

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 1- Kinetic Molecular Theory and Gas Behavior</b></p> <p>Week 1- Intro to Gases and Kinetic Theory (first full week)</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-10.</b> Analyze data to support the claim that the combined gas law describes the relationships among volume, pressure and temperature for a sample of an ideal gas.</p>	<p><b><u>Phenomenon</u></b> Tanker Collapse, Smell and Taste Correlation</p> <p><b><u>Activities</u></b> Smells Lab, State of Matter Differentiation/Properties Investigation</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.5: Using Mathematics and Computational Thinking</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>● Ideal Gas Law</li> <li>● Combined gas law</li> <li>● Volume</li> <li>● Pressure</li> <li>● Temperature</li> <li>● STP</li> </ul>	<p>Kinetic Theory Exit Ticket/Quiz after completing notes</p> <p>Smell Lab Report</p>

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<p><b>Unit 1- Kinetic Molecular Theory and Gas Behavior</b></p> <p>Week 2- Use of temperature and relation to pressure</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-10.</b> Analyze data to support the claim that the combined gas law describes the relationships among volume, pressure and temperature for a sample of an ideal gas.</p> <p><b>HS-PS3-2.</b> Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).</p>	<p><b><u>Phenomenon</u></b> Tanker Collapse, Absolute Zero (What is it? What would it be?), What Causes Wind?</p> <p><b><u>Activities</u></b> Online Gas Pressure Lab, Temperature Conversion Worksheet, Using Temperatures Lab, Weather Map Analysis</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter PS3.A: Definitions of Energy</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.5: Using Mathematics and Computational Thinking</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>● Ideal Gas Law</li> <li>● Combined gas law</li> <li>● Volume</li> <li>● Pressure</li> <li>● Temperature</li> <li>● STP</li> <li>● Mechanical energy</li> <li>● Potential energy</li> <li>● kinetic energy</li> <li>● Electric field</li> <li>● Magnetic field</li> <li>● Molecular energy</li> <li>● Heat conduction</li> <li>● Circuit</li> <li>● Current</li> <li>● Heat radiation</li> <li>● Work</li> </ul>	<p>Online Gas Pressure Lab Report</p>

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<p><b>Unit 1- Kinetic Molecular Theory and Gas Behavior</b></p> <p>Week 3- Introduction of Gas Laws</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-6.</b> Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.</p> <p><b>HS-PS1-10.</b> Analyze data to support the claim that the combined gas law describes the relationships among volume, pressure and temperature for a sample of an ideal gas.</p> <p><b>HS-PS3-2.</b> Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).</p>	<p><b><u>Phenomenon</u></b> Tanker Collapse, Marshmallow under pressure, Hot air balloon, Compression Sickness (“The Bends”)</p> <p><b><u>Activities</u></b> Syringe and Marshmallow Lab, Hot Air Balloon, Gas Law Calculation Lab</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS3.A: Definitions of Energy ETS1.C: Optimizing the Design Solution</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.5: Using Mathematics and Computational Thinking SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.5: Energy and Matter CC.7: Stability and Change</p>	<ul style="list-style-type: none"> <li>● Ideal Gas Law</li> <li>● Combined gas law</li> <li>● Volume</li> <li>● Pressure</li> <li>● Temperature</li> <li>● STP</li> <li>● Mechanical energy</li> <li>● Potential energy</li> <li>● kinetic energy</li> <li>● Electric field</li> <li>● Magnetic field</li> <li>● Molecular energy</li> <li>● Heat conduction</li> <li>● Heat radiation</li> <li>● Work</li> <li>● Surface area of reactants, dynamic</li> <li>● Thermal energy</li> <li>● Heat energy</li> <li>● Atomic arrangement</li> <li>● Equilibrium</li> <li>● Bond energy</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Catalyst</li> <li>● Chemical bond</li> <li>● Mole</li> <li>● Element</li> <li>● Compound</li> <li>● Concentration</li> <li>● Le Chatelier’s principle</li> </ul>	<p>Gas Law Quiz</p> <p>Syringe Lab Report</p> <p>Informal Intro Quiz covering gas physical properties</p>

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<p><b>Unit 1- Kinetic Molecular Theory and Gas Behavior</b></p> <p>Week 4- Application of KMT and Gas Laws to Real Life Situations</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-6.</b> Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.</p> <p><b>HS-PS1-10.</b> Analyze data to support the claim that the combined gas law describes the relationships among volume, pressure and temperature for a sample of an ideal gas.</p> <p><b>HS-PS3-2.</b> Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).</p>	<p><b><u>Phenomenon</u></b> Tanker Collapse, Hot Air Balloon</p> <p><b><u>Activities</u></b> Hot Air Balloon Lab, Gas Law Calculations, Review Kahoot, Diffusion POE</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS3.A: Definitions of Energy ETS1.C: Optimizing the Design Solution</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.5: Using Mathematics and Computational Thinking SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.5: Energy and Matter CC.7: Stability and Change</p>	<ul style="list-style-type: none"> <li>● Ideal Gas Law</li> <li>● Combined gas law</li> <li>● Volume</li> <li>● Pressure</li> <li>● Temperature</li> <li>● STP</li> <li>● Mechanical energy</li> <li>● Potential energy</li> <li>● kinetic energy</li> <li>● Electric field</li> <li>● Magnetic field</li> <li>● Molecular energy</li> <li>● Heat conduction</li> <li>● Circuit</li> <li>● Current</li> <li>● Work</li> <li>● Surface area of reactants, dynamic</li> <li>● Thermal energy</li> <li>● Heat energy</li> <li>● Atomic arrangement</li> <li>● Equilibrium</li> <li>● Bond energy</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Catalyst</li> <li>● Chemical bond</li> <li>● Mole</li> <li>● Element</li> <li>● Compound</li> <li>● Concentration</li> <li>● Le Chatelier's principle</li> </ul>	<p>Unit 1 Exam</p> <p>Hot Air Balloon Lab Report</p> <p>Diffusion Informal Quiz</p>

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<p><b>Unit 2 - Phase Changes and the Resulting Energy Transfer</b></p> <p>Week 5 - Properties and Classifications of Matter</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-5</b> 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><b>HS-PS3-1</b> Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p> <p><b>HS-PS3-2</b> Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).</p> <p><b>HS-PS3-4</b> Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).</p>	<p><b><u>Phenomenon</u></b> Candle and Ice Cube Car, Replacing Glass</p> <p><b><u>Activities</u></b> Vocabulary Homework, Classification of Matter Lab pt. 1, Use of Glass Discussion</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer PS3.D: Energy in Chemical Processes</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations SEP.4: Systems and System Models SEP.5: Using Mathematics and Computational Thinking SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.4: Systems and System Models CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Stored energy</li> <li>• Heat energy</li> <li>• Atomic arrangement</li> <li>• Conversion</li> <li>• Bond energy</li> <li>• Concentration</li> <li>• Reaction rate</li> <li>• Activation energy</li> <li>• Catalyst</li> <li>• Enzyme</li> <li>• Equilibrium</li> <li>• Mechanical energy</li> <li>• Potential energy</li> <li>• Conversion</li> <li>• Kinetic energy</li> <li>• Conduction</li> <li>• Electrical circuit</li> <li>• Electrical current</li> <li>• Heat radiation</li> <li>• Insulate</li> <li>• Resistor</li> <li>• Volt</li> <li>• Amp</li> <li>• Ohm's Law</li> <li>• Electric field</li> <li>• Magnetic field</li> <li>• Molecular energy</li> <li>• Heat conduction</li> <li>• Circuit</li> <li>• Specific heat</li> <li>• Specific heat capacity</li> <li>• Kinetic energy</li> <li>• Microscopic scale</li> <li>• Macroscopic scale</li> <li>• Molecular energy</li> <li>• Heat conduction</li> <li>• Kelvin</li> <li>• Joules</li> <li>• Calorimetry</li> <li>• Heat radiation</li> </ul>	<p>Matter Classification Lab Report</p> <p>Candle Car Anchoring Phenomenon Presentation</p>

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<p><b>Unit 2 - Phase Changes and the Resulting Energy Transfer</b></p> <p>Week 6 - Distinction between Chemical and Physical Processes</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-2</b> 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><b>HS-PS1-4</b> 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><b>Phenomenon</b> Candle and Ice Cube Car, Survival of Crops in Freezing Weather</p> <p><b>Activities</b> Use of Matter Flowchart, Distillation Research, Freezing in Florida Case Study, Physical Change vs. Chemical Change Worksheet</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models SEP.6: Constructing Explanations and Designing Solutions</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>● Reversible</li> <li>● Atomic weight</li> <li>● Chemical bond</li> <li>● Electron sharing</li> <li>● Ion</li> <li>● Outer electron state</li> <li>● Energy level</li> <li>● Electron transfer</li> <li>● Concentration</li> <li>● Equilibrium</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Stable</li> <li>● Combustion,</li> <li>● Yield(s)</li> <li>● Flammability</li> <li>● Octet</li> <li>● Transfer</li> <li>● Heat energy</li> <li>● Atomic arrangement</li> <li>● Stored energy</li> <li>● Conversion</li> <li>● Bond energy</li> <li>● Release of energy</li> <li>● Endothermic</li> <li>● Exothermic</li> </ul>	<p>Matter Classification Quiz</p>

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<p><b>Unit 2 - Phase Changes and the Resulting Energy Transfer</b></p> <p>Week 7 - Identification of Heat and Energy in Matter</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-4</b> 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><b>HS-PS3-1</b> Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known</p> <p><b>HS-PS3-2</b> Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).</p>	<p><b>Phenomenon</b> Candle and Ice Cube Car, Dry Ice</p> <p><b>Activities</b> Phase Change Diagrams, Energy and Temperature Unit Research, Endothermic vs. Exothermic Processes Discussion, Heating Curve Labeling and Construction, Dry Ice Safety Research</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models SEP.4: Systems and System Models SEP.5: Using Mathematics and Computational Thinking</p> <p><b>CCC (Crosscutting Concepts)</b> CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>● Transfer</li> <li>● Heat energy</li> <li>● Atomic arrangement</li> <li>● Stored energy</li> <li>● Conversion</li> <li>● Bond energy</li> <li>● Release of energy</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Mechanical energy</li> <li>● Potential energy</li> <li>● Conversion</li> <li>● Kinetic energy</li> <li>● Conduction</li> <li>● Electrical circuit</li> <li>● Electrical current</li> <li>● Heat radiation</li> <li>● Insulate</li> <li>● Resistor</li> <li>● Volt</li> <li>● Amp</li> <li>● Ohm's Law</li> <li>● Electric field</li> <li>● Magnetic field</li> <li>● Molecular energy</li> <li>● Heat conduction</li> <li>● Circuit</li> <li>● Current</li> <li>● Work</li> </ul>	<p>Dry Ice Exit Ticket</p> <p>Endothermic vs. Exothermic Partner Quiz</p>

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<p><b>Unit 2 - Phase Changes and the Resulting Energy Transfer</b></p> <p>Week 8 - Transfer of Heat and Energy through Chemical and Physical Processes</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-2</b> 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><b>HS-PS1-4</b> 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><b>HS-PS1-5</b> 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><b>HS-PS3-1</b> Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p> <p><b>HS-PS3-2</b> Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).</p> <p><b>HS-PS3-4</b> Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).</p>	<p><b>Phenomenon</b></p> <p>Candle and Ice Cube Car, Dry Ice, Calorimeter and Heating of Metal</p> <p><b>Activities</b></p> <p>Dry Ice Lab, Specific Heat Lab, Matter Classification Lab pt. 2, Unit 2 Review Kahoot</p> <p><b>DCI (Disciplinary Core Ideas)</b></p> <p>PS1.A: Structure and Properties of Matter</p> <p>PS1.B: Chemical Reactions</p> <p>PS3.A: Definitions of Energy</p> <p>PS3.B: Conservation of Energy and Energy Transfer</p> <p>PS3.D: Energy in Chemical Processes</p> <p><b>SEPS (Science and Engineering Practices)</b></p> <p>SEP.2: Developing and Using Models</p> <p>SEP.3: Planning and Carrying Out Investigations</p> <p>SEP.4: Systems and System Models</p> <p>SEP.5: Using Mathematics and Computational Thinking</p> <p>SEP.6: Constructing Explanations and Designing Solutions</p> <p><b>CCC (Crosscutting Concepts)</b></p> <p>CC.1: Patterns</p> <p>CC.4: Systems and System Models</p> <p>CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Reversible</li> <li>• Atomic weight</li> <li>• Chemical bond</li> <li>• Electron sharing</li> <li>• Ion</li> <li>• Outer electron state</li> <li>• Energy level</li> <li>• Electron transfer</li> <li>• Concentration</li> <li>• Equilibrium</li> <li>• Stable</li> <li>• Combustion,</li> <li>• Yield(s)</li> <li>• Flammability</li> <li>• Octet</li> <li>• Transfer</li> <li>• Heat energy</li> <li>• Atomic arrangement</li> <li>• Stored energy</li> <li>• Conversion</li> <li>• Bond energy</li> <li>• Release of energy</li> <li>• Atomic arrangement</li> <li>• Conversion</li> <li>• Bond energy</li> <li>• Concentration</li> <li>• Reaction rate</li> <li>• Activation energy</li> <li>• Catalyst</li> <li>• Enzyme</li> <li>• Equilibrium</li> <li>• Mechanical energy</li> <li>• Potential energy</li> <li>• Conversion</li> <li>• Kinetic energy</li> <li>• Conduction</li> <li>• Electrical circuit</li> <li>• Electrical current</li> <li>• Heat radiation</li> <li>• Insulate</li> <li>• Resistor</li> <li>• Volt</li> <li>• Amp</li> <li>• Ohm's Law</li> <li>• Electric field</li> <li>• Magnetic field</li> <li>• Molecular energy</li> <li>• Heat conduction</li> <li>• Circuit</li> <li>• Current</li> <li>• Heat radiation</li> <li>• Specific heat</li> <li>• Specific heat capacity</li> <li>• Kinetic energy</li> <li>• Microscopic scale</li> <li>• Macroscopic scale</li> <li>• Molecular energy</li> <li>• Kelvin</li> <li>• Joules</li> <li>• Calorimetry</li> </ul>	<p>Unit 2 Exam</p> <p>Dry Ice Lab Report</p> <p>Specific Heat Lab Report</p> <p>Matter Classification Lab Report</p>



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vStructure and the Periodic Table  Week 10- Scientific Notation and Atomic Structure	<b>Key summary</b>  HS-PS1-8 Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.	<b><u>Phenomenon</u></b> Group 1 Elements Reaction with Water  <b><u>Activities</u></b> Unit 3 Anchoring Phenomenon Poster, Vocabulary Homework, Scientific Notation Review  <b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.C: Nuclear Processes  <b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models  <b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.5: Energy and Matter	<ul style="list-style-type: none"> <li>• Absorption</li> <li>• Transformation</li> <li>• Nuclear reaction</li> <li>• Nucleus</li> <li>• Decay rate</li> <li>• Fission</li> <li>• Fusion</li> <li>• Neutron</li> <li>• Nuclear mass</li> <li>• Unstable</li> <li>• Half-life</li> <li>• Radioactive</li> <li>• Radiation</li> <li>• Alpha particle</li> <li>• Alpha decay</li> <li>• Beta particle</li> <li>• Beta emission</li> <li>• Gamma radiation</li> <li>• Atomic number</li> <li>• Atomic mass</li> <li>• Proton</li> <li>• Radioactive decay</li> </ul>	<ul style="list-style-type: none"> <li>• Anchoring Phenomenon Posters</li> <li>• Scientific Notation Review Check</li> </ul>

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<p><b>Unit 3-</b> Atomic Structure and the Periodic Table</p> <p>Week 11- The Changing Model of the Atom</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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-PS1-8 Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.</p>	<p><b>Phenomenon</b> Water Reactions, Scientific Wrongdoings</p> <p><b>Activities</b> Atomic Structure Research, Power of 10 Activity, Atomic Model Sketches, Element Cube Projects (Start), Build an Atom Simulation</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter PS1.C: Nuclear Processes</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Absorption</li> <li>• Transformation</li> <li>• Nuclear reaction</li> <li>• Nucleus</li> <li>• Decay rate</li> <li>• Fission</li> <li>• Fusion</li> <li>• Neutron</li> <li>• Nuclear mass</li> <li>• Unstable</li> <li>• Half-life</li> <li>• Radioactive</li> <li>• Radiation</li> <li>• Alpha particle</li> <li>• Alpha decay</li> <li>• Beta particle</li> <li>• Beta emission</li> <li>• Gamma radiation</li> <li>• Atomic number</li> <li>• Atomic mass</li> <li>• Proton</li> <li>• Radioactive decay</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> </ul>	<ul style="list-style-type: none"> <li>• “Build an Atom” Lab Questions</li> <li>• Atomic Theory and Scientific Notation Exit Ticket</li> <li>• Atomic and subatomic Structure Quiz</li> </ul>

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<p><b>Unit 3-</b> Atomic Structure and the Periodic Table</p> <p>Week 12- The Periodic Table and its Trends</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-2</b> 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-PS1-8 Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.</p>	<p><b>Phenomenon</b> Water Reactions, The Periodic Table, Isotopic Variance</p> <p><b>Activities</b> “An Organized Table” packet, PTable Scavenger Hunt, Build a Periodic Table Project, Periodic Trends Research</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1.C: Nuclear Processes</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models SEP.6: Constructing Explanations and Designing Solutions</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Absorption</li> <li>• Transformation</li> <li>• Nuclear reaction</li> <li>• Nucleus</li> <li>• Decay rate</li> <li>• Fission</li> <li>• Fusion</li> <li>• Neutron</li> <li>• Nuclear mass</li> <li>• Unstable</li> <li>• Half-life</li> <li>• Radioactive</li> <li>• Radiation</li> <li>• Alpha particle</li> <li>• Alpha decay</li> <li>• Beta particle</li> <li>• Beta emission</li> <li>• Gamma radiation</li> <li>• Atomic number</li> <li>• Atomic mass</li> <li>• Proton</li> <li>• Radioactive decay</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Reversible</li> <li>• Atomic weight</li> <li>• Chemical bond</li> <li>• Electron sharing</li> <li>• Ion</li> <li>• Concentration</li> <li>• Equilibrium</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Stable</li> <li>• Combustion</li> </ul>	<ul style="list-style-type: none"> <li>• Gas Law Quiz</li> <li>• Build a Periodic Table Project</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 3-</b> Atomic Structure and the Periodic Table</p> <p>Week 13- Electron Location and Orbitals</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-2</b> 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><b><u>Phenomenon</u></b> Water Reactions</p> <p><b><u>Activities</u></b> Electron and Quantum Number Packet, Element Cube Project (DUE), Electron Configuration Write-Ups, Test Review Kahoot</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Reversible</li> <li>• Atomic weight</li> <li>• Chemical bond</li> <li>• Electron sharing</li> <li>• Ion</li> <li>• Outer electron state</li> <li>• Energy level</li> <li>• Electron transfer</li> <li>• Concentration</li> <li>• Equilibrium</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Stable</li> <li>• Combustion</li> <li>• Yield(s)</li> <li>• Flammability</li> <li>• Octet</li> </ul>	<ul style="list-style-type: none"> <li>• Unit 3 Exam</li> <li>• Element Cube Project</li> <li>• Orbitals Quiz</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 4 - Atomic Interactions part 1 (Ionic and Metallic Bonds)</b></p> <p>Week 14 - Introduction to Bonding and Compounds</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-3</b> 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><b>Phenomenon</b> “Magic” Water Jar, Survivorship Bias and DHMO</p> <p><b>Activities</b> Unit 4 Anchoring Phenomenon Posters, Dihydrogen Monoxide Reading and Discussion, Vocabulary Homework</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> </ul>	<ul style="list-style-type: none"> <li>• Anchoring Phenomenon Posters</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 4 - Atomic Interactions part 1 (Ionic and Metallic Bonds)</b></p> <p>Week 15 - Principles of Ions and Ionic Bonding</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-3</b> 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><b>Phenomenon</b> “Magic” Water Jar</p> <p><b>Activities</b> Ionic Formation Simulation, Ionic Compound Naming, Ionic Compound POGIL</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> </ul>	<ul style="list-style-type: none"> <li>• Ions Exit Ticket</li> <li>• Ionic Bond Simulation Write-Up</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 4 - Atomic Interactions part 1 (Ionic and Metallic Bonds)</b></p> <p>Week 16 - Differences Between Ionic Compounds</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-3</b> 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><b>Phenomenon</b> “Magic” Water Jar</p> <p><b>Activities</b> Ionic Bonding Brackets, Ionic Compound Lab, Ionic Compound Naming Assignment</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> </ul>	<ul style="list-style-type: none"> <li>• Ionic Compound Quiz</li> <li>• Ionic Compound Lab</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 4 - Atomic Interactions part 1 (Ionic and Metallic Bonds)</b></p> <p>Week 17- Metallic Bonding</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-3</b> 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><b><u>Phenomenon</u></b> “Magic” Water Jar, Electricity Conduction</p> <p><b><u>Activities</u></b> Metallic Bonding Simulation, Metals Exit Ticket, Test Review Kahoot</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> </ul>	<ul style="list-style-type: none"> <li>• Unit 4 Exam</li> <li>• Metals Exit Ticket</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<b>Semester Final Exams</b>  Week 18 - Finals	<b>Key summary</b>	<u><b>Phenomenon</b></u>  <u><b>Activities</b></u>  <u><b>DCI (Disciplinary Core Ideas)</b></u>  <u><b>SEPS (Science and Engineering Practices)</b></u>  <u><b>CCC (Crosscutting Concepts)</b></u>		

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 5-</b> Atomic Interactions part 2 (Covalent Bonds)</p> <p>Week 1- Intro to Second Semester Chemistry and Recap of Unit 4</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>Phenomenon</b> Glass Jar with Magic Mesh that Holds Water</p> <p><b>Activities</b> Semester Intro Ted Talks, Unit 5 Anchoring Phenomenon Poster, Vocabulary Homework, Three Types of Bonding Simulations, Ozone Exploration Questions, Unit 5 Pretest</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> </ul>	<ul style="list-style-type: none"> <li>• Anchoring Phenomenon Posters</li> <li>• Vocabulary Homework</li> <li>• Bonding Simulations Packet</li> <li>• Unit 5 Pretest</li> </ul>
<p><b>Unit 5-</b> Atomic Interactions part 2 (Covalent Bonds)</p> <p>Week 2- Principles of Covalent Bonding and Lewis Structures</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-4</b> Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends</p>	<p><b>Phenomenon</b> Magic Mesh, Creation of Ammonia and Chemical Warfare</p> <p><b>Activities</b> Covalent Bonding Competition, Ammonia Video and Questions, Guided Lewis Structure Notes</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> </ul>	<ul style="list-style-type: none"> <li>• Review game</li> <li>• Video Questions</li> <li>• Notes Packet</li> <li>• Exit Ticket</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
	<p>upon the changes in total bond energy.</p> <p><b>HS-PS3-1</b> Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p>	<p>PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.5: Energy and Matter SEP.4: Systems and System Models</p>	<ul style="list-style-type: none"> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Transfer</li> <li>• Heat energy</li> <li>• Atomic arrangement</li> <li>• Stored energy</li> <li>• Conversion</li> <li>• Bond energy</li> <li>• Release of energy</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Mechanical energy</li> <li>• Potential energy</li> <li>• Conversion</li> <li>• Kinetic energy</li> <li>• Conduction</li> <li>• Electrical circuit</li> <li>• Electrical current</li> <li>• Heat radiation</li> <li>• Insulate</li> <li>• Resistor</li> <li>• Volt</li> <li>• Amp</li> <li>• Ohm's Law</li> </ul>	
<p><b>Unit 5-</b> Atomic Interactions part 2 (Covalent Bonds)</p> <p>Week 3-Lewis Structures and VSEPR Modeling</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-3</b> Plan and conduct an investigation to gather evidence to compare the structure of substances</p>	<p><b><u>Phenomenon</u></b> Magic Mesh, Destruction of the Ozone Layer</p> <p><b><u>Activities</u></b> Molecule Shapes Simulation, Covalent Bonding Quiz, Lewis Structure Memory Cards, VSEPR Modeling using Styrofoam balls</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> </ul>	<ul style="list-style-type: none"> <li>• Simulation Packet</li> <li>• Covalent Bonding Quiz</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
	at the bulk scale to infer the strength of electrical forces between particles	Matter  <u><b>SEPS (Science and Engineering Practices)</b></u> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations  <u><b>CCC (Crosscutting Concepts)</b></u> CC.1: Patterns	<ul style="list-style-type: none"> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> </ul>	
<b>Unit 5-</b> Atomic Interactions part 2 (Covalent Bonds)  Week 4- Compound Naming and Intro to	<b>Key summary</b> <b>HS-PS1-1</b> 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.	<u><b>Phenomenon</b></u> Magic Mesh, Properties of Water, Formation of Snowflakes, Separation of Dyes  <u><b>Activities</b></u> VSEPR Modeling Challenge and Game, Water Mini-Lab, Chromatography Simulation, Building a Snowflake,	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> </ul>	<ul style="list-style-type: none"> <li>• Simulation Packet</li> <li>• Mini-Lab Write Up</li> <li>• Compound Naming Assignments</li> <li>• Exit Ticket</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
Intermolecular Forces	<b>HS-PS1-3</b> 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 particle	Compound Naming Worksheets  <u><b>DCI (Disciplinary Core Ideas)</b></u> PS1.A: Structure and Properties of Matter  <u><b>SEPS (Science and Engineering Practices)</b></u> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations  <u><b>CCC (Crosscutting Concepts)</b></u> CC.1: Patterns	<ul style="list-style-type: none"> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> </ul>	
<b>Unit 5-</b> Atomic Interactions part 2 (Covalent Bonds)  Week 5- Intermolecular	<b>Key summary</b> <b>HS-PS1-1</b> 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.	<u><b>Phenomenon</b></u> Magic Mesh, Oil and Water, Separation of Dyes  <u><b>Activities</b></u> Chromatography Lab, Oil and Water POE (Predict, Observe, Explain),	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> </ul>	<ul style="list-style-type: none"> <li>• Chromatography Lab Write-Up</li> <li>• POE Questions</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
Forces	<p><b>HS-PS1-3</b> 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>Like Dissolves Like Exploration</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> </ul>	
<p><b>Unit 5-</b> Atomic Interactions part 2 (Covalent Bonds)</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> Use the periodic table as a model to predict the relative properties of elements based on the</p>	<p><b><u>Phenomenon</u></b> Magic mesh, Shaking Color Change, Decomposition of Sugar using Acid, Suffocating a Flame</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> </ul>	<ul style="list-style-type: none"> <li>• Unit 5 Exam</li> <li>• Simulation Packet</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 6-</b> Chemical Reactions</p> <p>Week 6- Unit 5 Test, Intro to Chemical Reactions</p>	<p>patterns of electrons in the outermost energy level of atoms.</p> <p><b>HS-PS1-3</b> 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><b>HS-PS1-4</b> 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><b>HS-PS1-7</b> Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>	<p><b>Activities</b> Unit 5 Exam, Chemical Reaction Demonstration Questions, Balancing Chemical Equations Simulation</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models SEP.3: Planning and Carrying Out Investigations</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> <li>• Transfer</li> <li>• Heat energy</li> <li>• Atomic arrangement</li> <li>• Stored energy</li> <li>• Conversion</li> <li>• Bond energy</li> <li>• Release of energy</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Nucleus</li> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Electron cloud</li> <li>• Intramolecular force</li> <li>• Covalent bond</li> <li>• Ionic bond</li> <li>• intermolecular force</li> <li>• Electrostatic force</li> <li>• Electronegativity</li> <li>• Electron distribution</li> <li>• Polarity</li> <li>• Temporary polarity</li> <li>• Permanent polarity</li> <li>• Polarize</li> <li>• Surface area</li> <li>• Atomic radius</li> <li>• Atomic weight</li> </ul>	

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
			<ul style="list-style-type: none"> <li>• Atomic mass</li> <li>• Solute</li> <li>• Solvent</li> <li>• Dissolve</li> <li>• Mole</li> <li>• Molar ratio</li> <li>• Molar mass</li> <li>• Limiting reactant</li> <li>• Excess reactant</li> <li>• Yield(s)</li> <li>• Theoretical yield</li> <li>• Actual yield</li> <li>• Concentration</li> <li>• Conversion</li> <li>• Reversible</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> </ul>	
<p><b>Unit 6-</b> Chemical Reactions</p> <p>Week 7- Balancing and Classifying Chemical Equations</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-2</b> 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><b>HS-PS1-7</b> Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>	<p><b>Phenomenon</b> Shaking Color Change, Decomposition of Sugar using Acid, Suffocating a Flame</p> <p><b>Activities</b> Chemical Equations Worksheet, Chemical Equations Review Game, March Mammal Madness</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions</p> <p><b>SEPS (Science and Engineering</b></p>	<ul style="list-style-type: none"> <li>• Reversible</li> <li>• Atomic weight</li> <li>• Chemical bond</li> <li>• Electron sharing</li> <li>• Ion</li> <li>• Outer electron state</li> <li>• Energy level</li> <li>• Electron transfer</li> <li>• Concentration</li> <li>• Equilibrium</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Stable</li> <li>• Combustion</li> <li>• Yield(s)</li> <li>• Flammability</li> <li>• Octet</li> <li>• Mole</li> <li>• Molar ratio</li> <li>• Molar mass</li> <li>• Limiting reactant</li> <li>• Excess reactant</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical Equations Worksheet</li> <li>• Exit Ticket</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
		<p><b><u>Practices)</u></b> SEP.5: Using Mathematics and Computational Thinking SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Yield(s)</li> <li>• Theoretical yield</li> <li>• Actual yield</li> <li>• Concentration</li> <li>• Conversion</li> <li>• Reversible</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> </ul>	
<p><b>Unit 6-</b> Chemical Reactions</p> <p>Week 8- Reaction Rates and How to Alter Them</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-2</b> 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><b>HS-PS1-5</b> 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><b>HS-PS1-7</b> Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>	<p><b><u>Phenomenon</u></b> Shaking Color Change, Decomposition of Sugar using Acid, Suffocating a Flame, Antacid and Vinegar Reaction</p> <p><b><u>Activities</u></b> Comparison of Chemical Reactions Lab, Reaction Rate Simulation, Scientific Notation and Unit Conversion Review, Chemical Reactions Quiz</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.5: Using Mathematics and Computational Thinking SEP.6: Constructing Explanations and Designing Solutions</p>	<ul style="list-style-type: none"> <li>• Reversible</li> <li>• Atomic weight</li> <li>• Chemical bond</li> <li>• Electron sharing</li> <li>• Ion</li> <li>• Outer electron state</li> <li>• Energy level</li> <li>• Electron transfer</li> <li>• Concentration</li> <li>• Equilibrium</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Stable</li> <li>• Combustion</li> <li>• Yield(s)</li> <li>• Flammability</li> <li>• Octet</li> <li>• Mole</li> <li>• Molar ratio</li> <li>• Molar mass</li> <li>• Limiting reactant</li> <li>• Excess reactant</li> <li>• Yield(s)</li> <li>• Theoretical yield</li> <li>• Actual yield</li> <li>• Concentration</li> <li>• Conversion</li> <li>• Reversible</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> </ul>	<ul style="list-style-type: none"> <li>• Reactions Lab Write-Up</li> <li>• Simulation Packet,</li> <li>• Chemical Reactions Quiz</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
		<p><b><u>CCC (Crosscutting Concepts)</u></b>            CC.1: Patterns            CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• Stored energy</li> <li>• Heat energy</li> <li>• Atomic arrangement</li> <li>• Conversion</li> <li>• Bond energy</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Concentration</li> <li>• Reaction rate</li> <li>• Activation energy</li> <li>• Catalyst</li> <li>• Enzyme</li> <li>• Equilibrium</li> </ul>	
<p><b>Unit 6-</b> Chemical Reactions</p> <p>Week 9- Moles and Conversions</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-7</b> Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction</p>	<p><b><u>Phenomenon</u></b> Discovery of Avogadro's Number</p> <p><b><u>Activities</u></b> Avogadro's Number Video Questions, Mole Conversions Worksheet, Exit Ticket, Salt vs. Sugar Lab Challenge</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.B: Chemical Reactions</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.5: Using Mathematics and Computational Thinking</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Mole</li> <li>• Molar ratio</li> <li>• Molar mass</li> <li>• Limiting reactant</li> <li>• Excess reactant</li> <li>• Yield(s)</li> <li>• Theoretical yield</li> <li>• Actual yield</li> <li>• Concentration</li> <li>• Conversion</li> <li>• Reversible</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> </ul>	<ul style="list-style-type: none"> <li>• Exit Ticket</li> <li>• Lab Challenge Write-Up</li> </ul>

[Chemistry-Q3]

[Jared Kaminski - 5/14/24]

STATE STANDARDS [Chemistry]

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 6-</b> Chemical Reactions</p> <p>Week 10 - Stoichiometry and Limiting Reactant</p>	<p><b>Key summary</b> <b>HS-PS1-7</b> Essential Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>	<p><b><u>Phenomenon</u></b> Alterations of pancake recipes</p> <p><b><u>Activities</u></b> Moles and Stoichiometry Quiz, Limiting Reactant Simulation, Limiting Reactant Worksheet</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.B: Chemical Reactions</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.5: Using Mathematics and Computational Thinking</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.5: Energy and Matter</p>	<ul style="list-style-type: none"> <li>• Mole</li> <li>• Molar ratio</li> <li>• Molar mass</li> <li>• Limiting reactant</li> <li>• Excess reactant</li> <li>• Yield(s)</li> <li>• Theoretical yield</li> <li>• Actual yield</li> <li>• Concentration</li> <li>• Conversion</li> <li>• Reversible</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> </ul>	<ul style="list-style-type: none"> <li>• Moles and Stoichiometry Quiz</li> <li>• Limiting Reactant Online Lab Write Up</li> </ul>
<p><b>Unit 6-</b> Chemical Reactions</p> <p>Week 11- Limiting Reactants</p>	<p><b>Key summary</b> <b>HS-PS1-7</b> Essential Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>	<p><b><u>Phenomenon</u></b> Creating Cherry Soda with Chemical Reactions</p> <p><b><u>Activities</u></b> Cherry Soda Video and Questions, Untouchable Key Lab, Limiting Reactant Exit Ticket, Unit 6 Blooket Pre-Test (Retake)</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.B: Chemical Reactions</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.5: Using Mathematics and</p>	<ul style="list-style-type: none"> <li>• Mole</li> <li>• Molar ratio</li> <li>• Molar mass</li> <li>• Limiting reactant</li> <li>• Excess reactant</li> <li>• Yield(s)</li> <li>• Theoretical yield</li> <li>• Actual yield</li> <li>• Concentration</li> <li>• Conversion</li> <li>• Reversible</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Pure substance</li> </ul>	<ul style="list-style-type: none"> <li>• Untouchable Key Lab Write Up</li> <li>• Exit Ticket</li> <li>• Pre-Test Retake</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
		Computational Thinking  <u><b>CCC (Crosscutting Concepts)</b></u> CC.5: Energy and Matter	<ul style="list-style-type: none"> <li>● Atomic number</li> <li>● Atomic symbol</li> <li>● Atomic weight</li> <li>● Ionic bond</li> <li>● Covalent bond</li> </ul>	
<p><b>Unit 7- Acids, Bases, and Solutions</b></p> <p>Week 12- Solubility and Concentration</p>	<p><b>Key summary</b>  <b>HS-PS1-3</b> 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><b>HS-PS1-5</b> 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><b>Phenomenon</b></u>            Creation of Caves, Growing Crystals</p> <p><u><b>Activities</b></u>            Unit 6 Exam, Concentration Simulation, Unit 7 Vocab Worksheet, Solutions Exit Ticket, Carlsbad Caverns Video and Questions, Unit 7 Blooket Pre-Test</p> <p><u><b>DCI (Disciplinary Core Ideas)</b></u>            PS1.A: Structure and Properties of Matter            PS1.B: Chemical Reactions</p> <p><u><b>SEPS (Science and Engineering Practices)</b></u>            SEP.3: Planning and Carrying Out Investigations            SEP.6: Constructing Explanations and Designing Solutions</p> <p><u><b>CCC (Crosscutting Concepts)</b></u>            CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>● Nucleus</li> <li>● Proton</li> <li>● Electron</li> <li>● Neutron</li> <li>● Electron cloud</li> <li>● Intramolecular force</li> <li>● Covalent bond</li> <li>● Ionic bond</li> <li>● intermolecular force</li> <li>● Electrostatic force</li> <li>● Electronegativity</li> <li>● Electron distribution</li> <li>● Polarity</li> <li>● Temporary polarity</li> <li>● Permanent polarity</li> <li>● Polarize</li> <li>● Surface area</li> <li>● Atomic radius</li> <li>● Atomic weight</li> <li>● Atomic mass</li> <li>● Solute</li> <li>● Solvent</li> <li>● Dissolve</li> <li>● Stored energy</li> <li>● Heat energy</li> <li>● Atomic arrangement</li> <li>● Conversion</li> <li>● Bond energy</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Concentration</li> <li>● Reaction rate</li> <li>● Activation energy</li> <li>● Catalyst</li> <li>● Enzyme</li> <li>● Equilibrium</li> </ul>	<ul style="list-style-type: none"> <li>● Unit 6 Exam</li> <li>● Unit 7 Pre-Test</li> <li>● Unit 7 Vocabulary Worksheet</li> <li>● Solutions Exit Ticket</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 7- Acids, Bases, and Solutions</b></p> <p>Week 13- Colligative Properties</p>	<p><b>Key summary</b>  <b>HS-PS1-3</b> 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><b>Phenomenon</b>            Antifreeze, Supersaturated Solutions, Salt on Icy Roads</p> <p><b>Activities</b>            Saltwater Solubility Lab (planning and post-lab), Colligative Property Exit Ticket, Ice Cream Lab, Solubility Curve Analysis Homework</p> <p><b>DCI (Disciplinary Core Ideas)</b>            PS1.A: Structure and Properties of Matter</p> <p><b>SEPS (Science and Engineering Practices)</b>            SEP.3: Planning and Carrying Out Investigations</p> <p><b>CCC (Crosscutting Concepts)</b>            CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>● Nucleus</li> <li>● Proton</li> <li>● Electron</li> <li>● Neutron</li> <li>● Electron cloud</li> <li>● Intramolecular force</li> <li>● Covalent bond</li> <li>● Ionic bond</li> <li>● intermolecular force</li> <li>● Electrostatic force</li> <li>● Electronegativity</li> <li>● Electron distribution</li> <li>● Polarity</li> <li>● Temporary polarity</li> <li>● Permanent polarity</li> <li>● Polarize</li> <li>● Surface area</li> <li>● Atomic radius</li> <li>● Atomic weight</li> <li>● Atomic mass</li> <li>● Solute</li> <li>● Solvent</li> <li>● Dissolve</li> </ul>	<ul style="list-style-type: none"> <li>● Saltwater Lab Prep Write Up</li> <li>● Saltwater Lab Post-Lab Write Up</li> <li>● Colligative Property Exit Ticket</li> </ul>
<p><b>Unit 7- Acids, Bases, and Solutions</b></p> <p>Week 14- Earth Day Activities and Intro to Acids and Bases</p>	<p><b>Key summary</b>  <b>HS-PS1-2</b> 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><b>Phenomenon</b>            Rock Candy, Piranha Solution (Acid dissolves chicken leg), Dissolving Gold</p> <p><b>Activities</b>            Rock Candy Lab, Silent Spring Reading and Ethics Discussions, Acid Videos and Questions, Solutions Quiz</p> <p><b>DCI (Disciplinary Core Ideas)</b>            PS1.B: Chemical Reactions</p>	<ul style="list-style-type: none"> <li>● Reversible</li> <li>● Atomic weight</li> <li>● Chemical bond</li> <li>● Electron sharing</li> <li>● Ion</li> <li>● Outer electron state</li> <li>● Energy level</li> <li>● Electron transfer</li> <li>● Concentration</li> <li>● Equilibrium</li> <li>● Endothermic</li> <li>● Exothermic</li> </ul>	<ul style="list-style-type: none"> <li>● Rock Candy Post-Lab Write Up</li> <li>● Acid Video Questions</li> <li>● Solutions Quiz</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
		<p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>● Stable</li> <li>● Combustion</li> <li>● Yield(s)</li> <li>● Flammability</li> <li>● Octet</li> </ul>	
<p><b>Unit 7- Acids, Bases, and Solutions</b></p> <p>Week 15- Identifying Acids and Bases in Reactions</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-2</b> 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><b><u>Phenomenon</u></b> Acids and Bases in Everyday Life</p> <p><b><u>Activities</u></b> Acid-Base Theories Exit Ticket, Acid-Base Pairs Worksheet, Acids and Bases Review Game, pH Simulations</p> <p><b><u>DCI (Disciplinary Core Ideas)</u></b> PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b> SEP.2: Developing and Using Models SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>● Proton</li> <li>● Electron</li> <li>● Neutron</li> <li>● Valence shell</li> <li>● Filled shell</li> <li>● Ion</li> <li>● Cation</li> <li>● Anion</li> <li>● Metal</li> <li>● Nonmetal</li> <li>● Metalloid</li> <li>● Group</li> <li>● Period</li> <li>● Family</li> <li>● Pure substance</li> <li>● Atomic number</li> <li>● Atomic symbol</li> <li>● Atomic weight</li> <li>● Ionic bond</li> <li>● Covalent bond</li> <li>● s, p, d, f orbitals</li> <li>● Electron configuration</li> <li>● Core electrons</li> <li>● Nucleus</li> <li>● Single, double, triple bond(s)</li> <li>● Molar mass</li> <li>● Atomic radius</li> <li>● Electronegativity</li> <li>● Reversible</li> <li>● Atomic weight</li> <li>● Chemical bond</li> <li>● Electron sharing</li> <li>● Ion</li> <li>● Outer electron state</li> <li>● Energy level</li> <li>● Electron transfer</li> <li>● Concentration</li> <li>● Equilibrium</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Stable</li> <li>● Combustion</li> <li>● Yield(s)</li> </ul>	<ul style="list-style-type: none"> <li>● Acid-Base Exit Ticket</li> <li>● pH Online Lab Write Up</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
<p><b>Unit 7- Acids, Bases, and Solutions</b></p> <p>Week 16- Calculating pH and pOH</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>Phenomenon</b> Life of a Goldfish, Color Changing Chemicals Using pH Indicators</p> <p><b>Activities</b> Fishtank Class Brainstorm Session, pH and pOH worksheet, Litmus Paper Lab, pH and pOH Quiz</p> <p><b>DCI (Disciplinary Core Ideas)</b> PS1.A: Structure and Properties of Matter</p> <p><b>SEPS (Science and Engineering Practices)</b> SEP.2: Developing and Using Models</p> <p><b>CCC (Crosscutting Concepts)</b> CC.1: Patterns</p>	<ul style="list-style-type: none"> <li>• Flammability</li> <li>• Octet</li>   <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> <li>• Family</li> <li>• Pure substance</li> <li>• Atomic number</li> <li>• Atomic symbol</li> <li>• Atomic weight</li> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• s, p, d, f orbitals</li> <li>• Electron configuration</li> <li>• Core electrons</li> <li>• Nucleus</li> <li>• Single, double, triple bond(s)</li> <li>• Molar mass</li> <li>• Atomic radius</li> <li>• Electronegativity</li> </ul>	<ul style="list-style-type: none"> <li>• pH and pOH worksheet</li> <li>• Litmus Paper Lab Write Up</li> <li>• pH and pOH Quiz</li> </ul>
<p><b>Unit 7- Acids, Bases, and Solutions</b></p> <p>Week 17- Titrations and Equilibrium</p>	<p><b>Key summary</b></p> <p><b>HS-PS1-1</b> 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><b>HS-PS1-2</b> Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms,</p>	<p><b>Phenomenon</b> Self-Undoing Reaction, Acid-Base Neutralization</p> <p><b>Activities</b> Reversible Reactions Online Lab, Acid-Base Equilibrium Online Lab, Titration Lab, Titration Curve Analysis Worksheet, Unit 7 Blookey Pre-Test (Retake), Unit 7 Exam</p>	<ul style="list-style-type: none"> <li>• Proton</li> <li>• Electron</li> <li>• Neutron</li> <li>• Valence shell</li> <li>• Filled shell</li> <li>• Ion</li> <li>• Cation</li> <li>• Anion</li> <li>• Metal</li> <li>• Nonmetal</li> <li>• Metalloid</li> <li>• Group</li> <li>• Period</li> </ul>	<ul style="list-style-type: none"> <li>• Reversible Reaction Online Lab Write Up</li> <li>• Acid-Base Equilibrium Online Lab Write Up</li> <li>• Titration Post-Lab Questions</li> <li>• Unit 7 Pre-Test Retake</li> <li>• Unit 7 Exam</li> </ul>

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
	<p>trends in the periodic table, and knowledge of the patterns of chemical properties.</p> <p><b>HS-PS1-5</b> 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><b>HS-PS1-6</b> Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.</p>	<p><b><u>DCI (Disciplinary Core Ideas)</u></b>            PS1.A: Structure and Properties of Matter            PS1.B: Chemical Reactions            ETS1.C: Optimizing the Design Solution</p> <p><b><u>SEPS (Science and Engineering Practices)</u></b>            SEP.2: Developing and Using Models            SEP.6: Constructing Explanations and Designing Solutions</p> <p><b><u>CCC (Crosscutting Concepts)</u></b>            CC.1: Patterns            CC.7: Stability and Change</p>	<ul style="list-style-type: none"> <li>● Family</li> <li>● Pure substance</li> <li>● Atomic number</li> <li>● Atomic symbol</li> <li>● Atomic weight</li> <li>● Ionic bond</li> <li>● Covalent bond</li> <li>● s, p, d, f orbitals</li> <li>● Electron configuration</li> <li>● Core electrons</li> <li>● Nucleus</li> <li>● Single, double, triple bond(s)</li> <li>● Molar mass</li> <li>● Atomic radius</li> <li>● Electronegativity</li> <li>● Reversible</li> <li>● Atomic weight</li> <li>● Chemical bond</li> <li>● Electron sharing</li> <li>● Ion</li> <li>● Outer electron state</li> <li>● Energy level</li> <li>● Electron transfer</li> <li>● Concentration</li> <li>● Equilibrium</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Stable</li> <li>● Combustion</li> <li>● Yield(s)</li> <li>● Flammability</li> <li>● Octet</li> <li>● Stored energy</li> <li>● Heat energy</li> <li>● Atomic arrangement</li> <li>● Conversion</li> <li>● Bond energy</li> <li>● Endothermic</li> <li>● Exothermic</li> <li>● Concentration</li> <li>● Reaction rate</li> <li>● Activation energy</li> <li>● Catalyst</li> <li>● Enzyme</li> <li>● Equilibrium</li> <li>● Surface area of reactants, dynamic</li> <li>● Thermal energy</li> <li>● Heat energy</li> </ul>	

Period	Standards and Performance Expectations	Suggested Activities and Resources 3D Dimensions	Critical Vocabulary	Assessments
			<ul style="list-style-type: none"> <li>• Atomic arrangement</li> <li>• Equilibrium</li> <li>• Bond energy</li> <li>• Endothermic</li> <li>• Exothermic</li> <li>• Catalyst</li> <li>• Chemical bond</li> <li>• Mole</li> <li>• Element</li> <li>• Compound</li> <li>• Concentration</li> <li>• Le Chatelier's principle</li> </ul>	
<b>Semester Final Exams</b>  Week 18- Finals	<b>Key summary</b>	<b><u>Phenomenon</u></b>  <b><u>Activities</u></b>  <b><u>DCI (Disciplinary Core Ideas)</u></b>  <b><u>SEPS (Science and Engineering Practices)</u></b>  <b><u>CCC (Crosscutting Concepts)</u></b>		