



Chemistry Curriculum Bundle #7

Title	 	Suggested Dates
Reactions		1/4– 1/28 (19 days)

Big Idea/Enduring Understanding	Guiding Questions
Scientists use chemical symbols and equations to represent chemical processes.	Why do certain combinations of chemicals react and others don't?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p>8 Science concepts. The student can quantify the changes that occur during chemical reactions. The student is expected to:</p> <p>8D use the law of conservation of mass to write and balance chemical equations; and</p> <p>11C use thermochemical equations to calculate energy changes that occur in chemical reactions and classify reactions as exothermic or endothermic;</p>	<p>Understand energy changes in chemical reactions. CCRS</p> <p><i>a. Distinguish between endothermic and exothermic reactions. Draw energy diagrams for endothermic and exothermic reactions.</i></p> <p><i>b. Describe the Law of Conservation of Energy. CCRS</i></p> <p>Understand energy changes and chemical reactions. CCRS</p> <p><i>a. Describe and give examples of renewable and non-renewable energy resources.</i></p> <p><i>b. Describe endothermic and exothermic reactions.</i></p> <p><i>c. Know that systems naturally tend to move in a direction that increases disorder or randomness (entropy). CCRS</i></p> <p>Understand chemical equilibrium. CCRS</p> <p><i>a. Identify the factors that cause a shift in equilibrium (e.g., temperature, concentration, volume, pressure).</i></p> <p><i>b. Explain LeChatelier's principle and use this principle to predict changes in the equilibrium position of a reaction. CCRS</i></p> <p>Such as</p> <ul style="list-style-type: none"> • Recognize chemical reactions • Explain evidences of a chemical reaction <ul style="list-style-type: none"> ○ Energy change such as heat, light, and temperature ○ Production of gas ○ Precipitate 	<p>Chemical Demonstrations Flinn Scientific, Inc. http://www.flinnsci.com/Sections/Chemistry/chemDemonstratoins.asp Decomposition: Old Foamey Synthesis: http://www.angelo.edu/faculty/kboudrea/demos/burning_magnesium/burning_magnesium.htm Single Replacement: 6 M HCl + zinc → capture the hydrogen gas in a balloon Double Replacement: PbNO₃ + KI → Combustion: Methane Bubbles</p> <p>Chemical Demo Videos http://auden.webster.edu/~anderjoe/packets/videos.html</p> <p>Activity Series Lab See chemistry resource folder</p> <p>Types of Reactions Lab See chemistry resource folder</p> <p>Chemical Changes Lab See chemistry resource folder</p> <p>Chem Tutor http://www.chemtutor.com/react.htm</p> <p>Collision Theory http://www.chemguide.co.uk/physical/basicrates/introduc</p>

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- Color change
- Odor
- Explain the relationship of chemical equation balancing to the law of conservation of mass
- Describe the symbols used in a chemical equation
 - +
 - →
- States of matter
 - Solid (s)
 - Liquid (l)
 - Gas (g)
 - Aqueous (aq)
- Write and balance equations when both reactants and products are given
- Translate word equations into chemical formula equations
- Write word equations from formula equations
- Recognize what type of reaction is taking place, given the reactants and products:
 - Synthesis (combination)
 - Decomposition (analysis)
 - Single replacement (single displacement)
 - Use the activity series of metals to predict single replacement
 - Double replacement (double displacement)
 - Use the solubility chart to predict products of double replacement
 - Combustion
- Predict the products based on reaction type
- Predict special types of decomposition reactions: metal hydroxides, metal carbonates, metal chlorates, and carbonic acids (PAP)
- Predict special types of synthesis reactions: metal oxides and metal chlorides (PAP)
- Write and balance equations when you must predict the products based on reaction type (PAP)
- Describe effect of reaction rate, according to:
 - The exposed surface area of the reactants

[tion.html](#)

Correct Orientation flash animation

<http://www.mhhe.com/physsci/chemistry/essentialchemistry/flash/collis11.swf>

Catalyst

<http://www.chemguide.co.uk/physical/basicrates/catalyst.html>

Rate Factors

<http://www.purchon.com/chemistry/rates.htm>

Endothermic Reactions

<http://chemistry.about.com/cs/howtos/ht/endothermic.htm>

Exothermic Reactions

<http://chemistry.about.com/cs/howtos/ht/exothermic.htm>

Hot Pack / Cold Pack

http://nobel.scas.bcit.ca/debeck_pt/science/hotColdPack/pack_p1.htm

Making Hot and Cold Packs

See chemistry resource folder

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	<ul style="list-style-type: none"> ○ The concentration of the reactants ○ Temperature ○ Catalyst ○ Agitation/Collision ● Describe the importance of the collision theory to reaction rates ● Describe how catalysts can be used to affect the rate of a reaction (PAP) ● Predict changes in reactions produced by shifts in equilibrium (PAP) ● Distinguish between an endothermic and an exothermic reaction ● Predict if ΔH is positive or negative 	
<p>10H understand and differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions;</p>	<p>Understand oxidation-reduction reactions. CCRS</p> <p><i>a. Differentiate between oxidation and reduction, and between oxidizing agent and reducing agent.</i></p> <p><i>b. Understand the consequences of corrosion processes and define and describe the electroplating process.</i></p> <p><i>c. Determine the oxidation number of any atom in an element, ion, or compound. CCRS</i></p> <p>Including</p> <ul style="list-style-type: none"> ● Describe and differentiate between oxidation and reduction ● Identify which substances will behave as oxidizing or reducing agents ● Balance redox equations (PAP) ● Describe electroplating metals (PAP) ● Describe the properties of corroded metals (PAP) 	<p>World of Chemistry Video Series http://learner.org/resources/series61.html</p> <p>Electroplating – How does it work? http://www.finishing.com/faqs/howworks.html</p> <p>History of Electroplating http://inventors.about.com/od/estartinventions/a/Electroplating.htm</p> <p>Corrosion Resistant Coatings http://www.finishing.com/Library/pennisi/corrosion.html</p> <p>Rust http://science.howstuffworks.com/question445.htm</p>