


Chemistry Curriculum Bundle #7

Title		Suggested Dates
Reactions		1/5– 1/29 (16 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>11 The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.</p> <p>11B Demonstrate the use of symbols, formulas, and equations in describing interactions of matter.</p>	<p>Such as</p> <ul style="list-style-type: none"> • Recognize chemical and nuclear reactions • Explain evidences of a chemical reaction • Explain the relationship of chemical equation balancing to the law of conservation of mass • Describe the symbols used in a chemical equation <ul style="list-style-type: none"> ○ + ○ → • States of matter <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> ○ Synthesis (combination) ○ Decomposition (analysis) ○ Single replacement (single displacement) ○ Use the activity series of metals to 	<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>

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	<ul style="list-style-type: none"> ○ 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 ● Write and balance equations when you must predict the products based on reaction type (PAP) 	
<p>5 The student knows that energy transformations occur during physical or chemical changes in matter.</p> <p>5B Identify and measure energy transformations and exchanges involved in chemical reactions.</p>	<p>Including</p> <ul style="list-style-type: none"> ● Analyze indicators of a chemical reaction <ul style="list-style-type: none"> ○ Energy change such as heat, light, and temperature ○ Production of gas ○ Precipitate ○ Color change 	<p>Chemical Changes Lab See chemistry resource folder</p> <p>Chem Tutor http://www.chemtutor.com/react.htm</p>
<p>15 The student knows factors involved in chemical reactions.</p> <p>15B Relate the rate of a chemical reaction to temperature, concentration, surface area, and presence of a catalyst.</p>	<p>Including</p> <ul style="list-style-type: none"> ● Describe effect of reaction rate, according to: <ul style="list-style-type: none"> ○ The exposed surface area of the reactants ○ 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) 	<p>Collision Theory http://www.chemguide.co.uk/physical/basicrates/introduction.html</p> <p>Correct Orientation flash animation http://www.mhhe.com/physsci/chemistry/essentialchemistry/flash/collis11.swf</p> <p>Catalyst http://www.chemguide.co.uk/physical/basicrates/catalyst.html</p> <p>Rate Factors http://www.purchon.com/chemistry/rates.htm</p>

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<p>15 The student knows factors involved in chemical reactions.</p> <p>15A Verify the law of conservation of energy by evaluating the energy exchange that occurs as a consequence of a chemical reaction.</p>	<p>Including</p> <ul style="list-style-type: none"> • Distinguish between an endothermic and an exothermic reaction <p><i>understand energy and its forms, including kinetic, potential, chemical, and thermal energies</i></p> <p><i>understand the law of conservation of energy and the processes of heat transfer</i></p> <p><i>use thermochemical equations to calculate energy changes that occur in chemical reactions and classify reactions as exothermic or endothermic</i></p> <p><i>perform calculations involving heat, mass, temperature change, and specific heat</i></p> <p><i>use calorimetry to calculate the heat of a chemical process</i></p>	<p>Endothermic Reactions http://chemistry.about.com/cs/howtos/ht/endothermic.htm</p> <p>Exothermic Reactions http://chemistry.about.com/cs/howtos/ht/exothermic.htm</p> <p>Hot Pack / Cold Pack http://nobel.scas.bcit.ca/debeck_pt/science/hotColdPack/pack_p1.htm</p> <p>Making Hot and Cold Packs See chemistry resource folder</p>
<p>10 The student knows common oxidation reduction reactions.</p> <p>10A Identify oxidation-reduction processes.</p>	<p>Including</p> <ul style="list-style-type: none"> • Describe and differentiate between oxidation and reduction (PAP) • Identify which substances will behave as oxidizing or reducing agents(PAP) • Balance redox equations (PAP) 	<p>World of Chemistry Video Series http://learner.org/resources/series61.html</p>
<p>10 The student knows common oxidation reduction reactions.</p> <p>10B Demonstrate and document the effects of a corrosion process and evaluate the importance of electroplating metals.</p>	<p>Including</p> <ul style="list-style-type: none"> • Describe electroplating metals (PAP) • Describe the properties of corroded metals (PAP) 	<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>