

CV Guarantee (Ag Chem/10-12)

Big Idea: Chemical Quantities and the Mole			
<p>Standard:</p> <p>HS-PS1-1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.</p> <p>HS-PS1-3 Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles</p> <p><u>PS2.B: Types of Interactions</u></p>		<p>Timeline:</p> <p>2-3 Weeks</p>	
<p>Key Vocabulary:</p> <p>Mole, Grams, Formula Units, Atoms, Molecular weights, Compounds, Molar Mass, Molecules, Atoms, Subscripts, Coefficients, Percent Composition, Conversion Factors</p>		<p>Vocabulary Activities:</p> <p>KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
<p>Understand mole to gram conversions</p> <p>Identify placements of conversion factors and labeling all numeric values</p> <p>Recognize which ratios are needed</p>	<p>Evaluate mole to mass conversions and determine conversion factors</p>	<p>Do a moles to mass conversion</p> <p>Do a percentage composition problem with elements</p> <p>Observe peers doing moles to mass conversions with the class</p>	<p>Write a complete a full moles to mass conversion factor with percent composition of elements</p>
<p>Resources:</p>			

CV Guarantee (Ag Chem/10-12)

Big Idea: Chemical Bonding and Naming Compounds			
<p>Standard: HS-PS1-2 Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.</p> <p>HS-PS1-4 Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.</p> <p><u>PS1.B: Chemical Reactions</u></p>		<p>Timeline: Quarter 1 5-6 Weeks</p>	
<p>Key Vocabulary: Ions, Valence Electrons, Shells, Protons, Electrons, Neutrons, Nucleus, Atomic Mass, Ionic Bonds, Covalent Bonds, Chemical Formulas, Oxidation Numbers, Monatomic Ions, Polyatomic Ions, Cation, *Nomenclature, Double Covalent Bond, Triple Covalent Bond</p>		<p>Vocabulary Activities: KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
Understand Ionic and Covalent Bonds Understand naming covalent compounds Identify ions, Cations, and oxidations levels based on valence electrons	Classify Ions and Cations by their oxidation number Compare and classify ionic and covalent bonds Predict if two compounds will be ionic or covalent bonds	Perform an ionic and covalent bond Execute solving chemical bonds along with naming all ions	Draw both chemical bonds with electron movement Model chemical bonds using props around the room
<p>Resources:</p>			

CV Guarantee (Ag Chem/10-12)

Big Idea: Chemical Quantities and the Mole			
<p>Standard:</p> <p>HS-PS1-1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.</p> <p>HS-PS1-3 Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles</p> <p><u>PS2.B: Types of Interactions</u></p>		<p>Timeline:</p> <p>2-3 Weeks</p>	
<p>Key Vocabulary:</p> <p>Mole, Grams, Formula Units, Atoms, Molecular weights, Compounds, Molar Mass, Molecules, Atoms, Subscripts, Coefficients, Percent Composition, Conversion Factors</p>		<p>Vocabulary Activities:</p> <p>KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
<p>Understand mole to gram conversions</p> <p>Identify placements of conversion factors and labeling all numeric values</p> <p>Recognize which ratios are needed</p>	<p>Evaluate mole to mass conversions and determine conversion factors</p>	<p>Do a moles to mass conversion</p> <p>Do a percentage composition problem with elements</p> <p>Observe peers doing moles to mass conversions with the class</p>	<p>Write a complete a full moles to mass conversion factor with percent composition of elements</p>
<p>Resources:</p>			

CV Guarantee (Ag Chem/10-12)

Big Idea: Chemical Reactions and Balancing Chemical Equations			
<p>Standard:</p> <p>HS-PS1-2 Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.</p> <p>HS-PS1-4 Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.</p> <p>HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p> <p><u>PS1.A: Structure and Properties of Matter</u></p> <p><u>PS1.B: Chemical Reactions</u></p>		<p>Timeline:</p> <p>Quarter 2</p> <p>3-5 Weeks</p>	
<p>Key Vocabulary:</p> <p>*Products, *Reactants, Combination reactions, Decomposition reactions, compounds, Displacement reactions, Double Displacement reactions, Solubility, Combustion reactions, *Product, *Reactants, Subscript, Coefficient, *Yields</p>		<p>Vocabulary Activities:</p> <p>KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition of words and definitions</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
<p>Understand why balancing chemical equations is important in everyday life</p> <p>Identify all components of a Chemical Equation</p>	<p>Analyze a chemical equation and its products</p> <p>Predict the Products when given chemicals as reactants</p>	<p>Perform a chemical reaction and identify its components</p> <p>Examine a chemical equation in order to properly balance</p>	<p>Design and produce a balanced chemical reaction</p> <p>Demonstrate a common everyday chemical reaction to peers</p>
<p>Resources:</p>			

CV Guarantee (Ag Chem/10-12)

Big Idea: Experiment and Investigation – Intro to Chemistry			
<p>Standard:</p> <p>Introduction to Chemistry. Connects the previously taken life sciences to this physical science</p> <p>Science and Engineering Practices: <u>Developing and Using Models</u> <u>Planning and Carrying Out Investigations</u> <u>Obtaining, Evaluating, and Communicating Information</u></p>		<p>Timeline:</p> <p>1-2 Weeks</p>	
<p>Key Vocabulary:</p> <p>Hypothesis, Independent Variable, Dependent Variable, Control Group, Experimental Group, Constants, Trials, Variables, Procedure, Method, Conclusion, Hypothesis, Data, Research, Observation, Results</p>		<p>Vocabulary Activities:</p> <p>KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
<p>Understand the scientific method and how it applies to everyday life</p> <p>Identify order and individual steps of the method relating to experiment and investigation</p>	<p>Classify the steps of the scientific method based on real facts given to them</p> <p>Analyze a problem and predict it's solution using the scientific method</p>	<p>Observe a problem posed to peers and create a full scientific method to solve the issue</p> <p>Conduct an experiment using the scientific method</p>	<p>Design an problem and experiment using scientific method</p> <p>Write and/or draw out all steps of method</p> <p>Display knowledge of experiment and investigation</p>
<p>Resources:</p> <p>Designing agriculture experiments, scientific method</p> <p>Agriculture problems and solutions</p>			

CV Guarantee (Ag Chem/10-12)

Big Idea: Matter, Change and Scientific Measurement			
<p>Standard: HS-PS1-5 Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.</p> <p><u>PS1.A: Structure and Properties of Matter</u></p> <p><u>PS2.B: Types of Interactions</u></p>		<p>Timeline:</p> <p>Unit one</p> <p>2-3 Weeks</p>	
<p>Key Vocabulary:</p> <p>Mixture, Compounds, *Matter, Pure substances, Elements, *Compounds, Homogeneous, Heterogeneous, Physical Change, Chemical Change, Extensive Property, Intensive Property, *substance, Law of Conservation of Mass, *Vapor, *Gas, *Liquid, *Solid, *Question, *Observation, *Results, *Research, *Conclusion, Hypothesis, *Data, *Procedure, *Method</p>		<p>Vocabulary Activities:</p> <p>KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
Understand and identify differences between mixtures and compounds	Classify substances as mixtures and compounds	Conduct experiments creating their own mixtures and compounds	Display their created mixtures and compounds
Understand and identify the differences between elements and compounds	Analyze how mixtures and compounds differ	Observe peers creating mixtures and compounds – identifying the results	Write out their findings and draw examples
Understand and identify the differences between homogeneous mixtures and heterogeneous mixtures	Summarize the scientific method		Design their own scientific experiment utilizing all aspects of the scientific method
<p>Resources:</p>			

CV Guarantee (Ag Chem/10-12)

Big Idea: Solutions, Reaction Rates and Equilibrium			
<p>Standard:</p> <p>HS-PS1-6 Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.*</p> <p>HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p> <p><u>PS2.A: Forces and Motion</u> <u>PS2.B: Types of Interactions</u> <u>PS3.A: Definitions of Energy</u></p>		<p>Timeline:</p> <p>3-4 Weeks</p>	
<p>Key Vocabulary:</p> <p>Equilibrium, Molarity, Collision theory, Reaction Rate, Reversible Reaction, Chemical Equilibrium, Le Chatelier's principle, Substances, Entropy, Boyles Law, Charles Law, Gay-Lussac's Law, Combined Gas Law, Ideal Gas Law, *Pressure, *Volume, Kelvin, *temperature, PTV</p>		<p>Vocabulary Activities:</p> <p>KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
<p>Understand the gas laws and their formulas</p> <p>Recognize the relationships between volume, pressure and temperature</p>	<p>Summarize the gas laws</p> <p>Evaluate equations based upon their PTV rates</p>	<p>Conduct experiments utilizing gas laws</p> <p>Investigate variables that affect PTV relationships and it's equilibrium</p>	<p>Draw out how pressure, temperature, and volume are effected when one variable is changed</p> <p>Design an experiment that involves PTV and produce a product from it</p>
<p>Resources:</p>			

CV Guarantee (Ag Chem, 10-12)

Big Idea: Stoichiometry			
<p>Standard:</p> <p>HS-PS1-2 Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.</p> <p>HS-PS1-6 Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.*</p> <p>HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>		<p>Timeline:</p> <p>Quarter 3</p> <p>2-4 weeks</p>	
<p>Key Vocabulary:</p> <p>Stoichiometry, Avogadro's number, Limiting reagent, relative atomic mass, mole unit, mass unit, molar mass, empirical formula, homogenous, concentration, volume, pressure, temperature, concordant</p>		<p>Vocabulary Activities:</p> <p>KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition</p>	
Knowledge	Reasoning	Performance Skills	Product Examples
<p>Understand how stoichiometry and moles to mass conversions correlate</p> <p>Explain what a mole is relative to everyday objects</p>	<p>Evaluate a stoichiometry problem – identifying excess and limiting reagents</p>	<p>Conduct a stoichiometry problem successfully</p>	<p>Design and solve their own stoichiometry equation</p> <p>Write and display stoichiometry equation comparing it to a moles to mass equation</p>

Resources:

CV Guarantee (Ag Chem/10-12)

Big Idea: The Periodic Table and Properties

Standard:

HS-P Use the periodic table as a model to
S1-1. predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.

HS-P Plan and conduct an investigation to gather
S1-3. evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.

HS-PS Communicate scientific and technical
2-6. information about why the molecular-level structure is important in the functioning of designed materials.*

PS1.A: Structure and Properties of Matter

Timeline:

Quarter 2

3-4 Weeks

Key Vocabulary:

Periods, groups, columns, rows, proton, electron, valence electrons, shells, neutrons, nucleus, atomic radius, atomic mass, particles, atomic numbers, isotopes, atomic orbitals, electron configuration, metals, non-metals, metalloids, hydrogen, alkali metals, alkaline Earth Metals, families, periods, groups, *horizontal, *vertical, transition metals, halogens, noble gases, *reactive, *un-reactive

Vocabulary Activities:

KaHoot, Worksheets: Fill in the Blanks, Matching, Quizlet, Quizzes, Oral questioning, Repetition

Knowledge

Understand how the periodic table is organized

Reasoning

Classify elements based on their periodic properties

Compare metals, metalloids, and transition metals

Performance Skills

Investigate plant nutrients to identify the correct elements

Product Examples

Design an element 'superhero' with all of it's properties

Write out element properties

Recognize elements and their individual properties	Compare elements in periods and groups	Observe reactions in elements and their properties	
Resources:			