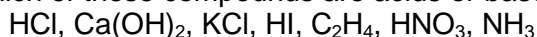


Acids & Bases Worksheet

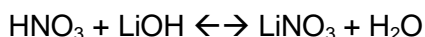
Objectives:

- Identify acids & bases and their conjugates and identify them as strong or weak
- Calculate pH, ionization constants, and titration problems
- Write acid-base reaction equations & identify the substances participating
- Predict the properties of a salt solution

1. Which of these compounds are acids or bases?



2. Identify & label the conjugate acid-base pairs in this reaction:



3. Water is an amphoteric substance. What does that mean?

4. Which of the following acids & bases are strong?



5. A solution has a [OH⁻] concentration of 1.0 x 10⁻⁹M. What is the pH of this solution?

6. A 0.115M acid solution (HA) is 85% ionized. What is the acid ionization constant for this acid?

7. Would solutions of NaCl and NH₄Cl be acidic, basic, or neutral?

8. A buffer solution contains acetic acid (HC₂H₃O₂) and sodium acetate (NaC₂H₃O₂). Show, with a reaction equation, how this buffer solution would react to a small addition of acid, a small addition of base.

9. You have 50.0 ml H₂SO₄ of unknown concentration. You titrate it with 0.250M NaOH and find that it takes 35.5 ml to neutralize the acid. What is the concentration of your acid solution?

1. Acids - HCl, HI, HNO₃; Bases - Ca(OH)₂, NH₃

2. $\overset{\text{acid}}{\text{HNO}_3} + \overset{\text{base}}{\text{LiOH}} \leftrightarrow \overset{\text{base}}{\text{LiNO}_3} + \overset{\text{acid}}{\text{H}_2\text{O}}$

3. Substance that can either lose or accept a proton & thus can function as either a Bronsted-Lowry acid or Bronsted-Lowry base

4. Strong acids - HI, H₂SO₄; Strong base - KOH

5. pH 6.0

6. Ka = 5.56 x 10⁻¹

7. Neutral, acidic

8. In solution, buffer would have acid and acetate ion present. Addition of acid would cause this reaction:
 $\text{H}_3\text{O}^+ + \text{C}_2\text{H}_3\text{O}_2^- \rightarrow \text{HC}_2\text{H}_3\text{O}_2 + \text{H}_2\text{O}$
 Addition of base:
 $\text{OH}^- + \text{HC}_2\text{H}_3\text{O}_2 \rightarrow \text{C}_2\text{H}_3\text{O}_2^- + \text{H}_2\text{O}$

9. 0.0888 M