Chemistry
Lab: Titration

Introduction:

Neutralization Reaction: a reaction where an **acid** and a **base** react to form **water** and a **salt**; can be used to create a pure sample of a salt or to determine the concentration of an acid or a base in a solution.

Examples: $HCl + NaOH \rightarrow NaCl + H_2O$

$H_2SO_4 + 2\ NaOH \rightarrow 2\ H_2O + Na_2SO_4$

Equivalence point (The point of neutralization in a titration)**:** The amount of acid (or base) that will give one mole of hydrogen (or hydroxide) ions;

$HCl + NaOH \rightarrow NaCl + H_2O$

In this example: one mole of HCl is one equivalent of HCl

Because moles of H+ from the acid are equal to moles of OH- from base, in the balanced equation, we can use the dilution equation to solve for unknown molarities. **$M_1V_1=M_2V_2$**

Balnced equation: **$HCl + NaOH \rightarrow NaCl + H_2O$**

Dilution equation: **$M_{HCl} \times V_{HCl} = M_{NaOH} \times V_{NaOH}$ at equivalnce point**

Calculation: **? x 35.3mL .102M x 32.8mL = .102 x 32.8 / 35.5 = .0948 (3 sigfigs!)**

Objectives: 1. Determine the M_{HCl} for each titration

2. Average three molarities

3. Have me sign

Data:

Titration	HCl	NaOH	Molarity

1	Vol_F HCl = Vol_I HCl = -_____ Vol HCl used =	Vol $NaOH_F$ = Vol $NaOH_I$ = -_____ Vol NaOH used=	M_1 HCl = _____
2	Vol_F HCl = Vol_I HCl = -_____ Vol HCl used =	Vol $NaOH_F$ = Vol $NaOH_I$ = -_____ Vol NaOH used=	M_2 HCl =_____
3	Vol_F HCl = Vol_I HCl = -_____ Vol HCl used =	Vol $NaOH_F$ = Vol $NaOH_I$ = -_____ Vol NaOH used=	M_3 HCl = _____
Average Molarity of HCl = _____			