COLORIMETRIC DETERMINATION OF ASPIRIN SMART WORKSHEET

PART A. PREPARATION OF SOLUTIONS FOR BEER LAW GRAPH

COMPOSITION OF SOLUTION S

The molar mass of acetylsalicylic acid is 180.16 $\mathrm{g\,mol^{-1}}$

Part A: Mass of acetylsalicylic acid data and molar concentration calculation

	Unrounded	Rounded	Unit
Mass of acetylsalicylic acid in 1 L solution		1.6023	g
1. Molar concentration of acetylsalicylic acid	0.008893761	0.00889	mol $\mathrm{L^{-1}}$

PREPARATION OF DILUTED SOLUTIONS TO BE USED FOR BEER'S LAW GRAPH

Final volume is 50.00 mL for all solutions, including blank

Part A: Volume data, ferric salicylate ion concentration calculation and absorbance data

Trial	Volume of solution S (mL)	Final volume (mL)	2. [Fe-salicylate ion] $(\mathrm{mol\,L^{-1}})$		Absorbance
			Unrounded	Rounded	
Blank ($\mathrm{FeCl_3}$ soln used to calibrate colorimeter)	0.00	50.00	0.00000	0.00	0.000
1	2.00	50.00	0.0003557504	0.000356	0.194
2	3.00	50.00	0.0005336257	0.000534	0.271
3	4.00	50.00	0.0007115009	0.000712	0.402
4	5.00	50.00	0.0008893761	0.000889	0.524
5	6.00	50.00	0.0010672513	0.00107	0.622

Data check

Absorbance Values: ✔ Data passes ascending order check

GRAPH CALCULATIONS

Using the graph of absorbance vs [Fe-salicylate ion], complete the table below.

Part A: Slope and intercept calculation

	Unrounded	Rounded	Unit
3. Slope	590.542	5.91×10^2	$\mathrm{L\ mol^{-1}}$
4. y-intercept	-0.0146429	-0.0146	Unitless

YOUR PROGRESS ON THE PREPARATION OF SOLUTIONS FOR BEER LAW GRAPH

CORRECT	POINTS AWARDED	AUTOSOLVED	NOT FINISHED
22 / 22	98 / 98	0 / 22	0 / 41

PART B. ANALYSIS OF ASPIRIN TABLET

ASPIRIN TABLET DATA

Part B: Strength and absorbance of aspirin

	Data	Unit
Strength of aspirin tablet (mg acetylsalicylic acid)	325	mg
Absorbance of aspirin solution	0.109	Unitless

ASPIRIN TABLET CALCULATIONS

Part B: Calculations

	Unrounded	Rounded	Units
5. Molar concentration of iron salicylate ion in 50 mL volumetric flask (calculated using equation of line)	0.000209372	0.000209	$\mathrm{mol\,L^{-1}}$
6. Molar concentration of iron salicylate ion in 250 mL volumetric flask (parent aspirin stock solution)	0.00523430	0.00523	$\mathrm{mol\,L^{-1}}$
7. Moles of iron salicylate ion in 250 mL volumetric flask (parent aspirin stock solution)	0.00130857	0.00131	mol
8. Calculated mass of acetylsalicylic acid in the tablet	235.753	236	mg
9. Percent error in mass of acetylsalicylic acid in the tablet	27.3846	27	%

	Quality of Data	
% Error	% error above 20%	0

YOUR PROGRESS ON

CORRECT	POINTS AWARDED	AUTOSOLVED	NOT FINISHED
10 / 10	44 / 50	0 / 10	0 / 12

YOUR OVERALL PROGRESS

Visual status toggles for statistics by question type