CHAPTER HIGHLIGHTS

Properties of Acids and Bases

Vocabulary

binary acid
oxyacid
Arrhenius acid
Arrhenius base
strong acid
weak acid

- Acids have a sour taste and react with active metals. Acids change the colors of acid-base indicators, react with bases to produce salts and water, and conduct electricity in aqueous solutions.
- Bases have a bitter taste, feel slippery to the skin in dilute aqueous solutions, change the colors of acid-base indicators, react with acids to produce salts and water, and conduct electricity in aqueous solution.
- An Arrhenius acid contains hydrogen and ionizes in aqueous solution to form hydrogen ions. An Arrhenius base produces hydroxide ions in aqueous solution.
- The strength of an Arrhenius acid or base is determined by the extent to which the acid or base ionizes or dissociates in aqueous solutions.

Acid-Base Theories

Vocabulary

Brønsted-Lowry acid
Brønsted-Lowry base
Brønsted-Lowry acid-base reaction
monoprotic acid
polyprotic acid
diprotic acid
triprotic acid
Lewis acid
Lewis base
Lewis acid-base reaction

- A Brønsted-Lowry acid is a proton donor. A Brønsted-Lowry base is a proton acceptor.
- A Lewis acid is an electron-pair acceptor. A Lewis base is an electron-pair donor.
- Acids are described as monoprotic, diprotic, or triprotic depending on whether they can donate one, two, or three protons per molecule, respectively, in aqueous solutions. Polyprotic acids include both diprotic and triprotic acids.

Acid-Base Reactions

Vocabulary

conjugate base
conjugate acid
amphoteric
neutralization
salt

- In every Brønsted-Lowry acid-base reaction, there are two conjugate acid-base pairs.
- A strong acid has a weak conjugate base; a strong base has a weak conjugate acid.
- Proton-transfer reactions favor the production of the weaker acid and base.
- The acidic or basic behavior of a molecule containing −OH groups depends on the electronegativity of other atoms in the molecule and on the number of oxygen atoms bonded to the atom that is connected to the −OH group.
- A neutralization reaction produces water and an ionic compound called a *salt*.
- Acid rain can create severe ecological problems.