

1. Give the word equation for the neutralization reaction of an acid and a base.



2. Complete these equations:



3. A titration is a laboratory method used to determine the concentration of an acid or a base in solution by performing a neutralization reaction with a standard solution.

4. At the end point of the titration, the indicator changes color, which indicates neutralization. Once neutralized, moles of [H⁺] acid and moles of 1 [OH⁻] base are equal.

5. In a titration of HCl with NaOH, 100.0 mL of the base was required to neutralize 20.0 mL of 5.0 M HCl. What is the molarity of the NaOH? (Be sure to write the neutralization reaction.)



1 mol NaOH	5.0 mol HCl	1 L HCl	20.0 mL HCl	100.0 mL NaOH
1 mol HCl	1 L HCl	100.0 mL HCl	100.0 mL NaOH	1 L NaOH

= $\frac{1.0 \text{ mol NaOH}}{1 \text{ L NaOH}}$

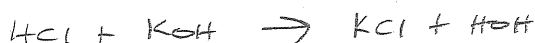
6. In a titration of H₂SO₄ with NaOH, 60.0 mL of 0.020 M NaOH was needed to neutralize 15.0 mL of H₂SO₄. What is the molarity of the acid? (Be sure to write the neutralization reaction.)



1 mol H ₂ SO ₄	0.020 mol NaOH	1 L NaOH	60.0 mL NaOH	100.0 mL H ₂ SO ₄
2 mol NaOH	1 L NaOH	100.0 mL NaOH	15.0 mL H ₂ SO ₄	1 L H ₂ SO ₄

= $0.040 \text{ M H}_2\text{SO}_4$

7. If 10.0 mL of 0.300 M KOH are required to neutralize 30.0 mL of gastric juice (HCl), what is the molarity of the gastric juice?



1 mol HCl	0.300 mol KOH	1 L KOH	10.0 mL KOH	100.0 mL HCl
1 mol KOH	1 L KOH	100.0 mL KOH	30.0 mL HCl	1 L HCl

= 0.100 M HCl