

Name _____ Section # _____ Station # _____ Date _____ .

Attach sample calculations of each type necessary to obtain the results (**indicated in bold**) for all parts of the experiment as described in the following tables. These should include the equations used, substituted values, and results.

I. Standardization of NaOH Solution (Quantitative Trials: Data and Calculations)

	Trial 1	Trial 2	Trial 3
Mass of $\text{KHC}_8\text{H}_4\text{O}_4$			
Moles of $\text{KHC}_8\text{H}_4\text{O}_4$			
Moles of NaOH			
Buret Reading (final)			
Buret Reading (initial)			
Volume of NaOH used			
Molarity of NaOH			

Average NaOH Molarity	
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Question 1: Explain what the effect will be on the calculated molarity of the NaOH solution if the endpoint in the titration of $\text{KHC}_8\text{H}_4\text{O}_4$ with the NaOH solution is mistakenly surpassed and the solution is too pink?

II. Antacid Analysis

Antacid used _____

	Trial 1	Trial 2	Trial 3
Mass of antacid (crushed tablet)			
Volume of HCl added			
Concentration of HCl used			
Mole of HCl added			
Buret Reading (final)			
Buret Reading (initial)			
Volume of NaOH used			
Molarity of NaOH (average from Part I)			
Moles of NaOH titrated (to neutralize leftover HCl)			
Mole of HCl (to react with antacid)			
Equivalent moles of base in antacid			
Equivalent moles bases per gram antacid			

Average equivalent moles base per gram antacid	
Cost of antacid per gram (Circle the appropriate value)	<i>Roloids = \$0.0221/g</i> <i>Tums = \$0.0569/g</i>
Antacid cost (\$) per equivalent mole of base	

Question 2: If the endpoint in the antacid titration is missed and too much NaOH is used, will the reported amount of antacid in the sample be too high or too low? Explain.

III. Class Data Analysis

Class data for this experiment can be downloaded from a Blackboard file in which each student will have entered the molarity of their NaOH solution and data on their two antacid trials. Tests were done on 2 different brands of antacids. The goal of this part of the report is to use Excel to find the equivalent moles of base / g tablet for each measurement made in the class, and then to determine the average value for both antacid samples. **Directions for the calculations are given in the lab manual.**

Class average results: Submit the results of your calculations of average values for the antacids with this report. In addition, note any data points that were discarded in the averaging of the antacid data.

Antacid evaluation: Fill in the chart below using calculated data for *average equivalent mol base / g antacid* and for the *cost / g antacid*

	Tums	Roloids
Equivalent mol base / g antacid	_____	_____
Antacid cost/ equivalent mol base	_____	_____

Compare the two antacids: Which has more neutralizing power per gram (that is, which contains more equivalent base per gram)? Which is a better buy (lower cost per mole of base)?

Relative Error Analysis:

Compare your results for the antacid to the class values by calculating the relative error.

Antacid used _____ Relative error _____

Comment on your relative errors. Are your values high or low, relative to the class averages? Are your values within 1% or 5% or 10% of the class values? Are they more than 10% from the class averages?