

**Thomas Edison EnergySmart Charter School**  
**Physical Science: Grade 5 – Unit 3 - Mixtures and Solutions**

<b>Unit Title:</b>	<b>Time Frame:</b>	<b>21<sup>st</sup> Century Theme</b>
Unit 2 Mixtures and Solutions	Second Marking period – 45 Days	<b>9.1-</b> Critical Thinking and Problem Solving Creativity and Innovation Collaboration, Teamwork, and Leadership Communication and Media Fluency
<b>Standard:</b>		
<ul style="list-style-type: none"> <li>● <b>5.2 Physical Science:</b> All students will understand that physical science principles, including fundamental ideas about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth systems science.</li> </ul>		
<b>Strand:</b>	<b>Cumulative Progress Indicator Number(s):</b>	
<ul style="list-style-type: none"> <li>● <b>Properties of Matter:</b> All objects and substances in the natural world are composed of matter. Matter has two fundamental properties: matter takes up space, and matter has inertia.</li> <li>● <b>Changes in Matter:</b> Substances can undergo physical or chemical changes to form new substances. Each change involves energy.</li> </ul>	<ul style="list-style-type: none"> <li>● <b>5.2.6.A.3</b> - Determine the identity of an unknown substance using data about intrinsic properties.</li> <li>● <b>5.2.6.B.1</b> - Compare the properties of reactants with the properties of the products when two or more substances are combined and react chemically.</li> </ul>	
<b>Essential Questions:</b>	<b>Enduring Understanding:</b>	
<ul style="list-style-type: none"> <li>● How do the properties of materials determine their use?</li> <li>● How does conservation of mass apply to the interaction of materials in a closed system?</li> </ul>	<ul style="list-style-type: none"> <li>● Pure substances have characteristic intrinsic properties, such as density, solubility, boiling point, and melting point, all of which are independent of the amount of the sample.</li> <li>● When a new substance is made by combining two or more substances, it has properties that are different from the original substances.</li> </ul>	
<b>Unit Learning Targets:</b> <i>The student will be able to....</i>	<b>Suggested Activities:</b> <i>Including Differentiated Strategies (DI)</i>	<b>Vocabulary</b>
<ul style="list-style-type: none"> <li>● Utilize various measurement tools, such as graduated cylinders, syringes, scales and beakers, in order to prepare students for lab experiments when</li> </ul>	<b>Foss: Mixtures and Solutions Kit:</b> <ul style="list-style-type: none"> <li>● Investigation 1: Separating Mixtures</li> </ul>	<b><u>Review previous cluster vocabulary:</u></b> <ul style="list-style-type: none"> <li>● evaporation</li> <li>● gas</li> </ul>

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<p>measuring mass and volume throughout the unit.</p> <ul style="list-style-type: none"> <li>● Use a screen, filter, or evaporation to separate mixtures based on their physical properties.</li> <li>● Describe the properties of mixtures and solutions, including concentration, solubility, and saturation.</li> <li>● Identify water and liquids as solvents and solids as solutes.</li> <li>● Compare the solubility of citric acid, sodium chloride, baking soda, and Epsom salt.</li> <li>● Compare equal volumes of two solutions and determine that they have different masses.</li> <li>● Differentiate between physical and chemical properties.</li> <li>● Identify evidence of a chemical reaction.</li> <li>● Define matter as anything that has volume and mass.</li> <li>● Collect, organize, and interpret the data that results from experiments,</li> <li>● Use appropriate safety equipment during lab activities.</li> <li>● Work safely and cooperatively with peers.</li> <li>● Create a table to record collected data.</li> <li>● Use mean, median, and mode to analyze collected data.</li> </ul>	<ul style="list-style-type: none"> <li>● <u>I</u> nvestigation 2: Reaching Saturation (See Grade 5 Science Intranet Folder for lab sheets)</li> <li>● <u>C</u> omplete Mystery Substance Activity (See Grade 5 Science Intranet Folder)</li> <li>● <u>I</u> nvestigation 3: Concentration</li> <li>● <u>C</u> omplete Mission Impossible Concentration Lesson (See Grade 5 Science Intranet Folder)</li> <li>● <u>I</u> nvestigation 4: Fizz Quiz</li> </ul> <p><b><u>Optional Activities:</u></b></p> <ul style="list-style-type: none"> <li>● <i>McGraw Hill</i> Quick Lab “Kitchen Colloids” pg. 346-347</li> </ul>	<ul style="list-style-type: none"> <li>● liquid</li> <li>● property</li> <li>● solid</li> </ul> <p><b><u>New key words:</u></b></p> <ul style="list-style-type: none"> <li>● change</li> <li>● chemical change</li> <li>● chemical reaction</li> <li>● concentration</li> <li>● crystal</li> <li>● dilute</li> <li>● dissolve</li> <li>● evaporation</li> <li>● mixture</li> <li>● physical change</li> <li>● precipitate</li> <li>● product</li> <li>● property</li> <li>● reactant</li> <li>● saturated solution</li> <li>● solubility</li> <li>● solute</li> <li>● solution</li> <li>● solvent</li> <li>● volume</li> </ul>
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<ul style="list-style-type: none"> <li>● Know that scientists are men and women from many cultures who have contributed to science and technology.</li> </ul>		
<p><b>Resource Materials</b></p> <ul style="list-style-type: none"> <li>● Houghton Mifflin: <i>The Nature of Matter</i>, Unit E, Level 4</li> <li>● FOSS: Mixtures and Solutions Kit</li> <li>● Power Points</li> </ul> <p>The below are from the State:          Annenberg Media’s Teachers’ Resources offer short video courses covering essential science content for K-6 teachers.  <a href="http://www.learner.org/resources/series200.html">http://www.learner.org/resources/series200.html</a></p>	<p><b>Assessments</b></p> <p>Written:</p> <ul style="list-style-type: none"> <li>● Quizzes (See Grade 5 Science Intranet Folder)</li> <li>● Written Responses to FOSS prompts</li> <li>● Science journal</li> <li>● Foss Summative Assessments</li> <li>● Benchmark Assessments</li> </ul>	
<p><b>Technology Integration</b></p> <ul style="list-style-type: none"> <li>● Publisher brochure</li> <li>● Glogs</li> <li>● Mystery Substance and Mission Impossible Concentration</li> <li>● Power Points (See Grade 5 Science Intranet Folder)</li> <li>● Videos: (See Grade 5 Science Intranet Folder)             <ul style="list-style-type: none"> <li>● Science Curriculum Video Clips (See Grade 5 Science Intranet Folder)                 <ul style="list-style-type: none"> <li>✓ <i>Physical Science: Mixtures and Solutions</i></li> <li>✓ <i>Mixtures: Together But Separate</i></li> </ul> </li> <li>● Houghton Mifflin: Science Video Series- Grade 4, Unit E and F:                 <ul style="list-style-type: none"> <li>✓ <i>Properties of Matter</i></li> <li>✓ <i>Changes in Matter</i></li> </ul> </li> <li>● Mr. Wizard’s World Science Video Library:                 <ul style="list-style-type: none"> <li>✓ <i>Heat Transfer</i></li> <li>✓ <i>Change of State</i></li> <li>✓ <i>Chemical Reactions</i></li> </ul> </li> <li>● Bill Nye Video Clips:                 <ul style="list-style-type: none"> <li>✓ <i>Chemical Reactions</i></li> <li>✓ <i>Forensics</i></li> </ul> </li> </ul> </li> </ul>	<p><b>Related Literature</b></p> <ul style="list-style-type: none"> <li>● <i>Bartholomew and the Oobleck</i> by Dr. Seuss</li> <li>● <i>The Ladder of Truth</i> (Leveled reader from McGraw Hill Reading Series)</li> </ul> <p>Houghton Mifflin Science Support Readers:</p> <ul style="list-style-type: none"> <li>● <i>Characteristics of Matter</i></li> <li>● <i>The Structure of Matter</i></li> <li>● <i>Electrical Energy</i></li> </ul>	

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