


Chemistry Curriculum Bundle #11

Title		Suggested Dates
Neutralization Reactions and Gases		4/19 – 5/7 (12 days)

Big Idea/Enduring Understanding	Guiding Questions
Temperature and pressure affect the motion of gas particles.	How does Kinetic Molecular Theory explain the behavior of gases?

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)
14 The student knows the properties and behavior of acids and bases. 14D Describe effects of acids and bases on an ecological system.	Such as <ul style="list-style-type: none"> • Describe the effects of acids and bases on living systems such as acid rain 	Acid Rain Demonstration http://www.ied.edu.hk/apfslt/v5_issue1/fongmw/index.htm
14 The student knows the properties and behavior of acids and bases. 14C Identify the characteristics of a neutralization reaction	Including <ul style="list-style-type: none"> • Describe reactants and products of neutralization reactions • Explain how titration is used in a volumetric analysis of acid or base concentrations • Solve titration problems (PAP) <p style="color: red; font-style: italic;">understand and differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions</p>	Matter and Change Lab Manual Glencoe Lab: Acids, Bases, and Neutralization Laying the Foundation: A Resource and Strategies Guide for Chemistry Lesson 33: Titrations-Titrations Pg. 670 A Demo a Day Volume 1 A Year of Chemical Demonstrations A Neutralization of Stomach Acid Pg 178 Orange Juice to Strawberry Float Demo Flinn Scientific, Inc. See chemistry resource folder Titration Virtual Lab http://lrs.ed.uiuc.edu/students/mihyewon/chemlab_experiment.html
14 The student knows the properties and behavior of acids and bases.	Including <ul style="list-style-type: none"> • Describe electrical conductivity with reference 	A Demo a Day Volume 1 A Year of Chemical Demonstrations

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<p>14B Demonstrate the electrical conductivity of acids and bases.</p>	<p style="text-align: center;">to presence of ions</p>	<p>Acid Strength versus Concentration Pg 172</p> <p>Base Strength animation McGraw Hill http://www.mhhe.com/physsci/chemistry/chang7/esp/folder_structure/ac/m2/s2/index.htm</p> <p>Acid Strength animation McGraw Hill http://www.mhhe.com/physsci/chemistry/chang7/esp/folder_structure/ac/m2/s1/index.htm</p> <p>Conductivity Animation http://www.chem.iastate.edu/group/Greenbowe/sections/projectfolder/flashfiles/electroChem/conductivity.html</p>
<p>8 The student knows how atoms form bonds to acquire a stable arrangement of electrons.</p> <p>8B Investigate and compare the physical and chemical properties of ionic and covalent compounds.</p>	<p>Including</p> <ul style="list-style-type: none"> • Describe metallic bonding and properties <p><i>name ionic compounds containing main group or transition metals, covalent compounds, acids, and bases, using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules</i></p> <p><i>write the chemical formulas of common polyatomic ions, ionic compounds containing main group or transition metals, covalent compounds, acids, and bases</i></p> <p><i>describe the nature of metallic bonding and apply the theory to explain metallic properties such as thermal and electrical conductivity, malleability, and ductility</i></p>	<p>Difference between ionic and covalent compounds http://www.usoe.k12.ut.us/curr/science/core/plans/ionic.html</p> <p>Effect of Bonding on Covalent and Ionic compounds http://www.jghs.edu.ky/Departments/Chemistry/chwsbor.htm</p>
<p>7 The student knows the variables that influence the behavior of gases.</p> <p>7A Describe interrelationships of gases contained within a closed system. Including</p> <ul style="list-style-type: none"> • Temperature (Celsius vs Kelvin) • Particle number • Pressure • Volume 	<p>Including</p> <ul style="list-style-type: none"> • Temperature (Celsius vs Kelvin) • Particle number (Avogadro's number) • Pressure (Pressure unit conversions) • Volume • Gas law constant • Discuss the Kinetic Molecular Theory of Gases with regard to the nature of gases and varying conditions • Explain the importance of and use STP when applying the gas laws • Graph relationships expressed by the gas laws • Explain important gas laws and use them in 	<p>Lab: Gas Stations See chemistry resource folder</p> <p>Gas Law Jeopardy See chemistry resource folder</p> <p>Laying the Foundation: A Resource and Strategies Guide for Chemistry Lesson 19: Charles' Law Pg. 472</p> <p>Laying the Foundation: A Resource and Strategies</p>

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	<p>calculations:</p> <ul style="list-style-type: none"> • Charles's law • Gay-Lussac's Law • Boyle's law • The combined gas law • Dalton's law of partial pressures, • Avogadro's Law • Graham's Law of Diffusion (PAP) <p><i>describe and calculate the relations between volume, pressure, number of moles, and temperature for an ideal gas as described by Boyle's law, Charles' law, Avogadro's law, Dalton's law of partial pressure, and the ideal gas law</i></p> <p><i>describe the postulates of kinetic molecular theory</i></p>	<p>Guide for Chemistry Lesson 20: Airbags Pg. 482</p> <p>Gas Law Demonstrations with Graphs http://www.grc.nasa.gov/WWW/K-12/airplane/aboyle.html http://www.grc.nasa.gov/WWW/K-12/airplane/aglussac.html</p>
<p>7 The student knows the variables that influence the behavior of gases.</p> <p>7B Illustrate the data obtained from investigations with gases in a closed system and determine if the data are consistent with the Universal Gas Law.</p>	<p>Including</p> <ul style="list-style-type: none"> • Describe what is meant by an "ideal" gas • Use and manipulate the ideal gas equation, $PV = nRT$ • Describe conditions a real gas approaches ideal gas behavior. • Calculate the molar mass of a substance using DRT/P and identify the substance (PAP) <p><i>perform stoichiometric calculations, including determination of mass and volume relationships between reactants and products for reactions involving gases</i></p>	<p>Lab: Popcorn Pressure See chemistry resource folder</p> <p>Ideal Gas Law Animation http://intro.chem.okstate.edu/1314F00/Laboratory/GLP.htm</p> <p>Ideal Gas Law Virtual Lab http://jersey.uoregon.edu/vlab/Piston/index.html</p>