

[illegible]

- [illegible]

- [illegible]

- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)
- [Unknown License](#): 0% (0 page)

By Page

- [Introductory Chemistry, Atoms First for FCC](#) - *Undeclared*
 - [Front Matter](#) - *Undeclared*
 - [TitlePage](#) - *Undeclared*
 - [InfoPage](#) - *Undeclared*
 - [Table of Contents](#) - *Undeclared*
 - [Licensing](#) - *Undeclared*
 - [1: Basics of Measurement](#) - *Unknown License*
 - [1.1: Taking Measurements- Numbers and Units](#) - *Unknown License*
 - [1.1.1: Scientific Notation - Writing Large and Small Numbers](#) - *Unknown License*
 - [1.1.2: The Basic Units of Measurement](#) - *Unknown License*
 - [1.2: Significant Figures](#) - *Unknown License*
 - [1.2.1: Significant Figures - Writing Numbers to Reflect Precision](#) - *Unknown License*
 - [1.2.2: Significant Figures in Calculations](#) - *Unknown License*
 - [1.3: Conversions](#) - *Unknown License*
 - [1.3.1: Problem Solving and Unit Conversions](#) - *Unknown License*
 - [1.3.2: Solving Multi-step Conversion Problems](#) - *Unknown License*
 - [1.3.3: Units Raised to a Power](#) - *Unknown License*
 - [1.4: Density](#) - *Unknown License*
 - [1.5: Temperature - Random Motion of Molecules and Atoms](#) - *Unknown License*
 - [1.E: Measurements \(Exercises\)](#) - *Unknown License*
- [2: Atomic Structure](#) - *Undeclared*
 - [2.1: The Scientific Method](#) - *CC BY-NC-SA 4.0*
 - [2.2: Indivisible - The Atomic Theory](#) - *Unknown License*
 - [2.3: The Properties of Protons, Neutrons, and Electrons](#) - *Unknown License*
 - [2.4: Keeping Track of Subatomic Particles](#) - *Unknown License*
 - [2.5: Looking for Patterns - The Periodic Table](#) - *Unknown License*
 - [2.6: Ions - Losing and Gaining Electrons](#) - *Unknown License*
 - [2.7: Isotopes - When the Number of Neutrons Varies](#) - *Unknown License*
 - [2.8: Atomic Mass - The Average Mass of an Element's Atoms](#) - *Undeclared*
 - [2.9: Summary of Atomic Theory and the Construction of Atoms](#) - *Unknown License*
 - [2.E: Atomic Structure \(Exercises\)](#) - *CC BY-NC-SA 4.0*
- [3: Light, Electrons, and the Periodic Table](#) - *Undeclared*
 - [3.1: Light is Visible Electromagnetic Radiation](#) - *Unknown License*

- 3.1.1: The Electromagnetic Spectrum - *Unknown License*
 - 3.2: Models of Electron Behavior - *Unknown License*
 - 3.2.1: The Bohr Model - Atoms with Orbits - *Unknown License*
 - 3.2.2: The Quantum-Mechanical Model- Atoms with Orbitals - *Unknown License*
 - 3.3: Quantum-Mechanical Orbitals and Electron Configurations - *Unknown License*
 - 3.4: Core and Valence Electrons - *CC BY-NC-SA 3.0*
 - 3.5: Electron Configurations and the Periodic Table - *Unknown License*
 - 3.5.1: The Explanatory Power of the Quantum-Mechanical Model - *Unknown License*
 - 3.6: Periodic Trends - Atomic Size, Ionization Energy, and Metallic Character - *Undeclared*
 - 3.E: Electronic Structure (Exercises) - *CC BY-NC-SA 4.0*
- 4: Compounds and Chemical Bonds - *Undeclared*
 - 4.1: Properties and Changes of Matter - *Unknown License*
 - 4.1.1: Differences in Matter- Physical and Chemical Properties - *Unknown License*
 - 4.1.2: Changes in Matter - Physical and Chemical Changes - *Unknown License*
 - 4.1.3: Conservation of Mass - There is No New Matter - *Unknown License*
 - 4.2: Summary of Matter and Changes - *Unknown License*
 - 4.3: Compounds - *Unknown License*
 - 4.3.1: Chemical Formulas - How to Represent Compounds - *Unknown License*
 - 4.4: A Molecular View of Elements and Compounds - *Unknown License*
 - 4.5: Ionic Compounds - *Unknown License*
 - 4.5.1: Ions - Monatomic and Polyatomic - *Unknown License*
 - 4.5.2: Writing Formulas for Ionic Compounds - *Unknown License*
 - 4.6: How to Name Compounds - *Unknown License*
 - 4.6.1: Naming Ionic Compounds - *Unknown License*
 - 4.6.2: Naming Molecular Compounds - *Unknown License*
 - 4.6.3: Naming Acids - *Unknown License*
 - 4.6.4: Nomenclature Summary - *Unknown License*
 - 4.7: Atoms, Molecules, and Ions (Exercises) - *Unknown License*
 - 5: The Mole and Chemical Formulas - *Unknown License*
 - 5.1: Avogadro's Number - *Unknown License*
 - 5.2: Conversions Between Moles and Atoms - *Unknown License*
 - 5.3: Molar Mass - *Unknown License*
 - 5.4: Conversions Between Moles and Mass - *Unknown License*
 - 5.5: Conversions Between Mass and Number of Particles - *Unknown License*
 - 5.6: Percent Composition - *Unknown License*
 - 5.7: Determining Empirical Formulas - *Unknown License*
 - 5.8: Percent of Water in a Hydrate - *Unknown License*
 - 5.9: Determining Molecular Formulas - *Unknown License*
 - 5.10: Mole Road Map - *Unknown License*
 - 5.E: The Mole Concept (Exercises) - *Unknown License*
 - 6: Lewis Structures, Shapes, and Intermolecular Forces - *Undeclared*
 - 6.1: The Octet Rule - *Unknown License*
 - 6.1.1: Representing Valence Electrons with Dots - *Unknown License*
 - 6.1.2: Lewis Structures of Ionic Compounds- Electrons Transferred - *Unknown License*
 - 6.1.3: Covalent Lewis Structures- Electrons Shared - *Unknown License*
 - 6.2: Writing Lewis Structures for Covalent Compounds - *Unknown License*
 - 6.2.1: Resonance - Equivalent Lewis Structures for the Same Molecule - *Unknown License*
 - 6.2.2: Exceptions to the Octet Rule - *Unknown License*
 - 6.3: Predicting the Shapes of Molecules - *Unknown License*
 - 6.4: Electronegativity and Polarity - *Unknown License*
 - 6.5: Intermolecular Forces- Dispersion, Dipole–Dipole, Hydrogen Bonding - *Unknown License*
 - 6.E: Electrons and Chemical Bonds (Exercises) - *Unknown License*
 - 7: Solids, Liquids, and Phase Changes - *Undeclared*
 - 7.1: Properties of Liquids and Solids - *Undeclared*
 - 7.2: Intermolecular Forces in Action- Surface Tension, Viscosity, and Capillary Action - *CC BY-NC-SA 4.0*
 - 7.3: Types of Crystalline Solids - *Unknown License*
 - 7.4: Temperature, Heat, and Energy - *Unknown License*

- 7.4.1: Energy and Chemical and Physical Change - *Unknown License*
 - 7.4.3: Energy - *Unknown License*
- 7.5: Heat Capacity - *Unknown License*
 - 7.5.1: Energy and Heat Capacity Calculations - *Unknown License*
 - 7.5.2: Temperature Changes - Heat Capacity - *Unknown License*
- 7.6: Phase Transitions - *Unknown License*
 - 7.6.1: Melting, Freezing, and Sublimation - *Unknown License*
 - 7.6.2: Boiling, Evaporation and Condensation - *Unknown License*
 - 7.6.3: Calculations for Phase Changes - *Unknown License*
 - 7.6.4: Heating Curve for Water - *Unknown License*
- 7.E: Solids, Liquids, and Phase Changes (Exercises) - *Unknown License*
- 8: Gases - *Unknown License*
 - 8.1: Solids, Liquids, and Gases- A Molecular Comparison - *Unknown License*
 - 8.2: Pressure - The Result of Constant Molecular Collisions - *Unknown License*
 - 8.3: Kinetic Molecular Theory- A Model for Gases - *Unknown License*
 - 8.4: Simple Gas Laws - *Unknown License*
 - 8.4.1: Boyle's Law - Pressure and Volume - *Unknown License*
 - 8.4.2: Charles's Law- Volume and Temperature - *Unknown License*
 - 8.4.3: Gay-Lussac's Law- Temperature and Pressure - *Unknown License*
 - 8.4.4: Avogadro's Law- Volume and Moles - *Unknown License*
 - 8.5: The Ideal Gas Law and Some Applications - CC BY-NC-SA 3.0
 - 8.6: Mixtures of Gases - *Unknown License*
 - 8.E: Gases (Exercises) - *Unknown License*
- 9: Aqueous Solutions - *Unknown License*
 - 9.1: Solutions - Homogeneous Mixtures - *Unknown License*
 - 9.1.1: How Solutions Form - *Unknown License*
 - 9.1.2: Electrolytes and Nonelectrolytes - *Unknown License*
 - 9.1.3: Aqueous Solutions and Solubility - Compounds Dissolved in Water - *Unknown License*
 - 9.2: Solubility Trends - *Unknown License*
- 9.2.1: Solutions of Solids Dissolved in Water - *Unknown License*
- 9.2.2: Solutions of Gases in Water - *Unknown License*
- 9.3: Measures of Concentration - *Unknown License*
 - 9.3.1: Percent Solutions - *Unknown License*
 - 9.3.2: Solution Concentration- Molarity - *Unknown License*
- 9.4: Concentration Calculations - *Unknown License*
 - 9.4.1: A Mole Map for Concentration - *Unknown License*
 - 9.4.2: Solution Dilution - *Unknown License*
- 9.5: Colligative Properties and Molality - *Unknown License*
 - 9.5.1: Freezing Point Depression and Boiling Point Elevation - *Unknown License*
 - 9.5.2: Osmosis - *Unknown License*
- 9.E: Solutions (Exercises) - *Unknown License*
- 10: Chemical Reactions - *Unknown License*
 - 10.1: Word Equations - *Unknown License*
 - 10.2: Chemical Equations - *Unknown License*
 - 10.3: Balancing Equations - *Unknown License*
 - 10.4: Types of Reactions - *Unknown License*
 - 10.4.1: Combination Reactions - *Unknown License*
 - 10.4.2: Decomposition Reactions - *Unknown License*
 - 10.4.3: Combustion Reactions - *Unknown License*
 - 10.4.4: Single Displacement/Replacement Reactions - *Unknown License*
 - 10.4.5: Double Displacement/Replacement Reactions - *Unknown License*
 - 10.5: Predicting Reactions - Single and Double Displacement Reactions - *Unknown License*
 - 10.5.1: Precipitation Reactions - *Unknown License*
 - 10.5.2: Acid-Base and Gas Evolution Reactions - *Undeclared*
 - 10.6: Writing Chemical Equations for Reactions in Solution- Complete Chemical, Complete Ionic, and Net Ionic Equations - *Unknown License*
 - 10.7: Oxidation and Reduction- Some Definitions - *Unknown License*
 - 10.8: Keeping Track of Redox Reactions - *Unknown License*
 - 10.8.1: Oxidation States - Electron Bookkeeping - *Unknown License*
 - 10.8.2: Determining Redox Reactions from Oxidation States - *Unknown License*

- 10.8.3: Balancing Redox Equations - *Unknown License*
- 10.9: Applications of Redox Reactions - *Unknown License*
 - 10.9.1: The Activity Series- Predicting Spontaneous Redox Reactions - *Unknown License*
 - 10.9.2: Batteries- Using Chemistry to Generate Electricity - *Unknown License*
 - 10.9.3: Corrosion - Undesirable Redox Reactions - *Unknown License*
- 10.E: Chemical Reactions (Exercises) - *Unknown License*
- 11: Stoichiometry- Quantities in Chemical Reactions - *Unknown License*
 - 11.1: General Stoichiometry - *Undeclared*
 - 11.1.1: Mass Stoichiometry - *Undeclared*
 - 11.1.2: Solution Stoichiometry - *Unknown License*
 - 11.1.3: Stoichiometry and the Ideal Gas Law - *Unknown License*
 - 11.1.4: Gas Stoichiometry at STP - *Undeclared*
 - 11.1.5: Acid-Base Titration - *Unknown License*
 - 11.2: Limiting Reactant - *Unknown License*
 - 11.3: Theoretical Yield, and Percent Yield - *Unknown License*
 - 11.4: Enthalpy Change is a Measure of the Heat Evolved or Absorbed - *Unknown License*
 - 11.E: Stoichiometry Applications (Exercises) - *Unknown License*
- 12: Acids and Bases - *Unknown License*
 - 12.1: Properties of Acids and Bases - *Unknown License*
 - 12.1.1: Acids- Properties and Examples - *Unknown License*
 - 12.1.2: Bases- Properties and Examples - *Unknown License*
 - 12.2: Chemistry of Acids and Bases - *Unknown License*
 - 12.2.1: Molecular Definitions of Acids and Bases - *Unknown License*
 - 12.2.2: Reactions of Acids and Bases - *Unknown License*
 - 12.2.3: Strong and Weak Acids and Bases - *Unknown License*
 - 12.3: Acid-Base Equilibria - *Unknown License*
 - 12.3.1: Water - Acid and Base in One - *Unknown License*
 - 12.3.2: The pH and pOH Scales - Ways to Express Acidity and Basicity - *Unknown License*
 - 12.4: Buffers are Solutions that Resist pH Change - *Unknown License*
 - 12.E: Acids and Bases - *Unknown License*
- 13: Chemical Equilibrium - *CC BY-NC-SA 3.0*
 - 13.1: Collision Theory and Reaction Rates - *Undeclared*
 - 13.1.1: Effects of Temperature, Concentration, and Catalysts on Reaction Rates - *CC BY-NC-SA 3.0*
 - 13.2: Dynamic Equilibrium - *Undeclared*
 - 13.3: The Equilibrium Constant Expression - *Undeclared*
 - 13.4: Le Chatelier's Principle - *CC BY-NC-SA 3.0*
 - 13.5: Some Special Types of Equilibria - *CC BY-NC-SA 3.0*
 - 13.E: Exercises - *CC BY-NC-SA 3.0*
- 14: Radioactivity and Nuclear Chemistry - *Unknown License*
 - 14.1: The Discovery of Radioactivity - *Unknown License*
 - 14.2: Types of Radioactivity- Alpha, Beta, and Gamma Decay - *Unknown License*
 - 14.3: Radioactivity and Half-Life - *CC BY-NC-SA 3.0*
 - 14.4: Applications of Nuclear Chemistry - *Unknown License*
 - 14.4.1: Detecting Radioactivity - *Unknown License*
 - 14.4.2: Radiocarbon Dating- Using Radioactivity to Measure the Age of Fossils and Other Artifacts - *Unknown License*
 - 14.4.3: The Discovery of Fission and the Atomic Bomb - *Unknown License*
 - 14.4.4: Nuclear Power- Using Fission to Generate Electricity - *Unknown License*
 - 14.4.5: Nuclear Fusion- The Power of the Sun - *Unknown License*
 - 14.4.6: The Effects of Radiation on Life - *Unknown License*
 - 14.4.7: Radioactivity in Medicine - *Unknown License*
 - 14.E: Nuclear Chemistry (Exercises) - *Unknown License*
- `_xx_ delete-test` - *CC BY-NC-SA 3.0*
- Back Matter - *Undeclared*
 - Index - *Undeclared*
 - Glossary - *Undeclared*
 - Detailed Licensing - *Undeclared*
 - Detailed Licensing - *Undeclared*