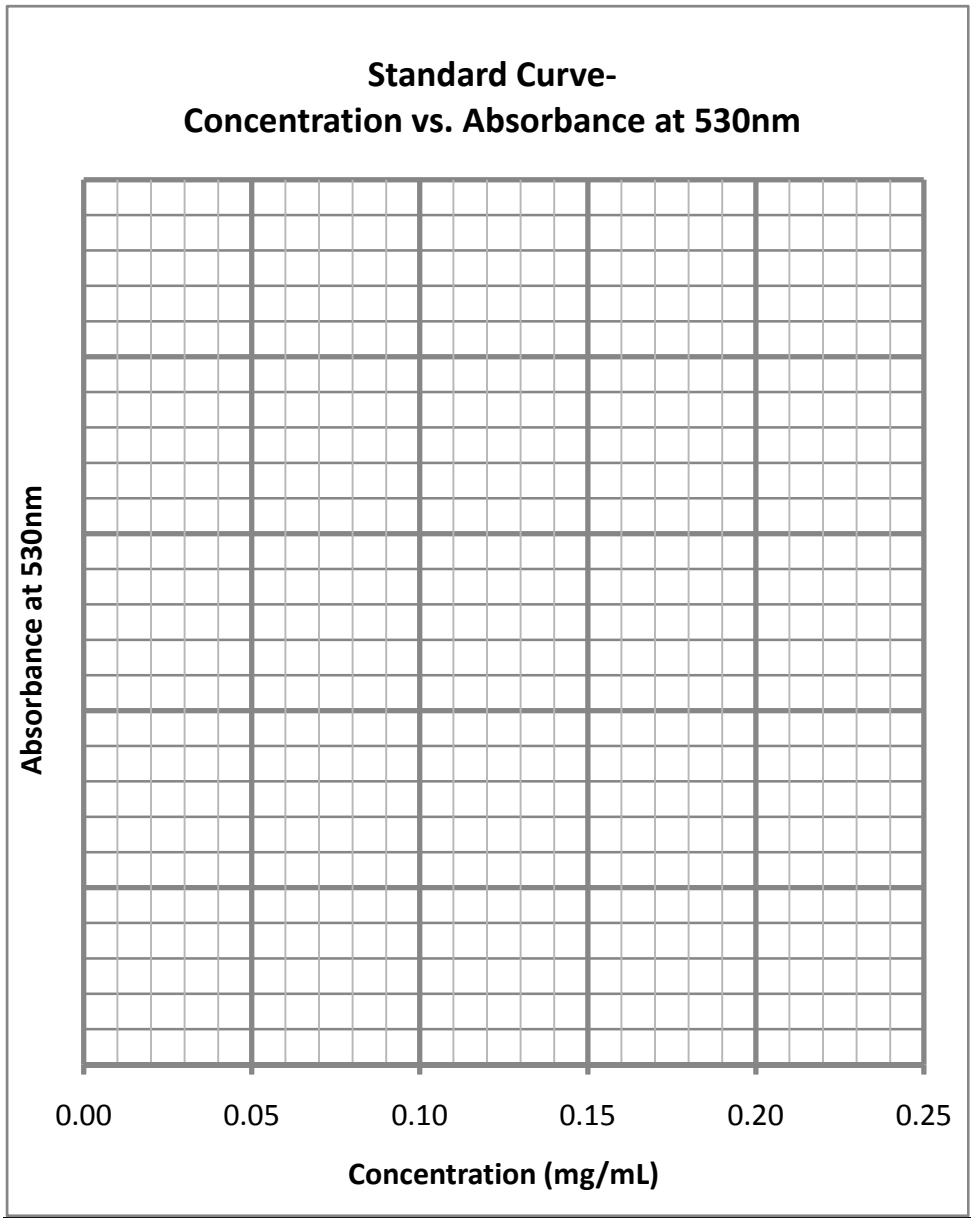
TUBE	CONTENTS	DILUTION FACTOR	CONCENTRATION (mg/ml)	ABSORBANCE AT 530nm
1	3mL $FeCl_3$ solution	-	0.00	
2	1mL ASA standard 9mL $FeCl_3$ solution	-	0.16	
3	5mL Tube #2 5mL $FeCl_3$ solution	-	0.08	
4	5mL Tube #3 5mL $FeCl_3$ solution	-	0.04	
5	5mL Tube #4 5mL $FeCl_3$ solution	-	0.02	
A	1mL aspirin solution 9mL $FeCl_3$ solution	10	?*	
B	0.5ml aspirin solution 9.5mL $FeCl_3$ solution	20	?*	

*__NOTE__

The concentration of colored product in tubes A and B will be determined by comparing the absorbance with the absorbance of the "standard", or known samples (tubes 1-5), using a Standard Curve (see graph on following page). Tube B is twice as dilute as Tube A, so it should absorb half as much light.

DATA ANALYSIS- STANDARD CURVE

In order to determine the amount of ASA in the aspirin tablet, you will have to compare the absorbance of your aspirin samples to that of known concentrations of ASA (tubes 1-5). Plot the absorbance versus the concentration for tubes 1-5 on the grid below (concentration on x-axis, absorbance on the y-axis). Draw a straight "best fit" line through these points (a best fit line comes as close as possible, but *may not go through all data points*). This is your "standard curve". It tells you the relationship between the absorbance of a salicylic acid solution and its concentration. Next, find the absorbance value for sample A on your graph. Based on your "standard curve", read what the concentration value for that sample should be and record in Table 1.



CALCULATIONS

To determine the amount of ASA in an aspirin tablet:

$$(concentration\ in\ mg/ml) \times (dilution\ \ factor) \times 250ml = \_\_\_\_\_\ mg\ in\ original\ tablet$$

Sample A:

Sample B:

Average:

QUESTIONS

1. Why did you use the $FeCl_3$ solution as a reference solution, or "blank"? Would water have worked just as well? Explain your reasoning.

2. Compare your results for tubes A and B. Do they agree (i.e., did both samples give you the same answer for the amount of ASA in an aspirin tablet)? In other words, how *precise* is your data (be ***quantitative!***)? If the two values are different, provide a possible explanation.

3. Compare your value for the ASA content of an aspirin tablet with the advertised value (the #mg per tablet listed on the bottle= 325mg). How close were you to the actual value? Assume that the advertised value is correct; how ***accurate*** were your results (be ***quantitative*** and calculate % error)?

   How to calculate % error:

$$\%\ error = \frac{325mg - Your\ value\ (mg)}{325mg} \times 100\%$$

4. Compare amount of ASA in one tablet to the total mass of the tablet. Is the majority of the mass of an aspirin tablet made up of ASA, its active ingredient?

5. What would you expect for results if you repeated this experiment with a Tylenol tablet (the active ingredient in Tylenol is acetaminophen)? What color would you expect the solution you put into the spectrophotometer to be? *Explain your reasoning.*