

Pacing Guide for 7-12 Curriculum

Course Title: _____

Length of Course: _____

Week Number	Chapter	COS	Objectives	Strategies / Materials Needed
Week 1	Orientation Lab Safety Lab Equipment	AHSGE 1	<p><i>SWBAT</i></p> <p>1. Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment.</p> <ul style="list-style-type: none"> • Select appropriate glassware for conducting experiments including a graduated cylinder, a beaker, a flask, a test tube, a microscope slide, a pipette, and a Petri dish • Select appropriate measuring equipment for conducting experiments including a balance and a stopwatch. 	<i>Lab Safety Quiz</i>
Week 2	Chapter 1: The Science of Chemistry	COS 1 COS5	<p>1. Differentiate among pure substances, mixtures, elements, and compounds.</p> <ul style="list-style-type: none"> • Distinguish between intensive and extensive properties of matter • Contrast properties of metals, nonmetals, and metalloids • Distinguish between homogeneous and heterogeneous forms of matter <p>5. Use the kinetic theory to explain states of matter, phase changes, solubility, and chemical reactions.</p> <p>Also be able to use metric units,</p>	Metric System Quiz

			metric prefixes, scientific notation, significant digits and conversion factors	
Week 3	Chapter 1: The Science of Chemistry	COS 1 COS5	<p>1. Differentiate among pure substances, mixtures, elements, and compounds.</p> <ul style="list-style-type: none"> • Distinguish between intensive and extensive properties of matter • Contrast properties of metals, nonmetals, and metalloids • Distinguish between homogeneous and heterogeneous forms of matter <p>5. Use the kinetic theory to explain states of matter, phase changes, solubility, and chemical reactions.</p> <p>Also be able to use metric units, metric prefixes, scientific notation, significant digits and conversion factors</p>	Classroom examples of 3 phases, discuss properties
Week 4	Chapter 1: The Science of Chemistry	COS 1 COS5	<p>1. Differentiate among pure substances, mixtures, elements, and compounds.</p> <ul style="list-style-type: none"> • Distinguish between intensive and extensive properties of matter • Contrast properties of metals, nonmetals, and metalloids • Distinguish between homogeneous and heterogeneous forms of matter <p>5. Use the kinetic theory to explain states of matter, phase changes, solubility, and chemical reactions.</p> <p>Also be able to use metric units, metric prefixes, scientific notation, significant digits and conversion</p>	Physical vs Chemical changes & Properties Powerpoint & Worksheet

			factors	
Week 5	Chapter 2: Matter and Energy	COS 8	8. Distinguish among endothermic and exothermic physical and chemical changes.	Instant Ice Pack, Hand Warmer – illustrate exothermic, endothermic
Week 6	Chapter 2: Matter and Energy	COS 8	8. Distinguish among endothermic and exothermic physical and chemical changes.	Scientific Notation Worksheet
Week 7	Chapter 2: Matter and Energy	COS 8	8. Distinguish among endothermic and exothermic physical and chemical changes.	Significant Digits Worksheet
Week 8	Chapter 3	COS 3 COS 6	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <ul style="list-style-type: none"> Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas Calculate the number of protons, neutrons, and electrons in an isotope Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements <p>6. Solve stoichiometric problems involving relationships among the number of particles, moles, and masses of reactants and products in a chemical reaction. Predict ionic and covalent bond types and products given known reactants</p>	Use Styrofoam atom model to illustrate Atomic Model

Week 9	Chapter 3	COS 3 COS 6	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <ul style="list-style-type: none"> • Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas • Calculate number of protons, neutrons, and electrons in an isotope • Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements <p>6. Solve stoichiometric problems involving relationships among the number of particles, moles, and masses of reactants and products in a chemical reaction. Predict ionic and covalent bond types and products given known reactants</p>	Relate concept of Mole to concept of “dozen”
Week 10	Chapter 3: Atoms and Moles	COS 3	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <p>Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas Calculate the number of protons, neutrons, and electrons in an isotope Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements</p>	Use Styrofoam atom model to illustrate electron configurations

Week 11	Chapter 4: Periodic Table	COS 3	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <p>Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas</p> <p>Calculate the number of protons, neutrons, and electrons in an isotope</p> <p>Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements</p>	History of Atomic Theory Timeline
Week 12	Chapter 4: Periodic Table	COS 3	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <p>Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas</p> <p>Calculate the number of protons, neutrons, and electrons in an isotope</p> <p>Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements</p>	Periodic Trends Practice & Flowchart/Mind Map
Week 13	Chapter 4: Periodic Table	COS 3	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <p>Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas</p> <p>Calculate the number of protons, neutrons, and electrons in an isotope</p> <p>Utilize benchmark discoveries to describe the historical development of</p>	Element Focus Report

			atomic structure, including photoelectric effect, absorption, and emission spectra of elements	
Week 14	Chapter 5: Ions and Ionic Compounds	COS 3,6	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <p>Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas</p> <p>Calculate the number of protons, neutrons, and electrons in an isotope</p> <p>Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements</p> <p>6. Predict ionic and covalent bond types and products given known reactants</p> <p>Assign oxidation numbers for individual atoms of monatomic and polyatomic ions</p> <p>Identify the nomenclature of ionic compounds, binary compounds, and acids</p>	Ion +/- Matching game
Week 15	Chapter 5: Ions and Ionic Compounds	COS 3,6	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <ul style="list-style-type: none"> Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas Calculate the number of protons, neutrons, and electrons in an isotope Utilize benchmark discoveries to describe the historical 	Ionic Compound Naming Rules Worksheet

			<p>development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements</p> <p>6. Predict ionic and covalent bond types and products given known reactants</p> <p>Assign oxidation numbers for individual atoms of monatomic and polyatomic ions</p> <p>Identify the nomenclature of ionic compounds, binary compounds, and acids</p>	
Week 16	Chapter 6: Covalent Compounds	COS 3 COS 6	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <ul style="list-style-type: none"> • Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas • Calculate the number of protons, neutrons, and electrons in an isotope • Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements <p>6. Assign oxidation numbers for individual atoms of monatomic and polyatomic ions</p> <p>Identify the nomenclature of ionic compounds, binary compounds, and acids</p>	Covalent Compound Practice sheet

Week 17	Chapter 6: Covalent Compounds	COS 3 COS 6	<p>3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels.</p> <ul style="list-style-type: none"> Utilize electron configurations, Lewis dot structures, and orbital notations to write chemical formulas Calculate the number of protons, neutrons, and electrons in an isotope Utilize benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements <p>6. Assign oxidation numbers for individual atoms of monatomic and polyatomic ions Identify the nomenclature of ionic compounds, binary compounds, and acids</p>	Covalent Compound Naming Rules Worksheet
Week 18	MidTerm Review and Exams; Chapters 1-6	See Previous Objectives		
Week 19	Chapter 7: Mole and Chemical Composition	COS 6	<p>6. Solve stoichiometric problems involving relationships among the number of particles, moles, and masses of reactants and products in a chemical reaction. Identify the nomenclature of ionic compounds, binary compounds, and acids Determine the empirical or molecular formula for a compound using percent composition data</p>	Relate concept of Mole to concept of “dozen” in solving Stoichiometry Problems, Molar Mass, & Empirical Formulas

Week 20	Chapter 8: Chemical Equations and Reactions	COS 6	6. Classify chemical reactions as composition, decomposition, single replacement, or double replacement Balance chemical equations	Reaction Type Identification Worksheet
Week 21	Chapter 8: Chemical Equations and Reactions	COS 6	6. Classify chemical reactions as composition, decomposition, single replacement, or double replacement Balance chemical equations	Balancing Equations Worksheets
Week 22	Chapter 9: Stoichiometry	COS 6	6. Solve stoichiometric problems involving relationships among the number of particles, moles, and masses of reactants and products in a chemical reaction. Predict ionic and covalent bond types and products given known reactants Assign oxidation numbers for individual atoms of monatomic and polyatomic ions	Powerpoint & Worksheet on Solving Stoichiometry Problems
Week 23	Chapter 9: Stoichiometry	COS 6	6. Solve stoichiometric problems involving relationships among the number of particles, moles, and masses of reactants and products in a chemical reaction. Predict ionic and covalent bond types and products given known reactants Assign oxidation numbers for individual atoms of monatomic and polyatomic ions	Powerpoint & Worksheet on Solving Stoichiometry Problems
Week 24	Chapter 10: Causes of Change	COS 8	8. Distinguish among endothermic and exothermic physical and chemical changes. Calculate temperature change by using specific heat Use Le Châtelier's principle to	Lab Demonstration on Equilibrium (Acetic Acid + Sodium Bicarbonate)

			explain changes in physical and chemical equilibrium	
Week 25	Chapter 11: States of Matter and Intermolecular Forces	COS 5	5. Use the kinetic theory to explain states of matter, phase changes, solubility, and chemical reactions.	Mind map/flowchart on Phase changes
Week 26	Chapter 12: Gases	COS 7	7. Explain the behavior of ideal gases in terms of pressure, volume, temperature, and number of particles using Charles's law, Boyle's law, Gay-Lussac's law, the combined gas law, and the ideal gas law.	Practice Work using Gas Laws
Week 27	Chapter 12: Gases	COS 7	7. Explain the behavior of ideal gases in terms of pressure, volume, temperature, and number of particles using Charles's law, Boyle's law, Gay-Lussac's law, the combined gas law, and the ideal gas law.	Lab Demo on PVT relationship
Week 28	Chapter 13: Solutions	COS 1 COS 4	1. Differentiate among pure substances, mixtures, elements, and compounds. Distinguish between intensive and extensive properties of matter Contrast properties of metals, nonmetals, and metalloids Distinguish between homogeneous and heterogeneous forms of matter 4. Describe solubility in terms of energy changes associated with the solution process. <ul style="list-style-type: none"> • Using solubility curves to interpret saturation levels • Explaining the conductivity of electrolytic solutions • Describing acids and bases in terms of strength, concentration, pH, and neutralization reactions • Describing factors that affect 	Presentation/discussion on concepts on concentration, solubility & Molarity

			<p>the rate of solution</p> <ul style="list-style-type: none"> Solving problems involving molarity, including solution preparation and dilution 	
Week 29	Chapter 13: Solutions	COS 1 COS 4	<p>1. Differentiate among pure substances, mixtures, elements, and compounds. Distinguish between intensive and extensive properties of matter Contrast properties of metals, nonmetals, and metalloids Distinguish between homogeneous and heterogeneous forms of matter</p> <p>4. Describe solubility in terms of energy changes associated with the solution process.</p> <ul style="list-style-type: none"> Using solubility curves to interpret saturation levels Explaining the conductivity of electrolytic solutions Describing factors that affect the rate of solution Solving problems involving molarity, including solution preparation and dilution 	Lab Exercise on creating Solution at specific concentrations
Week 30	Chapter 15: Acids and Bases	COS 4	<p>4. Explain the conductivity of electrolytic solutions Describe acids and bases in terms of strength, concentration, pH, and neutralization reactions Solve problems involving molarity, including solution preparation and dilution</p>	Acid-Base reaction worksheet

Week 31	Chapter 15: Acids and Bases	COS 4	4. Explain the conductivity of electrolytic solutions Describe acids and bases in terms of strength, concentration, pH, and neutralization reactions Solve problems involving molarity, including solution preparation and dilution	Lab -Titration exercise w/ indicators
Week 32	Chapter 18: Nuclear Chemistry	COS 9	9. Distinguish between chemical and nuclear reactions. <ul style="list-style-type: none"> Identifying atomic and subatomic particles, including mesons, quarks, tachyons, and baryons Calculate the half-life of selective radioactive isotopes Identifying types of radiation and their properties Contrasting fission and fusion Describing carbon-14 decay as a dating method 	Particle identification worksheet
Week 33	Chapter 18: Nuclear Chemistry	COS 9	9. Distinguish between chemical and nuclear reactions. <ul style="list-style-type: none"> Identifying atomic and subatomic particles, including mesons, quarks, tachyons, and baryons Calculate the half-life of selective radioactive isotopes Identifying types of radiation and their properties Contrasting fission and fusion Describing carbon-14 decay as a dating method 	Nuclear reaction worksheet
Week 34	Chapters 19 and 20	COS 2	2. Describe the structure of carbon chains, branched chains, and rings.	Organic Compound Structure diagramming

Week 35	Chapters 19 and 20	COS 2	2. Describe the structure of carbon chains, branched chains, and rings.	Organic Compound Nomenclature practice sheet
Week 36	Final Exam Review and Test			