Name: _____ **Citric Acid**

DATA SHEET

ORANGE JUICE DATA	Trial 1	Trial 2	Trial 3
Volume of juice			
Initial buret reading (mL)			
Initial juice pH value			
Final buret reading (mL)			
Final juice pH value			
Volume of NaOH used (mL)			
Moles of NaOH used			
Moles of citric acid in sample (show work below)			
Grams of citric acid in sample			
% citric acid in sample(mass/volume)			

Average % citric acid in sample (mass/volume) _____

GRAPEFRUIT JUICE DATA	Trial 1	Trial 2	Trial 3
Volume of juice			
Initial buret reading (mL)			
Initial juice pH value			
Final buret reading (mL)			
Final juice pH value			
Volume of NaOH used (mL)			
Moles of NaOH used			
Moles of citric acid in sample (show work below)			
Grams of citric acid in sample			
% citric acid in sample(mass/volume)			

Average % citric acid in sample (mass/volume) _____

Name: _____ **Citric Acid**

DATA SHEET (Continued)

LEMON JUICE DATA	Trial 1	Trial 2	Trial 3
Volume of juice			
Initial buret reading (mL)			
Initial juice pH value			
Final buret reading (mL)			
Final juice pH value			
Volume of NaOH used (mL)			
Moles of NaOH used			
Moles of citric acid in sample (show work below)			
Grams of citric acid in sample			
% citric acid in sample(mass/volume)			

Average % citric acid in sample (mass/volume) _____

LIME JUICE DATA	Trial 1	Trial 2	Trial 3
Volume of juice			
Initial buret reading (mL)			
Initial juice pH value			
Final buret reading (mL)			
Final juice pH value			
Volume of NaOH used (mL)			
Moles of NaOH used			
Moles of citric acid in sample (show work below)			
Grams of citric acid in sample			
% citric acid in sample(mass/volume)			

Average % citric acid in sample (mass/volume) _____

Name: _____ **Citric Acid**

REVIEW QUESTIONS

1. Which fruit contained the highest concentration of Citric Acid? Which had the least? Is this what you would expect? Why or why not?

2. Consult the labels of the four juices products provided. Besides citric acid, what other components in fruit juices would be of interest to the manufacturer? Why?

3. Why do you wait 30 seconds before reading the meniscus of the buret?

4. Why should all internal surfaces of the buret be rinsed with the titrant, 0.5 M sodium hydroxide?

5. Does the quantity of water added to the juice sample have to be accurately measured? Why or why not?

6. What is the formula of citric acid? Draw its structure.

7. What is the molar mass of citric acid? Show work.

8. How many hydrogen ions can citric acid donate in aqueous solution?

9. Write the reaction between citric acid and a strong base such as NaOH.

Name: _____ **Citric Acid**

10. Describe the purpose for a titration experiment.

11. What is an indicator? List some indicators used in previous experiments.

12. What is the name of the device used to add titrant to a sample?

13. What are the units associated with a number expressing
14. concentration?

15. A student used 8.95mL of a 0.22 M NaOH solution to neutralize a 10.0 mL sample containing citric acid. Calculate:

    a. Moles of base
    b. Moles of acid
    c. Grams of acid
    d. Percent weight/volume

16. Were your results from the three titrations of each juice sample in close agreement? If not, what factors might have caused errors in the data?