



Name: _____

Partner's Name(s): _____

Lab Date: _____ Lab Instructor's Name: _____

QUANTITATIVE ANALYSIS OF THE CITRIC ACID CONTENT IN JUICES LAB NOTEBOOK PAGES

All purpose, procedure(s), and data/observations must be recorded in the lab notebook in pen with permanent, waterproof ink (black or blue). Pencils, markers, highlighters, and correction fluid (white-out) are not permitted. No information can be recorded elsewhere and transferred after leaving the lab. Lab notebooks can be digital or paper; you may write directly on the lab notebook pages in your lab manual or download a digital copy onto your electronic device and then write in it. Refer to the Guide for Success in the General Chemistry Laboratory section in the front of this lab manual for more detailed instructions.

- ⦿ **Before Lab:** Make sure to complete the Purpose and Procedure sections in your lab notebook pages.
- ⦿ **After Lab:** Upload your notebook pages to the appropriate Carmen assignment within 48 hours after the start time of your in-person lab session. If you used the notebook pages in your paper copy of your lab manual, you should scan or take photos of the pages. Do not remove them from your lab manual. Refer to the LLT Notebook upload assignment in Carmen for more detailed instructions.

PURPOSE _____

Describe the what, why, and how of the experiment in bullet points or a few sentences. Consult the Expected Learning Outcomes and the procedure for the experiment to develop the purpose.

PROCEDURE CITATION _____

Chemistry 1210: General Chemistry Laboratory Manual, Fall 2025–Summer 2026.; Weaver, T. A., Opoku-Agyeman, B., Fontes N. Da Silva, C., Welch, A. N., Stern, J. E., Wroblewski, R. A., Walter, C., van Helmond, A. Eds.; Van-Griner Learning; Cincinnati, OH; pp. 89–98.

PROCEDURE

PART A. STANDARDIZE THE NaOH SOLUTION

Write a summary or step-by-step procedure for this part of the experiment in the space below.

PART B. DETERMINE THE CONCENTRATION OF THE CITRIC ACID IN LEMON OR LIME JUICE

Write a summary or step-by-step procedure for this part of the experiment in the space below.

CLEAN UP AND WASTE DISPOSAL

All solutions and waste, including extra KHP solid, may be rinsed down the drain with a large amount of running water. Any KHP cleaned up from the balance area must go in the class Chemical Waste beaker. Empty KHP vials should be shown to your lab instructor and then disposed of in the Blue Solid Waste bucket under your reagent cart. After cleaning up, wipe down your work area with 70% ethanol spray and a paper towel. Wash your hands thoroughly after completing this experiment.

DATA AND OBSERVATIONS

QUANTITATIVE ANALYSIS OF THE CITRIC ACID CONTENT IN JUICES

PART A. STANDARDIZE THE NaOH SOLUTION (MY DATA)

	MY 1ST TRIAL	MY 2ND TRIAL	MY 3RD TRIAL (USE IF NEEDED)
Mass of KHP in flask (g)			
*Moles of KHP (mol)			
Buret initial reading (mL)			
Buret final reading (mL)			
*Volume of NaOH added (mL)			

PART A. STANDARDIZE THE NaOH SOLUTION (GROUP DATA)

INITIALS/TRIAL	MASS OF KHP IN FLASK (g)	MOLES KHP IN FLASK (mol)	VOLUME OF NaOH ADDED (mL)	CONCENTRATION OF NaOH (M)
My 1st Trial				
My 2nd Trial				

*Average concentration of NaOH (M) _____

PART B. DETERMINE THE CONCENTRATION OF CITRIC ACID IN LEMON OR LIME JUICE

Assigned juice: _____

	MY 1ST TRIAL	MY 2ND TRIAL	MY 3RD TRIAL (USE IF NEEDED)
Volume of juice sample (mL)			
Buret initial reading (mL)			
Buret final reading (mL)			
*Volume of NaOH added (mL)			

PART B. DETERMINE THE CONCENTRATION OF CITRIC ACID IN LEMON AND LIME JUICE**Lemon Juice**

INITIALS/ TRIAL	VOLUME OF JUICE SAMPLE (mL)	VOLUME OF NaOH ADDED (mL)	MOLES NaOH USED (mol)	MOLES CITRIC ACID IN SAMPLE (mol)	CONC. CITRIC ACID IN JUICE (M)

*Average concentration of citric acid in lemon juice (M) _____

Lime Juice

INITIALS/ TRIAL	VOLUME OF JUICE SAMPLE (mL)	VOLUME OF NaOH ADDED (mL)	MOLES NaOH USED (mol)	MOLES CITRIC ACID IN SAMPLE (mol)	CONC. CITRIC ACID IN JUICE (M)

*Average concentration of citric acid in lime juice (M) _____

* Indicates the value is calculated.

CALCULATIONS

In lab, calculate the group's average concentration of NaOH using the group's data from Part A. Then, using the group's average concentration of NaOH, calculate the average concentration of citric acid in each juice using the group's data. Calculations must be shown to your lab instructor before leaving for credit. **Displaying all your work will help your lab instructor check your results and assist you if needed.**

CALCULATIONS (CONT.)
