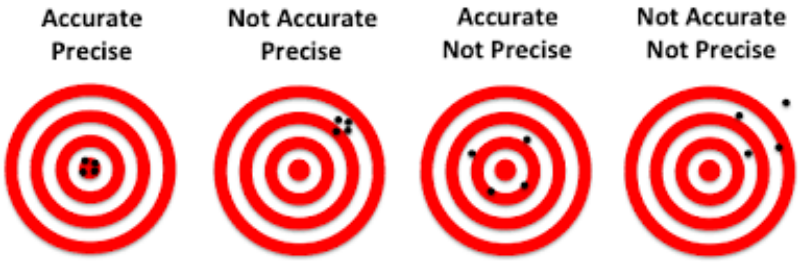
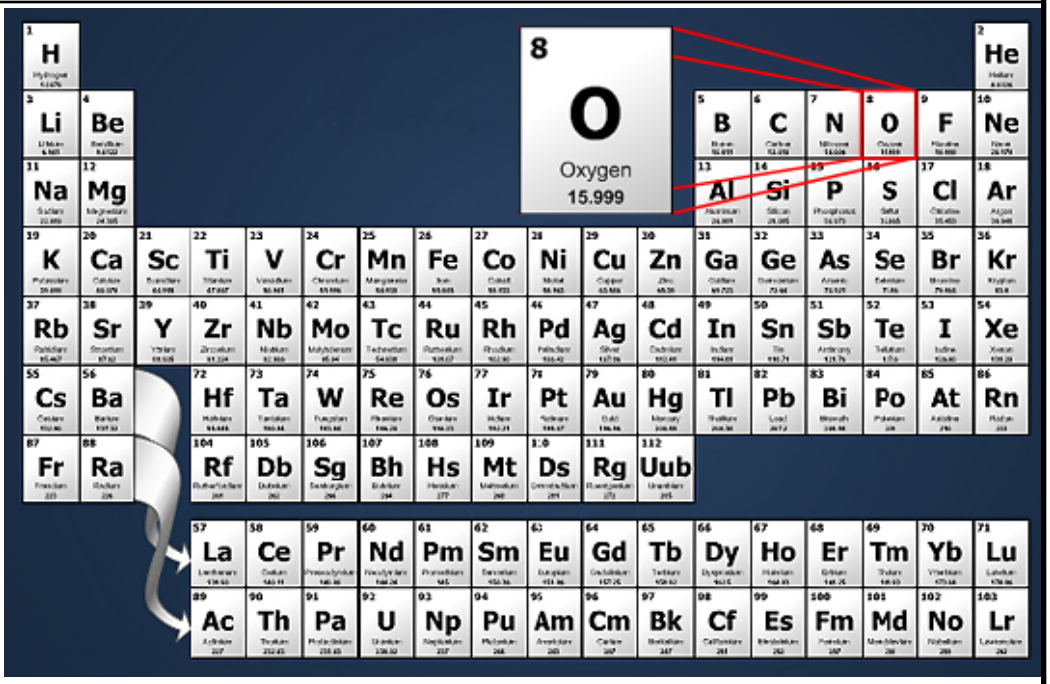
Topic: Beginning with Science	**Learning Goals** • Explain the scientific principles of earth space science • Distinguish the processes and tools used to investigate phenomena • Explain and distinguish forces and physical/chemical changes affect matter on Earth
1.01 Welcome to Earth Space Science	**At the end of this lesson, you will be able to:** • define Earth as a system • identify and describe the spheres of Earth
Define:	
• Hydrosphere • Biosphere • Geosphere • Exosphere • Atmosphere • Cryosphere	
1.02 Scientific Investigation	**At the end of this lesson, you will be able to:** • know and apply the scientific method to a variety of scenarios • identify which questions can be answered by science • identify science vs. pseudoscience • design an experiment based on scientific questions
What does try to explain?	
What are the 5 qualifications for something to be experimented on scientifically?	• • • • •
What is the Scientific Method?	
Define:	
• Hypothesis • Theory • Law	
Science or Pseudoscience	
How are Science and Pseudoscience different?	

<table>
<tr><td>What is an example of pseudoscience?</td><td></td></tr>
<tr><td>1.03 Theories and Laws</td><td>At the end of this lesson, you will be able to:
Differentiate between scientific theories and laws
Recognize that theories do not become laws and laws do not become theories
Identify theories and laws specific to Earth Space Science
Recognize how models explain and laws in science</td></tr>
<tr><td>Define:
Theory</td><td></td></tr>
<tr><td>Define:
Laws</td><td></td></tr>
<tr><td>What common misconception is there between theories and laws?</td><td></td></tr>
<tr><td>What are models in science important?</td><td></td></tr>
<tr><td>1.04 Measurement</td><td>At the end of this lesson, you will be able to:
Determine appropriate measurements for different scenarios
Explain why we use metric measurement units in science
Determine appropriate graphing strategies for a variety of scenarios</td></tr>
<tr><td>What are some ways we can quantify matter?</td><td>1.
2.
3.
4.
5.</td></tr>
<tr><td>What is the difference between 32℃ and 32℉ ?</td><td></td></tr>
<tr><td>Metric System versus U.S.

(fill in the comparison chart)</td><td><table><tr><td></td><td>Metric</td><td>U.S.</td></tr><tr><td>Length</td><td></td><td></td></tr><tr><td>Weight</td><td></td><td></td></tr><tr><td>Mass</td><td></td><td></td></tr><tr><td>Speed</td><td></td><td></td></tr><tr><td>Volume</td><td></td><td></td></tr><tr><td>Temperature</td><td></td><td></td></tr></table></td></tr>
<tr><td>Define:
Mass
Weight
Temperature
Volume
Length
Time</td><td></td></tr>
</table>

Define: • Precision • Accuracy	
What are the eight types of graphs?	1. 2. 3. 4. 5. 6. 7. 8.
1.05 Atomic Structure and Forces	At the end of this lesson you will be able to: • Describe subatomic particles • Identify properties of protons, neutrons, and electrons • Describe changes in atomic theory over time • Identify major atomic bonds • Identify strong and weak nuclear forces
Define • Atom • Chemical properties • Physical properties • Subatomic particles	
History of Atomic Theory	Name the scientist and their contribution to Atomic Theory 1. 2. 3. 4. 5. 6.

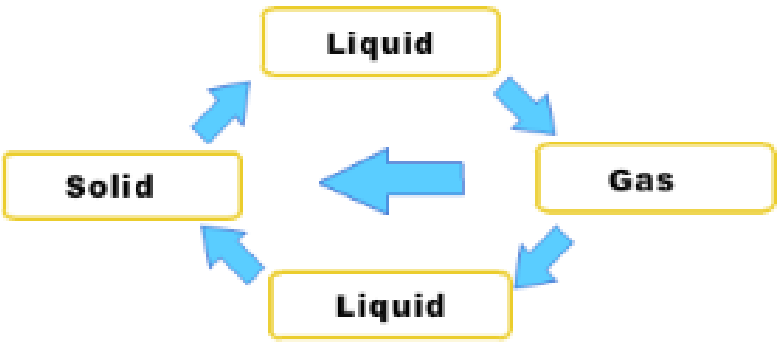
	7.
Periodic Table (label/color) • Rows • Columns • Atomic Number • Atomic Mass • Symbol • Columns • Metals • Nonmetals • Metalloids • Rare Earth Elements • Noble Gases	
Define • Bond • Ionic Bond • Covalent Bond	
What are the four fundamental forces?	1. 2. 3. 4.
1.06 Matter and Energy	At the end of this lesson you will be able to: • Identify the four phases of matter • Describe heat as energy transferred by convection, conduction and radiation • Explain the connection of heat energy to change in temperature and states of matter
Define • Physical properties • Law of Conservation of Matter	

<table>
<tr>
<td>States of Matter
(fill in the table using the interactive in the lesson on page 2 of Lesson 1.06)</td>
<td>
<table>
<tr><th>States of Matter</th><th>Particle Arrangement</th><th>Particle Motion</th><th>Example</th></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>
</td>
</tr>
<tr>
<td>Chemical versus Physical changes</td>
<td>List some examples of physical changes:

List some examples of chemical changes:</td>
</tr>
<tr>
<td>Define
● Conservation of Energy
Types of Energy
● Gravitational Potential
● Nuclear
● Mechanical
● Electrical
● Elastic Potential
● Radiant
● Chemical
● Thermal</td>
<td></td>
</tr>
<tr>
<td>What are the three main types of Energy tranfers</td>
<td>1.

2.

3.</td>
</tr>
<tr>
<td>Phase Changes

(label each arrow with the respective phase change)
● Melting
● Freezing
● Boil/Evaporate
● Condensation
● Sublimation</td>
<td>
</td>
</tr>
</table>