

Name: _____

CHEMISTRY 12 Titration Lab
Determination of the Molarity of an Acid or Base Solution

PART 1: STRONG ACID vs. STRONG BASE TITRATION

Step 1: Collect the following materials:

10 mL pipette and bulb, 125 mL Erlenmeyer flask, 50 mL burette, burette clamp, ring stand and funnel, ~ 100 mL NaOH, ~ 30 mL H₂SO₄, ~ 30 mL CH₃COOH and phenolphthalein

Step 2. **Rinse** burette with ~ 5 mL of **0.500 M NaOH**, then FILL close to 0.00mL

Step 3: Using the pipette withdraw precisely 10.0 mL of the unknown [**H₂SO₄**] and dispense this into a 125 mL Erlenmeyer flask

Step 4: Add a few drops of the Indicator: ***phenolphthalein*** to the acid.

Step 5: Open the stopcock on the burette to dispense the required volume of Base (be sure to record the initial and final volume values)

Step 6: Make sure you swirl the Erlenmeyer as you drop the base and stop titrating as soon as the colour change is observed

Step 7: Repeat this process a minimum of TWO more times (for a total of 3 trials) and fill out the attached data table for Part 1.

Step 8: Write up an explanation for Part 1 of this activity. Be sure to include the balanced chemical equation, why choosing "phenolphthalein" as an indicator is acceptable, the knowns and the unknowns (volume and concentration of acid and base). Calculate the average volume of NaOH at the point where the colour of the solution in the Erlenmeyer changed. What did the colour change to? Show the calculation step-by-step needed to determine the concentration of the unknown [**H₂SO₄**].

PART 2: Weak ACID vs. STRONG BASE TITRATION

Step 1. **Re-fill** the Burette with **0.500 M NaOH** (close to 0.00 mL)

Step 2: Using a cleaned pipette, withdraw precisely 10.0 mL of the unknown **[CH₃COOH]** and dispense this into a 125 mL Erlenmeyer flask

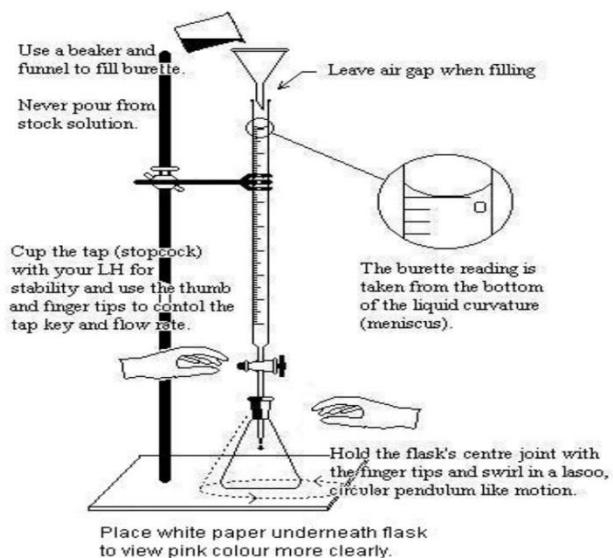
Step 3: Add a few drops of the Indicator: ***phenolphthalein*** to the acid.

Step 4: Open the stopcock on the burette to dispense the required volume of BASE (be sure to record the initial and final volume values)

Step 5: Be sure to swirl the Erlenmeyer as you drop the base and stop titrating as soon as the colour change is observed

Step 6: Repeat this process a minimum of TWO times (for a total of 3 trials) and fill out the attached data table for Part 2.

Step 7: Write up an explanation for Part 2 of this activity. Be sure to include the balanced chemical equation, why choosing "phenolphthalein" as an indicator is acceptable, the knowns and the unknowns (volume and concentration of acid and base). Calculate the average volume of NaOH at the point where the colour of the solution in the Erlenmeyer changed. What did the colour change to? Show the calculation step-by-step needed to determine the concentration of the unknown **[CH₃COOH]**



Data and Observations:

Part 1	Trial 1	Trial 2	Trial 3
Initial volume of NaOH			
Final Volume of NaOH			
Volume used:			

Part 1 Explanation:

Part 2	Trial 1	Trial 2	Trial 3
Initial volume of NaOH			
Final Volume of NaOH			
Volume used:			

Part 2 Explanation: