

## Neutralization Experiment

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Per: \_\_\_\_\_

### Procedure

1. Obtain your supply box. Be careful, there is hydrochloric acid in the Erlenmeyer Flask.
2. Add one to two drops of phenolphthalein indicator to the flask.
3. Read the initial volume of NaOH in the burette and record. Be sure to read in the right direction!
4. Slowly add NaOH from the burette into the flask containing the acid and indicator. Swirl as you add the base.
5. Keep adding the NaOH slowly until the solution turns pale pink and holds its color for at least 30 seconds.
6. Read the final volume of the NaOH in the burette and record. Again, be sure to read in the right direction!
7. Pour the contents of the flask down the drain and rinse the flask with water several times.
8. Return your supply box to the side table.
9. Answer the Calculation and Analysis Questions.

### Data

Molarity of the NaOH= 0.2M

Volume of 0.1M HCl = 50mL

	TRIAL 1	TRIAL 2	TRIAL 3	TRIAL 4
Initial Volume of NaOH				
Final Volume of NaOH				
Volume of NaOH Used				

### Calculations

1. Use the molarity equation ( $M = \text{mol/L}$ ) to calculate the moles of HCl used in each trial.
  - A. Trial 1
  - B. Trial 2
  - C. Trial 3
  - D. Trial 4
2. Use the molarity equation ( $M = \text{mol/L}$ ) to calculate the moles of NaOH used in each trial.
  - A. Trial 1
  - B. Trial 2
  - C. Trial 3
  - D. Trial 4

## Analysis Questions

1. What do you notice about the amount of moles of acid compared to the moles of base?
2. The point that the solution turns pink is known as the equivalence point of the reaction but the end point of the titration. Explain this distinction.
3. What are some sources of error that might cause your results to not be exactly perfect?
4. Write a balanced chemical equation for the reaction you performed.
5. If 100mL of 0.5M hydrochloric acid had been used, how much 0.25M NaOH would have been required to reach the equivalence point?
6. In a titration 33.21mL of 0.3020M rubidium hydroxide solution is required to exact ally neutralize 20.00mL of hydrofluoric acid solution. What is the molarity of the hydrofluoric acid solution?
7. A 35.00mL sample of NaOH solution is titrated to endpoint by 14.76mL of 0.4122M HBr solution. What is the molarity of the NaOH solution?
8. Write a balanced reaction equation for the neutralization of sulfuric acid with potassium hydroxide. Identify the acid, base, and salt in your reaction.