

**Unit # - 1 – Geology (9 weeks)**

<b>Standards Addressed</b>	<b>Student Learning Objectives for this Unit</b>	<b>Content Skills and Knowledge</b>	<b>Learning Activities and Instructional Strategies</b>
<p>NSES Standards: Motion &amp; Forces Science as Inquiry Science &amp; Technology History &amp; Nature of Science</p> <p>PA STEE Standards: 3.2.7.A (sci. k) 3.2.7.B (app k) 3.4.7.C (force &amp; motion) 3.4.7.B (e ht trn) 3.1.7.B (models) 3.7.7.B (instr)</p> <p>1.2 read crit 1.4 writing 1.8 presentation</p> <p>2.2 comp/estimation 2.3 measurement/est 2.5 prob solving 2.6 data analysis</p>	<p>Standard: Structure of the Earth System Fundamental concepts and principles that underlie this standard include:</p> <ul style="list-style-type: none"> <li>▪ The solid earth is layered with a lithosphere; hot, convecting <b>mantle</b>; and dense, metallic <b>core</b>.</li> <li>▪ <b>Lithospheric</b> plates on the scales of continents and oceans constantly move at rates of centimeters per year in response to movements in the mantle. Major geological events, such as <b>earthquakes</b>, <b>volcanic eruptions</b>, and <b>mountain building</b>, result from these plate motions.</li> <li>▪ Landforms are the result of a combination of constructive and destructive forces. Constructive forces include crustal deformation, volcanic eruption, and deposition of sediment, while destructive forces include <b>weathering</b> and <b>erosion</b>.</li> <li>▪ Some changes in the solid earth can be described as the "<b>rock cycle</b>." Old rocks at the earth's surface weather, forming sediments that are buried, then compacted, heated, and often recrystallized into new rock. Eventually, those new rocks may be brought to the surface by the forces that drive plate motions, and the rock cycle continues.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>▪ Inner and outer core, mantle, and plates</li> <li>▪ Theory of continental drift; <b>plate tectonics</b></li> <li>▪ Mid-ocean ridges, ocean floor spreading transform faults, trenches, lithosphere</li> <li>▪ Divergent / convergent boundaries</li> <li>▪ Convection currents</li> <li>▪ Magma, lava, vent</li> <li>▪ Types: Cinder, Composite, Shield</li> <li>▪ Zones of Volcano and Earthquakes</li> <li>▪ Seismic waves: Primary, Secondary, Surface</li> <li>▪ Seismograph and Richter Scale</li> <li>▪ Agents of weathering and erosion</li> <li>▪ Properties of Minerals</li> <li>▪ Description and formation of igneous, metamorphic and sedimentary rocks</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>▪ Create and interpret scale drawings</li> <li>▪ Learn the use of new instruments and equipment</li> <li>▪ Adjusting variables to predict the effect on a system</li> <li>▪ Mineral Key</li> <li>▪ Use Tools/Techniques of Geology</li> </ul>	<p><b>Labs or Demonstrations:</b> Famous Rock Groups (Holt OSP) Crystal Growth Hard Rock Chronicles Convection Connection</p> <p><b>Readings:</b> Section Directed Readings (Holt OSP) (these are provided for every section in the text)</p> <p><b>Worksheets:</b> Minerals of the Earth's Crust (Holt OSP) Mineral Hunt Between a Rock and a Hard Place Rocks: Mineral Mixtures</p> <p><b>Technology Links</b></p> <ul style="list-style-type: none"> <li>▪ This "learning tool is called <a href="#">Virtual Courseware: Earthquake</a>. It is a tremendous example of web based tools combined with strong content and design.</li> <li>▪ This well done "learning tool" is from the United States Geologic Survey (USGS). This data rich and accessible site is called the <a href="#">Earthquakes Hazards Program - Northern California</a>. The <a href="#">real time earthquake maps</a> are especially good for students to see and use in their studies.</li> <li>▪ For more web resources:</li> <li>▪ <a href="http://www.learningscience.org/earths_ci.htm">http://www.learningscience.org/earths_ci.htm</a></li> </ul>