

Units 10- Situational pH: Acids and Bases

Content Area: **Science**
Course(s): **Chemistry Honors**
Time Period: **May**
Length: **6 weeks**
Status: **Published**

Transfer Skills

Compounds of acids and bases are around us every day. The pH of chemicals has an affect on the uses and safety of handling. Neutralization reactions are the most common between acids and bases.

Enduring Understandings

Acids and bases play a major role in our every day lives.

Acid-Base reactions do not always produce neutral results.

It is possible for a chemical system to resist a pH change.

Essential Questions

Why do chemists define acid and bases in different ways?

To what extent can the strengths of acids and bases be quantified?

Why is pH important?

How is it possible for a buffered solution to use up both excess acid and excess base to maintain a constant pH?

To what extent are the characteristics of all titration the same?

Content

Hydronium ion, conjugate acid, conjugate base, amphoteric, pH, titration, Arrhenius Acid and Base, Brønsted-Lowery Acid and base, Lewis Acid & Base, indicator, neutralization, standard solution, buffer

Skills

Distinguish between acid and base properties, and definitions, including: Brønsted Lowery, Arrhenius, and Lewis.

Identify conjugate acid base pairs in acid base reactions and the direction favored by the reaction.

Calculate and use pH to classify a solution as neutral, acidic, or basic.

Determine the percent ionization of acids and bases and the relationship to strength.

Understand and explain the purpose of a titration. Explain the various parts of a titration curve.

Determine the point in a titration that neutralization has occurred

Resources

Standards

SCI.9-12.5.1.12.A.2	Develop and use mathematical, physical, and computational tools to build evidence-based models and to pose theories.
SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
SCI.9-12.5.1.12.B.2	Build, refine, and represent evidence-based models using mathematical, physical, and computational tools.
SCI.9-12.5.1.12.D.3	Demonstrate how to use scientific tools and instruments and knowledge of how to handle animals with respect for their safety and welfare.
SCI.9-12.5.2.12.A.6	Relate the pH scale to the concentrations of various acids and bases.
SCI.9-12.5.2.12.B.1	Model how the outermost electrons determine the reactivity of elements and the nature of the chemical bonds they tend to form.