

<b>Topic: Beginning with Science</b>	<b>Learning Goals</b> <ul style="list-style-type: none"> <li>• Explain the scientific principles of earth space science</li> <li>• Distinguish the processes and tools used to investigate phenomena</li> <li>• Explain and distinguish forces and physical/chemical changes affect matter on Earth</li> </ul>
<b>1.01 Welcome to Earth Space Science</b>	<b>At the end of this lesson, you will be able to:</b> <ul style="list-style-type: none"> <li>• define Earth as a system</li> <li>• identify and describe the spheres of Earth</li> </ul>
Define: <ul style="list-style-type: none"> <li>• Hydrosphere</li> <li>• Biosphere</li> <li>• Geosphere</li> <li>• Exosphere</li> <li>• Atmosphere</li> <li>• Cryosphere</li> </ul>	
<b>1.02 Scientific Investigation</b>	<b>At the end of this lesson, you will be able to:</b> <ul style="list-style-type: none"> <li>• know and apply the scientific method to a variety of scenarios</li> <li>• identify which questions can be answered by science</li> <li>• identify science vs. pseudoscience</li> <li>• design an experiment based on scientific questions</li> </ul>
What does try to explain?	
What are the 5 qualifications for something to be experimented on scientifically?	<ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>
What is the Scientific Method?	
Define: <ul style="list-style-type: none"> <li>• Hypothesis</li> <li>• Theory</li> <li>• Law</li> </ul>	
Science or Pseudoscience	
How are Science and Pseudoscience different?	

What is an example of pseudoscience?																						
<b>1.03 Theories and Laws</b>	<p><b>At the end of this lesson, you will be able to:</b></p> <ul style="list-style-type: none"> <li>• Differentiate between scientific theories and laws</li> <li>• Recognize that theories do not become laws and laws do not become theories</li> <li>• Identify theories and laws specific to Earth Space Science</li> <li>• Recognize how models explain and laws in science</li> </ul>																					
Define: • Theory																						
Define: • Laws																						
What common misconception is there between theories and laws?																						
What are models in science important?																						
<b>1.04 Measurement</b>	<p><b>At the end of this lesson, you will be able to:</b></p> <ul style="list-style-type: none"> <li>• Determine appropriate measurements for different scenarios</li> <li>• Explain why we use metric measurement units in science</li> <li>• Determine appropriate graphing strategies for a variety of scenarios</li> </ul>																					
What are some ways we can quantify matter?	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> </ol>																					
What is the difference between 32°C and 32°F?																						
Metric System versus U.S.  (fill in the comparison chart)	<table border="1"> <thead> <tr> <th></th> <th>Metric</th> <th>U.S.</th> </tr> </thead> <tbody> <tr> <td><b>Length</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><b>Weight</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><b>Mass</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><b>Speed</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><b>Volume</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><b>Temperature</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>		Metric	U.S.	<b>Length</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Weight</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Mass</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Speed</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Volume</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Temperature</b>	<input type="checkbox"/>	<input type="checkbox"/>
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Define: • Mass • Weight • Temperature • Volume • Length • Time																						

<p>Define:</p> <ul style="list-style-type: none"> <li>• Precision</li> <li>• Accuracy</li> </ul>	<p>Accurate Precise</p> <p>Not Accurate Precise</p> <p>Accurate Not Precise</p> <p>Not Accurate Not Precise</p>
<p>What are the eight types of graphs?</p>	<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> <li>6.</li> <li>7.</li> <li>8.</li> </ol>
<p><b>1.05 Atomic Structure and Forces</b></p>	<p>At the end of this lesson you will be able to:</p> <ul style="list-style-type: none"> <li>• Describe subatomic particles</li> <li>• Identify properties of protons, neutrons, and electrons</li> <li>• Describe changes in atomic theory over time</li> <li>• Identify major atomic bonds</li> <li>• Identify strong and weak nuclear forces</li> </ul>
<p>Define</p> <ul style="list-style-type: none"> <li>• Atom</li> <li>• Chemical properties</li> <li>• Physical properties</li> <li>• Subatomic particles</li> </ul>	
<p>History of Atomic Theory</p>	<p>Name the scientist and their contribution to Atomic Theory</p> <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> <li>5.</li> <li>6.</li> </ol>

<p>Periodic Table (label/color)</p> <ul style="list-style-type: none"> <li>• Rows</li> <li>• Columns</li> <li>• Atomic Number</li> <li>• Atomic Mass</li> <li>• Symbol</li> <li>• Columns</li> <li>• Metals</li> <li>• Nonmetals</li> <li>• Metalloids</li> <li>• Rare Earth Elements</li> <li>• Noble Gases</li> </ul>	<p>7.</p> <p>8 Oxygen 15.999</p>
<p>Define</p> <ul style="list-style-type: none"> <li>• Bond</li> <li>• Ionic Bond</li> <li>• Covalent Bond</li> </ul>	
<p>What are the four fundamental forces?</p>	<p>1. 2. 3. 4.</p>
<p><b>1.06 Matter and Energy</b></p>	<p>At the end of this lesson you will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the four phases of matter</li> <li>• Describe heat as energy transferred by convection, conduction and radiation</li> <li>• Explain the connection of heat energy to change in temperature and states of matter</li> </ul>
<p>Define</p> <ul style="list-style-type: none"> <li>• Physical properties</li> <li>• Law of Conservation of Matter</li> </ul>	

States of Matter  
(fill in the table using the interactive in the lesson on page 2 of Lesson 1.06)

States of Matter	Particle Arrangement	Particle Motion	Example

Chemical versus Physical changes

List some examples of physical changes:

List some examples of chemical changes:

Define

- Conservation of Energy
- Types of Energy
- Gravitational Potential
- Nuclear
- Mechanical
- Electrical
- Elastic Potential
- Radiant
- Chemical
- Thermal

What are the three main types of Energy transfers

- 1.
- 2.
- 3.

Phase Changes

(label each arrow with the respective phase change)

- Melting
- Freezing
- Boil/Evaporate
- Condensation
- Sublimation



