

Wyoming Department of Education Required Virtual Education Course Syllabus

Niobrara County School District # 1

Program Name	Wyoming Virtual Academy	Content Area	SC
Course ID	D-SCI-306AVG1-K	Grade Level	9-12
Course Name	Chemistry CR - Semester 1	# of Credits	0.5
SCED Code	03101B0.5012	Curriculum Type	K12 Inc

COURSE DESCRIPTION

Generally offered over the summer. This course surveys all key areas of chemistry, including atomic structure, chemical bonding and reactions, solutions, stoichiometry, thermochemistry, organic chemistry, and nuclear chemistry. The course includes direct online instruction and related assessments, used with a problem-solving book. Instructions for hands-on labs are included. K12 lab kits contain all lab materials that cannot easily be found in the home.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
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.
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.
HS-PS1-3	Plan and conduct an investigation to gather evidence to compare the structure of substances at the macroscopic scale to infer the strength of electrical forces between particles.
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.
HS-PS1-7	Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.
HS-PS2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of materials.
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
Unit 1: The Study of Chemistry Lesson 1: Semester Introduction	0	Complete the Semester Introduction.

<p>Unit 1: The Study of Chemistry Lesson 2: Chemistry and Society</p>	0	<p>Identify the main areas of chemistry: organic chemistry, inorganic chemistry, biochemistry, physical chemistry, and analytical chemistry.</p>
<p>Unit 1: The Study of Chemistry Lesson 3: Matter and Energy Lesson 4: Discuss: Meet and Greet</p>	0	<p>Define the states of matter and give examples of gases, liquids, and solids. Compare and contrast a physical change with a chemical change.</p>
<p>Unit 1: The Study of Chemistry Lesson 5: Review: Matter</p>	0	<p>Identify the main areas of chemistry: organic chemistry, inorganic chemistry, biochemistry, physical chemistry, and analytical chemistry.</p> <p>Give examples of how chemistry has contributed to society and our way of life.</p> <p>Describe the scope of the study of chemistry.</p> <p>Define the states of matter and give examples of gases, liquids, and solids.</p> <p>Compare and contrast a physical change with a chemical change.</p> <p>Identify the role of energy in chemical and physical changes.</p>
<p>Unit 1: The Study of Chemistry Lesson 6: Pure Substances</p>	0	<p>Distinguish between pure substances and mixtures.</p> <p>Define the term element and give some examples.</p> <p>Define the term compound and give some examples.</p> <p>Use chemical symbols and formulas.</p> <p>Distinguish between elements, compounds, and mixtures.</p>

<p>Unit 1: The Study of Chemistry Lesson 7: Mixtures</p>	0	<p>Distinguish between pure substances and mixtures.</p> <p>Differentiate a homogeneous mixture from a heterogeneous mixture.</p> <p>Describe some processes that separate mixtures.</p> <p>Define and recognize mixtures.</p>
<p>Unit 1: The Study of Chemistry Lesson 8: Review: Substances</p>	0	<p>Define the term element and give some examples.</p> <p>Define the term compound and give some examples.</p> <p>Use chemical symbols and formulas.</p> <p>Differentiate a homogeneous mixture from a heterogeneous mixture.</p> <p>Describe some processes that separate mixtures.</p> <p>Define and recognize mixtures. Distinguish between elements, compounds and mixtures.</p>
<p>Unit 1: The Study of Chemistry Lesson 9: Laboratory: Paper Chromatography 1</p>	HS-PS1-3, HS-PS2-6	<p>Use paper chromatography to separate components of inks. Describe the principle behind the technique of chromatography.</p>
<p>Unit 1: The Study of Chemistry Lesson 10: Laboratory: Paper Chromatography 2</p>	HS-PS1-3, HS-PS2-6	<p>Use paper chromatography to separate components of inks. Describe the principle behind the technique of chromatography.</p>
<p>Unit 1: The Study of Chemistry Lesson 11: Your Choice</p>	0	00000
<p>Unit 1: The Study of Chemistry Lesson 12: Mid-Unit Test</p>	HS-PS1-3, HS-PS2-6	00000
<p>Unit 1: The Study of Chemistry Lesson 13: Properties of Substances</p>	0	<p>Distinguish between a substance's physical and chemical properties.</p> <p>Define and give examples of physical properties of matter, including mass, volume, and density.</p>

		Describe and distinguish between physical and chemical changes in matter.
Unit 1: The Study of Chemistry Lesson 14: Problem Solving in Chemistry	0	Solve problems that include measurement conversion between SI and English systems. Understand the basics of scientific notation. Demonstrate ability to correctly express significant figures.
Unit 1: The Study of Chemistry Lesson 15: Review: Properties and Problems	0	Distinguish between a substance's physical and chemical properties. Define and give examples of physical properties of matter, including mass, volume, and density. Describe and distinguish between physical and chemical changes in matter. Solve problems that include measurement conversion between SI and English systems. Understand the basics of scientific notation. Demonstrate ability to correctly express significant figures.
Unit 1: The Study of Chemistry Lesson 16: Metric System: Base Units	0	Use base and derived metric units to solve problems. Distinguish between SI base units and SI derived units. Identify the SI base units. Use metric units to express length, volume, mass, and temperature. Define absolute zero.

<p>Unit 1: The Study of Chemistry Lesson 17: Metric System: Derived Units</p>	0	<p>Use base and derived metric units to solve problems. Identify the SI derived units. Use SI derived units to solve problems.</p> <p>Express energy measurements in joules (J) and calories (cal).</p>
<p>Unit 1: The Study of Chemistry Lesson 18: Review: Metric System</p>	0	<p>Distinguish between SI base units and SI derived units. Identify the SI base units. Use metric units to express length, volume, mass, and temperature. Define absolute zero. Identify the SI derived units. Use SI derived units to solve problems. Express energy measurements in joules (J) and calories (cal).</p>
<p>Unit 1: The Study of Chemistry Lesson 19: Graphing</p>	0	<p>Display proficiency in graphing.</p> <p>Understand the importance of graphs in the study of chemistry.</p> <p>Create graphs that clearly and accurately display data.</p>
<p>Unit 1: The Study of Chemistry Lesson 20: Scientific Method and Chemistry</p>	0	<p>Give examples of the use of scientific methods in chemistry.</p> <p>List the steps in a scientific method.</p> <p>Give a scenario and describe the use of the steps of a scientific method in solving a problem.</p>
<p>Unit 1: The Study of Chemistry Lesson 21: Review: Graphing and Scientific Method</p>	0	<p>Understand the importance of graphs in the study of chemistry.</p> <p>Create graphs that clearly and accurately display data. List the steps in a scientific method.</p> <p>Give a scenario and describe the use of the steps of a scientific method in solving a problem.</p>
<p>Unit 1: The Study of Chemistry Lesson 22: Your Choice</p>	0	00000

<p>Unit 1: The Study of Chemistry Lesson 23: Unit Test</p>	<p>HS-PS1-3, HS-PS2-6</p>	<p>00000</p>
<p>Unit 2: Atomic Structure Lesson 1: Early Theories of the Atom</p>	<p>0</p>	<p>Explore the difference between different models of the atom.</p> <p>Describe the contribution of Democritus and John Dalton to our understanding of the atom.</p> <p>Describe how the experiments of J.J. Thomson and Robert Millikan helped determine the nature of the electron.</p> <p>Describe how the experiments of J.J. Thomson and Robert Millikan illustrate the nature of science.</p>
<p>Unit 2: Atomic Structure Lesson 2: The Nuclear Atom</p>	<p>0</p>	<p>Identify the parts of an atom and the characteristics of each part.</p> <p>Describe how the experiments of Ernest Rutherford helped determine the nature of the nucleus.</p> <p>Describe the structure of an atom and its subatomic particles. Identify protons, neutrons, and electrons and their mass relative to each other.</p>
<p>Unit 2: Atomic Structure Lesson 3: Atomic Number and Mass Number</p>	<p>0</p>	<p>Define an atom's atomic number.</p> <p>Define an atom's mass number. Distinguish the mass number of an atom from its atomic number.</p>

<p>Unit 2: Atomic Structure Lesson 4: Review: The Atom</p>	<p>0</p>	<p>Describe how the experiments of Ernest Rutherford helped determine the nature of the nucleus.</p> <p>Describe the structure of an atom and its subatomic particles. Identify protons, neutrons, and electrons and their mass relative to each other.</p> <p>Define an atom's atomic number.</p> <p>Define an atom's mass number. Distinguish the mass number of an atom from its atomic number. Describe how the experiments of Thomson and Millikan helped determine the nature of the electron.</p> <p>Describe how the experiments of Thomson and Millikan illustrate the nature of science.</p> <p>Describe the contributions of Democritus and John Dalton to our understanding of the atom.</p> <p>State the tenets of John Dalton's atomic theory.</p>
<p>Unit 2: Atomic Structure Lesson 5: Laboratory: Properties of Substances 1 Lesson 6: Discuss: Properties of Substances</p>	<p>HS-PS1-1, HS-PS1-3, HS-PS2-6, HS-PS4-3</p>	<p>Observe physical changes when two substances are mixed.</p> <p>Examine products produced from mixtures.</p> <p>Infer if a chemical reaction has occurred.</p>
<p>Unit 2: Atomic Structure Lesson 7: Laboratory: Properties of Substances 2</p>	<p>HS-PS1-1, HS-PS1-3, HS-PS2-6, HS-PS4-3</p>	<p>Observe physical changes when two substances are mixed.</p> <p>Examine products produced from mixtures.</p> <p>Infer if a chemical reaction has occurred.</p>

<p style="text-align: center;">Unit 2: Atomic Structure Lesson 8: Ions</p>	0	<p>Describe the charges of an ion and how these charges are determined.</p> <p>Using protons, neutrons, and electrons, analyze an atom's particle arrangement and charge.</p> <p>Define an ion. Recognize and write symbols for various ions.</p>
<p style="text-align: center;">Unit 2: Atomic Structure Lesson 9: Isotopes and Average Atomic Mass</p>	0	<p>Define an isotope.</p> <p>Give examples of isotopes. Define average atomic mass.</p> <p>Calculate average atomic mass from isotope data for a given sample of an element.</p>
<p style="text-align: center;">Unit 2: Atomic Structure Lesson 10: Review: Aspects of the Atom</p>	0	<p>Using protons, neutrons, and electrons, analyze an atom's particle arrangement and charge.</p> <p>Define an ion. Recognize and write symbols for various ions.</p> <p>Define an isotope.</p> <p>Give examples of isotopes. Define average atomic mass.</p> <p>Calculate atomic mass from isotope data of a given sample of an element.</p>
<p style="text-align: center;">Unit 2: Atomic Structure Lesson 11: The Bohr Atom</p>	0	<p>Discover the basics of the quantum atom and atomic spectra.</p> <p>Describe the concept of electron orbitals as expressed by the Bohr model of the atom.</p> <p>Explain how quantum mechanics can help in understanding the idea of discrete electron orbitals.</p> <p>Define valence electron.</p>
<p style="text-align: center;">Unit 2: Atomic Structure Lesson 12: Your Choice</p>	0	00000

Unit 2: Atomic Structure Lesson 13: Unit Test	HS-PS1-1, HS-PS1-3, HS-PS2-6, HS-PS4-3, HS- ETS1-1	00000
Unit 3: The Periodic Table Lesson 1: Atomic Number and the Periodic Law	0	Define periodic law. Explain the historical discovery of recurring patterns of properties with increasing atomic mass.
Unit 3: The Periodic Table Lesson 2: The Periodic Table	0	Locate groups and periods in the periodic table. Locate a period in the periodic table. Locate a group in the periodic table. Explain that the elements in a group have similar physical and chemical properties. Identify representative categories of elements in the periodic table. Describe the periodic table and its scientific importance.
Unit 3: The Periodic Table Lesson 3: Trends within the Periodic Table	0	Evaluate trends in the periodic table. Analyze trends in ionization energy for elements in the periodic table. Analyze trends in electronegativity values for elements in the periodic table. Analyze trends for relative sizes of ions and atoms in the periodic table.

<p>Unit 3: The Periodic Table Lesson 4: Review: Periodic Table</p>	0	<p>Define periodic law.</p> <p>Explain the historical discovery of recurring patterns of properties with increasing atomic mass.</p> <p>Locate a period in the periodic table.</p> <p>Locate a group in the periodic table.</p> <p>Explain that the elements in a group have similar physical and chemical properties.</p> <p>Identify representative categories of elements in the periodic table.</p> <p>Describe the periodic table and its scientific importance.</p> <p>Analyze trends in ionization energy for elements in the periodic table.</p> <p>Analyze trends in electronegativity values for elements in the periodic table.</p> <p>Analyze trends for relative sizes of ions and atoms in the periodic table.</p>
<p>Unit 3: The Periodic Table Lesson 5: Metals</p>	0	<p>Discuss each of the classes of elements.</p> <p>Locate metals on the periodic table.</p> <p>Give some examples of metals.</p> <p>Describe properties of metals.</p>
<p>Unit 3: The Periodic Table Lesson 6: Nonmetals</p>	0	<p>Discuss each of the classes of elements.</p> <p>Locate nonmetals on the periodic table.</p> <p>Give some examples of nonmetals.</p> <p>Describe properties of nonmetals.</p>

<p>Unit 3: The Periodic Table Lesson 7: Review: Metals and Nonmetals</p>	0	<p>Locate metals on the periodic table. Give some examples of metals.</p> <p>Describe properties of metals.</p> <p>Locate nonmetals on the periodic table.</p> <p>Give some examples of nonmetals. Describe properties of nonmetals.</p>
<p>Unit 3: The Periodic Table Lesson 8: Laboratory: Reaction of Metals 1</p>	0	<p>Observe physical and chemical properties of transition metal ions in solution.</p> <p>Compare the reactions of transition metal ions with those of other metal ions.</p> <p>Observe the results of mixing ammonium hydroxide and hydrochloric acid with metal ions.</p>
<p>Unit 3: The Periodic Table Lesson 9: Laboratory: Reaction of Metals 2</p>	HS-PS1-1, HS-PS2-6	<p>Observe physical and chemical properties of transition metal ions in solution.</p> <p>Compare the reactions of transition metal ions with those of other metal ions.</p> <p>Observe the results of mixing ammonium hydroxide and hydrochloric acid with metal ions.</p>
<p>Unit 3: The Periodic Table Lesson 10: Metalloids</p>	0	<p>Give some examples of metalloids.</p> <p>Describe properties of metalloids.</p> <p>Locate metalloids on the periodic table.</p>
<p>Unit 3: The Periodic Table Lesson 11: Inner Transition Metals</p>	0	<p>Locate inner transition metals on the periodic table.</p> <p>Give some examples of inner transition metals.</p> <p>Discuss some properties of inner transition metals.</p>

<p>Unit 3: The Periodic Table Lesson 12: Review: Metalloids and Inner Transition Metals</p>	0	<p>Give some examples of metalloids.</p> <p>Describe properties of metalloids.</p> <p>Locate inner transition metals on the periodic table.</p> <p>Give some examples of inner transition metals.</p> <p>Discuss some properties of inner transition metals.</p> <p>Locate metalloids in the periodic table.</p>
<p>Unit 3: The Periodic Table Lesson 13: Your Choice</p>	0	00000
<p>Unit 3: The Periodic Table Lesson 14: Unit Test</p>	HS-PS1-1, HS-PS2-6	00000
<p>Unit 4: Chemical Bonding Lesson 1: Monatomic Ions</p>	0	<p>Describe chemical bonding as the transfer or sharing of electrons.</p> <p>Discuss the importance of the octet rule in determining bonding.</p> <p>Define anion and cation.</p> <p>Identify some monatomic ions.</p>
<p>Unit 4: Chemical Bonding Lesson 2: Polyatomic Ions</p>	0	<p>Identify some polyatomic ions.</p> <p>Explain how electronegativity relates to bond formation.</p> <p>Explain how ionization energy relates to bond formation.</p>
<p>Unit 4: Chemical Bonding Lesson 3: Review: Ions</p>	0	<p>Describe chemical bonding as the transfer or sharing of electrons.</p> <p>Discuss the importance of the octet rule in determining bonding.</p> <p>Define anion and cation.</p> <p>Identify some monatomic ions.</p> <p>Identify some polyatomic ions.</p> <p>Explain how electronegativity relates to bond formation.</p>

		Explain how ionization energy relates to bond formation.
Unit 4: Chemical Bonding Lesson 4: The Ionic Bond and Salts	0	Describe how ionic bonds form. Describe how metallic bonds form. Describe an ionic bond. Define a salt as an ionic compound. Analyze the repeating patterns of positive and negative ions in salt crystals such as NaCl. Determine what holds the positive and negative ions together in salt crystals such as NaCl.
Unit 4: Chemical Bonding Lesson 5: Properties of Ionic Compounds	0	Identify the properties of ionic compounds. Describe how metallic bonds form. List and discuss some of the properties of ionic compounds. Explain how the nature of the ionic bond accounts for various properties of ionic compounds. Explain why ionic compounds are excellent conductors of electricity when dissolved in water.

<p>Unit 4: Chemical Bonding Lesson 6: Review: Ionic Compounds</p>	0	<p>Describe how metallic bonds form. Describe an ionic bond. Define a salt as an ionic compound. Analyze the repeating patterns of positive and negative ions in salt crystals such as NaCl. Determine what holds the positive and negative ions together in salt crystals such as NaCl. List and discuss some of the properties of ionic compounds. Explain how the nature of the ionic bond accounts for various properties of ionic compounds. Explain why ionic compounds are excellent conductors of electricity when dissolved in water.</p>
<p>Unit 4: Chemical Bonding Lesson 7: Laboratory: Salts: Precipitation Reactions 1 Lesson 8: Discuss: Salts: Precipitation Reactions</p>	HS-PS1-2, HS-PS1-3	<p>Experimentally determine some of the properties of salts.</p> <p>Discover solubility properties of some ionic compounds.</p>
<p>Unit 4: Chemical Bonding Lesson 9: Laboratory: Salts: Precipitation Reactions 2</p>	HS-PS1-2, HS-PS1-3	<p>Experimentally determine some of the properties of salts.</p> <p>Discover solubility properties of some ionic compounds.</p>
<p>Unit 4: Chemical Bonding Lesson 10: Your Choice</p>	0	00000
<p>Unit 4: Chemical Bonding Lesson 11: Mid-Unit Test</p>	HS-PS1-2, HS-PS1-3	00000
<p>Unit 4: Chemical Bonding Lesson 12: The Covalent Bond and Molecules</p>	0	<p>Describe how covalent bonds form.</p> <p>Explain and illustrate how covalent bonds are formed.</p> <p>Define molecule.</p> <p>Contrast ionic and covalent compounds.</p> <p>Given examples of compounds, describe patterns of covalent bonding, including single, double, and triple bonds.</p> <p>Understand the rules for naming covalent compounds.</p>

<p style="text-align: center;">Unit 4: Chemical Bonding Lesson 13: Lewis Dot Structures</p>	0	<p>Explain Lewis dot diagrams and be able to draw them.</p> <p>For given molecules, interpret Lewis dot structures in terms of chemical bonds.</p> <p>For given molecules, draw Lewis dot structures.</p>
<p style="text-align: center;">Unit 4: Chemical Bonding Lesson 14: Van der Waals Forces</p>	0	<p>Explain what van der Waals forces are.</p> <p>Relate the idea of electrostatic attraction to intermolecular bonds.</p> <p>Relate the boiling- and melting-point temperatures of substances to the effects of van der Waals forces.</p> <p>Describe and illustrate hydrogen bonds.</p>
<p style="text-align: center;">Unit 4: Chemical Bonding Lesson 15: Review: Atomic Bonding</p>	0	<p>Explain and illustrate how covalent bonds are formed.</p> <p>Define molecule.</p> <p>Contrast ionic and covalent compounds.</p> <p>Given examples of compounds, describe patterns of covalent bonding, including single, double, and triple bonds.</p> <p>Understand the rules for naming covalent compounds.</p> <p>For given molecules, interpret Lewis dot structures in terms of chemical bonds.</p> <p>For given molecules, draw Lewis dot structures.</p> <p>Relate the idea of electrostatic attraction to intermolecular bonds.</p> <p>Relate the boiling- and melting-point temperatures of substances to the effects of van der Waals</p>

		forces. Describe and illustrate hydrogen bonds.
Unit 4: Chemical Bonding Lesson 16: Your Choice	0	00000
Unit 4: Chemical Bonding Lesson 17: Unit Test	HS-PS1-2, HS-PS1-3	00000
Unit 5: Chemical Reactions Lesson 1: The Conservation of Mass	0	Explain the law of conservation of matter. Identify reactants and products in chemical reactions. Define the terms reactants and products in a chemical reaction. Identify reactants and products in a chemical equation. Describe the importance of the law of conservation of mass as it relates to chemical reactions.
Unit 5: Chemical Reactions Lesson 2: Balancing Chemical Equations	0	Balance chemical reactions. Relate the idea of conservation of mass to the need to balance chemical equations. Identify balanced equations. Write balanced equations to represent chemical reactions.

<p>Unit 5: Chemical Reactions Lesson 3: Review: Chemical Equations</p>	0	<p>Define the terms reactants and products in a chemical reaction.</p> <p>Identify reactants and products in a chemical equation.</p> <p>Describe the importance of the law of conservation of mass as it relates to chemical reactions.</p> <p>Relate the idea of conservation of mass to the need to balance chemical equations.</p> <p>Identify balanced equations.</p> <p>Write balanced equations to represent chemical reactions.</p>
<p>Unit 5: Chemical Reactions Lesson 4: Types of Reactions 1</p>	0	<p>Recognize the different kinds of chemical reactions.</p> <p>Define combustion reactions.</p> <p>Compare and contrast the products and reactants of combustion reactions.</p> <p>Define synthesis reactions.</p> <p>Compare and contrast the products and reactants of synthesis reactions.</p> <p>Define decomposition reactions.</p> <p>Compare and contrast the products and reactants of decomposition reactions.</p>

<p style="text-align: center;">Unit 5: Chemical Reactions Lesson 5: Types of Reactions 2</p>	<p style="text-align: center;">0</p>	<p>Recognize the different kinds of chemical reactions.</p> <p>Define single-displacement reactions.</p> <p>Define double-displacement reactions.</p> <p>Describe oxidation. Describe reduction. Identify reactions that involve oxidation and reduction. Explain what happens in oxidation-reduction reactions. Compare and contrasts the products and reactants of single-displacement reactions.</p> <p>Compare and contrasts the products and reactants of double-displacement reactions.</p>
<p style="text-align: center;">Unit 5: Chemical Reactions Lesson 6: Review: Chemical Reactions</p>	<p style="text-align: center;">0</p>	<p>Recognize the different kinds of chemical reactions. Define combustion reactions. Compare and contrast the products and reactants of combustion reactions. Define synthesis reactions. Compare and contrast the products and reactants of synthesis reactions. Define decomposition reactions. Compare and contrast the products and reactants of decomposition reactions. Define single-displacement reactions. Define double-displacement reactions. Describe oxidation. Describe reduction. Identify reactions that involve oxidation and reduction. Explain what happens in oxidation-reduction reactions. Compare and contrasts the products and reactants of single-displacement reactions.</p>

Unit 5: Chemical Reactions Lesson 7: Laboratory: Types of Chemical Reactions 1	HS-PS1-2, HS-PS1-3, HS-PS1-4, HS-PS1-7	Compare and contrast synthesis, single-displacement, and double-displacement reactions.
Unit 5: Chemical Reactions Lesson 8: Laboratory: Types of Chemical Reactions 2	HS-PS1-2, HS-PS1-3, HS-PS1-4, HS-PS1-7	Compare and contrast synthesis, single-displacement, and double-displacement reactions.
Unit 5: Chemical Reactions Lesson 9: Your Choice	0	00000
Unit 5: Chemical Reactions Lesson 10: Unit Test	HS-PS1-2, HS-PS1-3, HS-PS1-4, HS-PS1-7	00000
Unit 6: Stoichiometry Lesson 1: Stoichiometry and Its Uses	0	Define stoichiometry. Demonstrate understanding of the law of multiple proportions in chemical formulas. Describe some different ways of measuring matter.
Unit 6: Stoichiometry Lesson 2: Mole-Number Relationships	0	Define a mole. Calculate the number of particles in a substance and the amount of a substance. Identify the quantity of one mole as set when the mass of carbon-12 equals 12 grams. Define one mole as the amount of a substance with the same number of particles (atoms or compounds) as 12 grams of carbon-12. State Avogadro's number. Apply the mole concept to calculate the number of particles in a substance and the amount of a substance.

<p style="text-align: center;">Unit 6: Stoichiometry Lesson 3: Review: Stoichiometry</p>	0	<p>Define stoichiometry.</p> <p>Demonstrate understanding of the law of multiple proportions in chemical formulas.</p> <p>Describe some different ways of measuring matter.</p> <p>Identify the quantity of one mole as set when the mass of carbon-12 equals 12 grams.</p> <p>State Avogadro's number.</p> <p>Apply the mole concept to calculate the number of particles in a substance and the amount of a substance.</p> <p>Define one mole as the amount of a substance with the same number of particles as 12 grams of carbon-12.</p>
<p style="text-align: center;">Unit 6: Stoichiometry Lesson 4: Mole-Mass Relationships</p>	0	<p>Convert the mass of a molecular substance to moles.</p> <p>Define molar mass.</p> <p>Determine the molar mass of a compound, given its formula and atomic masses of its atoms.</p>
<p style="text-align: center;">Unit 6: Stoichiometry Lesson 5: Mole-Volume Relationships</p>	0	<p>Explain what is meant by standard temperature and pressure (STP) of a gas.</p> <p>Define molar volume of a gas.</p> <p>Discuss Avogadro's hypothesis.</p> <p>Solve mole-volume problems.</p>

<p>Unit 6: Stoichiometry Lesson 6: Review: Moles</p>	0	<p>Convert the mass of a molecular substance to moles.</p> <p>Define molar mass.</p> <p>Determine the molar mass of a compound, given its formula and atomic masses of its atoms.</p> <p>Explain what is meant by standard temperature and pressure (STP) of a gas.</p> <p>Define molar volume of a gas.</p> <p>Discuss Avogadro's hypothesis.</p> <p>Solve mole-volume problems.</p>
<p>Unit 6: Stoichiometry Lesson 7: Moles and Chemical Equations</p>	0	<p>Demonstrate understanding of the law of multiple proportions in chemical formulas.</p> <p>Predict yields of products of a chemical reaction when given molar quantities of reactants or products.</p>
<p>Unit 6: Stoichiometry Lesson 8: Calculating Yields of Reactions</p>	0	<p>Calculate the masses of reactants and products in a chemical reaction using principles of stoichiometry.</p> <p>Calculate the masses of reactants and products in a chemical reaction when given the mass of a reactant or product and the relevant atomic masses.</p> <p>Determine amounts of reactants and products when given balanced reaction equations.</p>
<p>Unit 6: Stoichiometry Lesson 9: Laboratory: Stoichiometry of Chemical Reactions 1</p>	HS-PS1-2, HS-PS1-4, HS-PS1-7	Determine stoichiometric relationships of chemical reactions.
<p>Unit 6: Stoichiometry Lesson 10: Laboratory: Stoichiometry of Chemical Reactions 2</p>	HS-PS1-2, HS-PS1-4, HS-PS1-7	Determine stoichiometric relationships of chemical reactions.
<p>Unit 6: Stoichiometry Lesson 11: Your Choice</p>	0	00000
<p>Unit 6: Stoichiometry Lesson 12: Unit Test</p>	HS-PS1-2, HS-PS1-4, HS-PS1-7	00000

Unit 7: Semester Review and Test Lesson 1: Semester Review	0	00000
Unit 7: Semester Review and Test Lesson 2: Your Choice	0	00000
Unit 7: Semester Review and Test Lesson 3: Your Choice	0	00000
Unit 7: Semester Review and Test Lesson 4: Semester Test	0	00000