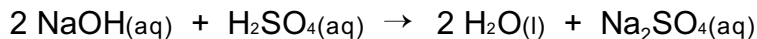


Titrations

1. Earl N. Myers performed a titration by adding 0.115 mol/L NaOH(aq) to a 25.00 mL sample of H₂SO₄(aq).



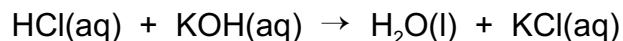
Reading(mL)	Trial 1	Trial 2	Trial 3
final reading	17.05	28.00	39.00
initial reading	4.00	17.05	28.00
volume NaOH added			

- a) Calculate the volume of NaOH added in each trial.
- b) Which solution was in the buret? _____
- c) Why should we omit the result in Trial 1 in the calculation of the acid concentration.
- _____
- _____

- d) Use Trials 2 & 3 to calculate the concentration of H₂SO₄(aq). (0.0252 mol/L)

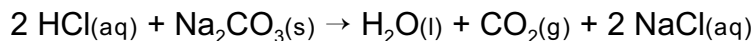
2. 25.0 mL of HCl(aq) is titrated against a solution of KOH with a concentration of 0.75 mol/L. The following data was obtained from the burette:

	Trial 1	Trial 2	Trial 3
Final Reading	14.3 mL	28.4 mL	42.6 mL
Initial Reading	0.1 mL	14.3 mL	28.4 mL



Determine the concentration of the acid used. (0.425 mol/L)

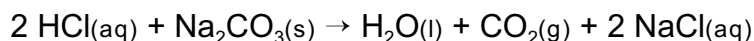
3. A primary standard of $\text{Na}_2\text{CO}_3(\text{s})$ is used to determine the concentration of a hydrochloric acid solution. In the first trial a solution containing 0.5012 g of $\text{Na}_2\text{CO}_3(\text{s})$ required 21.35 mL of $\text{HCl}(\text{aq})$ to reach the equivalence point.



- a) Based on this trial, what is the concentration of $\text{HCl}(\text{aq})$? (0.443 mol/L)

(b) Why is it important to perform more than one trial?

4. A pipette is used to transfer four 25.00 mL samples of hydrochloric acid, $\text{HCl}(\text{aq})$, to flasks. Each sample is then titrated to the endpoint using a 0.001887 mol/L solution sodium carbonate, Na_2CO_3 . The results below were obtained. What is the concentration of $\text{HCl}(\text{aq})$?



Trial	1	2	3	4
Final reading(mL)	20.98	33.26	33.12	45.43
Initial reading(mL)	8.08	20.98	20.83	33.12
Volume of Na_2CO_3 added (mL)	12.90	12.28	12.29	12.31

Calculate the molar concentration of the $\text{HCl}(\text{aq})$. (0.00187 mol/L)