

Key Science Concepts and Skills	
Activities Summaries	Chemistry Principles
<p>Activity 1: Chemical and Physical Changes Students learn what conditions are necessary in order to determine whether the process is a physical or chemical change.</p>	<ul style="list-style-type: none"> • Chemical change • Physical change • Chemical reaction
<p>Activity 2: More Chemical Changes Students learn what characteristics are used to identify a chemical reaction taking place. How indicators are used to identify acids and bases, and some tests used to identify gases.</p>	<ul style="list-style-type: none"> • Chemical tests • Acid-Base indicators • Precipitates
<p>Activity 3: Chemical Names and Formulas Students learn how to use the symbols from the periodic table and how to write the correct formulas of compounds. In addition to writing formulas they will also learn how to name compounds.</p>	<ul style="list-style-type: none"> • Chemical symbols • Chemical formulas • Chemical compounds • Chemical names
<p>Activity 4: Chemical Equations Students practice writing chemical changes by using word equations and chemical equations. In addition to learning how to express an equation they will also study single-displacement and double-displacement reactions.</p>	<ul style="list-style-type: none"> • Chemical equations • Balancing chemical equations • Single-displacement reactions • Double-displacement reactions • Synthesis • Decomposition • Metal-activity series • Solubility rules
<p>Activity 5: Chemical Energy Students learn how to use chemical thermodynamics to produce products that use endothermic and exothermic reactions.</p>	<ul style="list-style-type: none"> • Heat energy • Endothermic reactions • Exothermic reactions • Conservation of Energy
<p>Activity 6: Reaction Rates Students study those factors that can alter the rate of a chemical reaction. The factors studied are temperature, concentration, nature of the reactant, and catalyst.</p>	<ul style="list-style-type: none"> • Reaction rates • Concentration • Kinetic energy • Collision theory • Catalysts
<p>Activity 7: Acids, Bases, and Indicators-Colorful Chemistry Students study the special properties of acids and bases. Special properties that the students will need to understand: how they react with metals, how they feel, how they taste (however, remember that you do not taste chemicals in the laboratory), and how they can be tested for using indicators.</p>	<ul style="list-style-type: none"> • Acids/Bases • Arrhenius acids and bases • Indicators • pH • Titration • Neutralization
<p>Activity 8: Color Reactions that Involve the Transfer of Electrons Students investigate metal activity. They study oxidation and reduction and how we might be able to control them to our benefit.</p>	<ul style="list-style-type: none"> • Oxidation • Reduction • Galvanization • Metal plating • Rust