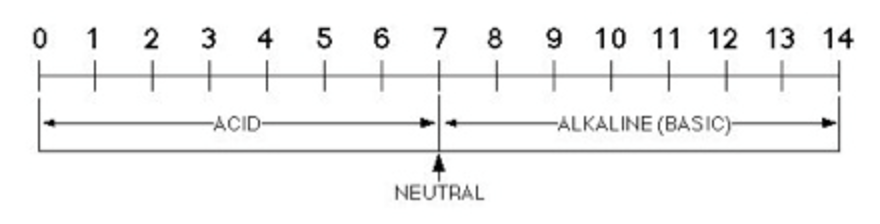
**Honors Chemistry: Acids and Bases Unit Objectives**

**By the end of the unit, students should be able to:**

* Introduction to acids and bases
  + List the properties of acids and bases
  + Classify a substance as an acid or base based on its chemical formula
    - Always refer to Reference Tables K and L
    - Know the exceptions: Compounds that contain –OH but are NOT bases
      * Alcohols: compounds with ONLY C, H, and then an OH, such as CH3OH
      * Organic Acids: end in –COOH, but are ACIDS, NOT BASES, such as ethanoic acid: CH3COOH (on Table K)
* Acid and Base theories
  + Explain how Arrhenius defined acids and bases according to the specific types of ions they produce in solution
  + Explain how Bronsted and defined acids and bases (BAAD)
    - Identify the acids and bases in a chemical equation
    - Identify conjugate pairs in a reaction
    - Define amphoteric substance and give an example.
  + Know the difference between Lewis acids and bases in terms of electron pair transfer and be able to identify if a substance acts like a Lewis acid or base
* Anhydrides
  + Identify acidic and basic anhydrides
  + Determine the formula of the acid or base that forms when an anhydride dissolves in water.
* Acid and Base strength
  + Memorize the rules for identifying strong and weak acids and bases from their formulas
  + Know the difference between strong and weak acids in terms of ionization
  + Write the equations for ionization of an acid or base in water
  + Perform calculations with ionization constants (Ka or Kb)
  + Know the relationship between the value of Ka and the strength of an acid
  + Calculate the percent ionization of an acid
* pH scale
  + Memorize and be able to use the following formulas:
    - [H3O+] x [OH-] = 1.0 x 10-14
    - pH = - log [H3O+]
    - [H3O+] = 1.0 x 10-pH
  + Classify a substance as an acid or a base based on its pH number
  + Calculate the pH of substance if given the concentration of H+/H3O+ and vice versa
  + Know what happens to the concentrations of hydronium ion and hydroxide ion as pH decreases (gets more acidic) or increases (gets more basic)
  + Calculate how many times the [H+/H3O+] increases/decreases for a change in each step on the pH scale



High [H+/H3O+]

Low [OH-]

Low [H+/H3O+]

High [OH-]

[H+/H3O+] = [OH-]

* Indicators
  + Use Table M to determine what color a given indicator would appear for a solution at a certain pH
* Reactions involved with acids and bases
  + Predict the products in a reaction of an acid with a metal
  + Predict the products in a reaction of an acid with a base (a neutralization reaction)
  + Identify if the hydrolysis of a particular salt would form an acidic or basic solution
* Titration
  + Explain why a titration would be performed
  + Use the Titration Formula on Table T to calculate the unknown concentration or volume in a titration problem
    - \*Make sure to multiply the MAVA side by the # of H+ in the acid, and the MBVB side by the # of OH- in the base