Chemistry Curriculum Bundle #6

Title	Suggested Dates
VSEPR and bonding	12/7-12/18 (8 days)

Big Idea/Enduring Understanding	Guiding Questions
Atoms in different combinations form different geometric shapes.	Why do atoms form chemical bonds?

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)
8 The student knows how atoms form bonds to acquire a stable arrangement of electrons. **8C** Compare the arrangement of atoms in molecules, ionic crystals, polymers, and metallic substances.	Including • Solid amorphous structures • Solid covalent network structures • Ionic compound structure (crystal lattice) • Metallic bonding ("sea of electrons") • Explain VSEPR theory in relation to shapes including o Linear o Bent o Tetrahedral o Trigonal planar o Trigonal pyramidal • Use geometric shapes to determine molecular polarity *predict molecular structure for molecules with linear, trigonal planar, or tetrahedral electron pair geometries using Valence Shell Electron Pair Repulsion (VSEPR) theory*	**VSEPR Animations** Adrian Dingle http://adriandingleschemistrypages.com/vsepr.html **Shapes and Polarities Lab** See chemistry resource folder

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8 The student knows how atoms form bonds to acquire a stable arrangement of electrons. **8A** Identify characteristics of atoms involved in chemical bonding.	Including • Describe and differentiate between types of bonds including ionic and covalent • Draw Lewis Dot structures for atoms and compounds • State the octet rule and explain how it influences chemical reactivity • Identify and describe double and triple bonds • Point out common exceptions to octet rule (PAP) *construct electron dot formulas to illustrate ionic and covalent bonds*	**Building Covalent Molecules Lab** See chemistry resource folder **Lab Lewis Dot** See chemistry resource folder **Lab Lewis Dot Answers** See chemistry resource folder **World of Chemistry Video Series: Chemical Bonds** http://learner.org/resources/series61.html
8 The student knows how atoms form bonds to acquire a stable arrangement of electrons. **8B** Investigate and compare the physical and chemical properties of ionic and covalent compounds.	Including • Describe covalent bonding and properties o Polar o Nonpolar covalent *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* *write the chemical formulas of common polyatomic ions, ionic compounds containing main group or transition metals, covalent compounds, acids, and bases* *describe the nature of metallic bonding and apply the theory to explain metallic properties such as thermal and electrical conductivity, malleability, and ductility*	**Polar vs. Non-Polar Animation** http://www.emu.dk/gsk/fag/fys/ckf/fase1/1fokv/kemisk_binding/ion_kovalent_polaer_kovalent_binding.swf **Polarity Concept Demo** http://chemed.chem.purdue.edu/genchem/demosheets/8.2.html **Solubility Demonstration** http://chemed.chem.purdue.edu/genchem/demosheets/8.4.html