

## GIPS Chemistry Design Map

Units (in sequence)	Estimated Time Frame (days)	K-12 Program Strands With Corresponding Course/Grade Level Standards	K-12 Program Enduring Understandings (for content only)	K-12 Program Essential Questions (for content only)	Unit Assessments (note if optional)	C/GL Key Vocabulary Concepts
Unit <b>Water</b> Section A	15 days	<p><b>Physical Science</b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Investigate and analyze aspects of water chemistry including solubility, separation techniques, purification and treatment</p>	<p>The total amount of matter and energy remains constant, even though their form and location undergo continual change.</p> <p>The way matter can be separated determines what type of matter it is.</p> <p><b>See strand one for full text.</b></p>	<p>How does energy, matter, and/or momentum remain constant in a closed system?</p> <p>How do scientists distinguish between objects? What do they learn from the comparisons?</p>	Constructed Response Assessment	<p>hydrologic cycle</p> <p>state of matter</p> <p>mixtures</p> <p>matter</p> <p>density</p> <p>atom</p> <p>element</p> <p>compound</p> <p>atomic structure</p>
Unit <b>Water</b> Section B	18 days	<p><b>Physical Science</b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Investigate and distinguish between physical and chemical properties</p> <p>Describe and use atomic structure to determine reactivity, bonding, names and formulas</p>	<p>All matter is made up of relatively few kinds of basic materials combined in various ways.</p> <p>The way matter can be separated determines what type of matter it is.</p> <p>The characteristics of atomic or molecular structure determine the physical properties and the ways in which substances react.</p> <p><b>See strand one for full text.</b></p>	<p>How do scientists distinguish between objects? What do they learn from the comparisons?</p> <p>How do the properties of a substance determine its use?</p>	Constructed Response Assessment	<p>ion</p> <p>molecule</p> <p>chemical formula</p> <p>chemical equation</p> <p>ionic bond</p> <p>chemical reaction</p> <p>concentration</p> <p>pH</p> <p>periodic table</p> <p>physical properties/changes</p> <p>chemical properties/changes</p> <p>chemical reaction</p> <p>law of conservation of matter</p> <p>mole</p> <p>petroleum</p> <p>covalent bond</p> <p>kinetic molecular theory</p> <p>ideal gas laws</p>

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Unit <b>Water</b> Section C	18 days	<p><b><u>Physical Science</u></b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Investigate and analyze aspects of water chemistry including solubility, separation techniques, purification and treatment</p> <p><b><u>Life Science</u></b> <b>3.3 Ecosystems</b></p> <p>Describe and explain biological effects of environmental pollution on organisms</p>	<p>All matter is made up of relatively few kinds of basic materials combined in various ways.</p> <p>The way matter can be separated determines what type of matter it is.</p> <p>Organisms can survive only in environments in which their needs can be met</p> <p><b>See strand one for full text.</b></p>	<p>How do scientists distinguish between objects? What do they learn from the comparisons?</p> <p>How do the properties of a substance determine its use?</p> <p>How do organisms change, survive and adapt to their environments?</p>	<p>Performance Assessment: Solubility Curve Construction</p> <p>Inquiry Lab C. 11 Solvents</p> <p>Constructed Response Assessment</p>	
Unit <b>Water</b> Section D Putting it All Together	14 days	<p><b><u>Physical Science</u></b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Investigate and analyze aspects of water chemistry including solubility, separation techniques, purification and treatment</p>	<p>The way matter can be separated determines what type of matter it is.</p> <p>When two or more substances interact to form new substances, the properties of the new combinations may be very different from those of the old.</p> <p><b>See strand one for full text.</b></p>	<p>What information do I have? What information do I need? How do I get that information?</p> <p>How do I use data to support my thinking?</p> <p>Who is my audience? How does that affect the way I communicate data and ideas?</p> <p>How do scientists distinguish between objects? What do they learn from the comparisons?</p>	<p>Performance Assessment Fish Kill Essay</p> <p>Constructed Response Assessment</p>	

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<p style="text-align: center;"><b>Unit Materials Section A</b></p> <p style="text-align: center;"><b>Structure and uses</b></p>	13 days	<p><b><u>Physical Science</u></b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Analyze and identify evidence of chemical reactions</p> <p>Investigate and analyze aspects of water chemistry including solubility, separation techniques, purification and treatment</p> <p>Describe the effects of various factors on physical changes and chemical reactions</p> <p>Identify and use trends in the periodic table</p> <p>Investigate and distinguish between physical and chemical properties</p>	<p>All matter is made up of relatively few kinds of basic materials combined in various ways.</p> <p>The way matter can be separated determines what type of matter it is.</p> <p style="text-align: center;"><b>See strand one for full text.</b></p>	<p>How do scientists distinguish between objects? What do they learn from the comparisons?</p> <p>The properties of a substance determine its use?</p> <p>How does the structure of the atom affect the physical and chemical properties of the atom?</p>	<p>Performance Assessment 2A.7 "Grouping the Elements"</p> <p>Constructed Response Assessment</p>	
<p style="text-align: center;"><b>Unit Materials Section B</b></p> <p style="text-align: center;"><b>Structure and uses</b></p>	15 days	<p><b><u>Physical Science</u></b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Describe and use atomic structure to determine reactivity, bonding, names and formulas</p> <p>Investigate and distinguish between physical and chemical properties</p> <p>Identify and use trends in the periodic table</p>	<p>The Earth system is composed of interacting subsystems of the geosphere, hydrosphere, atmosphere, and biosphere.</p> <p>When two or more substances interact to form new substances, the properties of the new combinations may be very different from those of the old.</p> <p>The characteristics of atomic or molecular structure determine the physical properties and the way in which substances react.</p> <p>The way matter can be separated determines what type of matter it is.</p> <p style="text-align: center;"><b>See strand one for full text.</b></p>	<p>What are the parts of this system? How do they work together?</p> <p>How do scientists distinguish between objects? What do they learn from the comparisons?</p> <p>What causes a reaction? How do we predict reactions before they happen?</p> <p>How does the structure of the atom affect the physical and chemical properties of the atom?</p>	<p>Performance Assessments 2B.2 Metal Production vs Use Poster/ presentation and 2B.5 Inquiry Lab "Relative Reactivities of Metals"</p> <p>Constructed Response Assessment</p>	

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<p style="text-align: center;"><b>Unit Materials Section C</b></p> <p>Structure sand Uses</p>	24 days	<p><b><u>Physical Science</u></b> <b>2.3 Matter and Energy</b></p> <p>Write balanced chemical equations and do mass calculations</p> <p><b><u>Earth and Space Science</u></b> <b>4.1 Structure, History, &amp; Cycles</b></p> <p>Compare and contrast the difference between renewable and nonrenewable resources</p>	<p>The total amount of matter and energy remains constant, even though their form and location undergo continual change.</p> <p>All matter is made up of relatively few kinds of basic materials combined in various ways.</p> <p><b>See strand one for full text.</b></p>	<p>How does energy/matter remain constant even as it changes form?</p> <p>How do scientists distinguish between objects? What do they learn from the comparisons?</p>	Constructed Response Assessment	
<p style="text-align: center;"><b>Unit Material Section D</b></p> <p>Structures and Uses</p>	18 days	<p><b><u>Physical Science</u></b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Describe the effects of various factors on physical changes and chemical reactions</p>	<p>Materials within the Earth system have physical/chemical.</p> <p>The characteristics of atomic or molecular structure determine the chem./phys properties of a substance.</p> <p>When two or more substances interact to form new substances, the properties of the new combinations may be very different from those of the old.</p> <p><b>See strand one for full text.</b></p>	<p>What are the parts of this system? How do they work together?</p> <p>How do the properties of a substance determine its use?</p>	Performance Assessment: Inquiry Lab 2D "Copper Plating" <p style="text-align: center;">Constructed Response Assessment</p>	
<p style="text-align: center;"><b>Unit Petroleum Section A</b></p>	18 days	<p><b><u>Physical Science</u></b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Describe the effects of various factors on physical changes and chemical reactions</p>	<p>All matter is made up of relatively few kinds of basic materials combined in various ways.</p> <p>The characteristics of atomic or molecular structure determine the chem./phys properties of a substance.</p> <p><b>See strand one for full text.</b></p>	<p>How do scientists distinguish between objects? What do they learn from the comparisons?</p> <p>How does the structure of the atom affect the physical and chemical properties of the atom?</p>	Performance Assessment: Model Building <p style="text-align: center;">Constructed Response Assessment</p>	

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Unit <b>Air</b>  Chemistry and the Atmosphere	24 days	<p><b><u>Physical Science</u></b> <b>2.3 Matter and energy</b></p> <p>Write balanced chemical equations and do mass calculations</p> <p><b><u>Physical Science</u></b> <b>2.1 Chemical and Physical Properties of Matter</b></p> <p>Examine atmospheric gases with emphasis on the gas laws and kinetic molecular theory</p>	<p>The total amount of matter and energy remains constant, even though their form and location undergo continual change.</p> <p>All matter is made up of relatively few kinds of basic materials combined in various ways.</p> <p><b>See strand one for full text.</b></p>	<p>How does energy/matter remain constant even as it changes form?</p> <p>How do scientists distinguish between objects? What do they learn from the comparisons?</p>	<p>Performance Assessment 4A.2 Graphing Atmospheric Data</p> <p>Constructed Response Assessment</p>	