


## 8<sup>th</sup> Grade Science Curriculum Bundle #2

<b>Title</b>		<b>Suggested Dates</b>
Energy in Motion		9/14-10/2 (14 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
Energy can take many forms but the total energy in a system is constant. Radiation, conduction and convection transfer energy through Earth’s systems.	How is the transfer of energy controlled by the conservation of energy and by the tendency toward disorder? What happens when energy interacts with matter? How are matter and energy configured and reconfigured?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
<p><b>8.10 The student knows that complex interactions occur between matter and energy.</b></p> <p>8.10A Illustrate interactions between matter and energy including specific heat.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Specific heat</li> <li>--- Heat and Pressure of a gas (relate to particle model)</li> <li>--- States of Matter</li> <li>--- Thermal energy</li> <li>--- Temperature</li> <li>--- Law of conservation of energy</li> <li>--- Thermal energy transfer by radiation, convection, and conduction (relate to particle model).</li> <li>--- Melting point/freezing point/boiling point</li> <li>---Evaporation/condensation/sublimation melting/crystallization</li> <li>--- Phase change diagrams</li> </ul> <p><u>Teacher Note:</u> Treatment of specific heat should be conceptual and include experiences to illustrate that:</p> <ul style="list-style-type: none"> <li>• different materials respond differently to heat transfer ie., some heat up more quickly than others</li> <li>• the temperature change of an object depends on its mass, the heat supplied, and its composition</li> </ul> <p><u>Teacher Note:</u> Plan for re-teaching of 6.9A, regarding complex energy transformations.</p>	<p><b><u>VOCABULARY:</u></b> physics, physicist, mass, density, volume, potential energy, kinetic energy, energy transformation, chemical energy, electrical energy, thermal energy, atomic, energy, light energy, sound energy, mechanical energy, evaporation, matter, convection, conduction, condensation, sublimation, radiation, law of conservation, calories, and specific heat</p> <p>AVID Activity- Writing in Science pages 22-23 “Pre-write and Quickwrite”</p> <p><b><u>CORE ACTIVITY:</u></b> LTF #24: Molecular motion: Are you Current on Convection? Life/Earth p. 530</p> <p><b><u>TECHNOLOGY:</u></b> Keeping Warm (Internet activity)</p> <p>Law of Conservation of Matter (CD)</p> <p>LTF #25: Evaporation and Condensation Life/Earth p. 540</p> <p>LTF #3: A Cool Chemical Reaction Chem/Physics p. 266</p> <p><b><u>Uncovering Student Ideas in Science,</u></b> Keeley. Vol. 2 #10, Ice-Cold Lemonade</p>

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		<p>Heat Movement</p> <p>Cold Stuff</p> <p>Graphic Organizers: Energy and Energy Transfer</p> <p>Save the Cube</p> <p>Energy Outline Review</p>
<p><b>8.1 The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.</b></p> <p>8.1A Demonstrate safe practices during field and laboratory investigations.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Lab Cleanup Procedures</li> <li>--- Chemical and waste disposal</li> <li>--- Equipment cleaning and storage</li> <li>--- Safety contract</li> </ul> <p>In accordance with the Texas Safety Standards:  <a href="#">Pflugerville ISD :: Online Curriculum :: Science</a></p> <p><u>Teacher Note:</u> Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p><a href="#">Texas Safety Standards</a></p>
<p><b>8.1 The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.</b></p> <p>8.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Lab material disposal</li> <li>--- Recycling</li> </ul>	
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2A Plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology.</p>	<p>Such as:</p> <ul style="list-style-type: none"> <li>--- Design their own experiments</li> <li>--- Emphasis should be on scientific methods and should build understanding of the variety of methods and their suitability for various tasks.</li> </ul> <p><u>Teacher Note:</u> It is recommended that students create and design at least 2 labs/experiments.</p>	<p>AVID Activity- Writing in Science pages 55-94  “Experimental Design Lab Report Activities”</p>
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2B Collect information by observing and measuring.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Measuring mass and volume to calculate density</li> <li>--- Measuring temperature with thermometer</li> <li>--- Using dimensional analysis to convert from English to metric units within the temperature scale and units of energy such as calories and joules.</li> <li>--- Pre-AP: Emphasis on using probeware in a variety of</li> </ul>	<p><b><u>CORE ACTIVITY:</u></b> Coin Operated (ATE p. 653)</p> <p>Density Power point</p> <p>Density Practice Sheet</p> <p>Observing Densities Lab</p>

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	<p>situations</p> <p><u>Teacher Note:</u> Measurement exercises should progress across the middle school grade levels and begin by developing conceptual understanding. In 8<sup>th</sup> grade, students can begin to convert from one unit to another.</p>	<p>Dunk For Density</p> <p>AVID Activity- Writing in Science pages 26-28 “ Observation Narrative”</p>
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2C Organize, analyze, evaluate, make inferences and predict trends from direct and indirect evidence.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Graph interpretation and extrapolation</li> <li>--- Predicting outcomes based on data tables</li> </ul>	<p>AVID Activity- Writing in Science pages 29-30 “Comparative Analysis”</p>
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2D Communicate valid conclusions.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Experimental conclusions</li> <li>--- Supporting conclusions with data</li> <li>--- Analyze error sources and fix experiment to reduce outside variables</li> <li>--- Graph/Chart/Table extrapolation for conclusion</li> <li>--- Analysis of graphs</li> </ul>	<p>AVID Activity- Reading in Science pages 111-132 “ Additional Active Reading Graphic Organizers”</p>
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2E Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.</p>	<p>Such as:</p> <ul style="list-style-type: none"> <li>--- Bar graphs, line graphs, pie charts, data tables and determine which is best for each set of data.</li> </ul>	
<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3A Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Critique a conclusion of a modeled experiment.</li> </ul> <p><u>Teacher Note:</u> Current event analysis that critiques a scientific explanation. Relate to labs throughout the year. Should emphasize the nature of scientific explanations: testability, repeatability, evidence, and predictive nature.</p>	
<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3B Draw inferences based on information related to promotional materials for products and services.</p>	<p>Such as:</p> <ul style="list-style-type: none"> <li>--- interpreting product labels and calorie consumption</li> </ul>	<p>What’s the score? @ <a href="http://www.Teamnutrition.usda.gov">www.Teamnutrition.usda.gov</a></p> <p>What’s on the Label? or Product Label Warm-up</p> <p>Holt Math Skills For Science #38-Knowing Nutrition</p> <p><b>Science Graphing Pack</b> -Is Cereal Good For You Graph</p>

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<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3C Represent the natural world using models and identify their limitations.</p>	<p><b>Including:</b>            --- Distinguish between limitations and advantages of models</p> <p><b>Such as:</b>            --- Molecular phase change models</p> <p><i>Use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature.</i></p> <p><i>Identify advantages and limitations of models such as size, scale, properties, and materials.</i></p>	<p><b><u>CORE ACTIVITY:</u></b> Graphic Organizer-Models</p>
<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3D Evaluate the impact of research on scientific thought, society, and the environment.</p>	<p><b><u>Teacher Note:</u></b> Do a current event impact analysis that looks at how scientific research has impacted thought, society and the environment. Such as why is “being green” and using alternative energy sources so important today.</p>	<p><b>Science Graphing Pack</b>            -What is a Landfill Graph            -Energy Use In the U.S. Graph</p> <p><b><u>AVID Activity:</u></b> Writing in Science page 24 “Brief Autobiography”.</p>
<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3E Connect Grade 8 science concepts with the history of science and contributions of scientists.</p>	<p><b>Such as:</b>            ---Kelvin, Fahrenheit</p>	
<p><b>8.4 The student knows how to use a variety of tools and methods to conduct science inquiry.</b></p> <p>8.4A Collect, record, and analyze information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, water test kits, and timing devices.</p>	<p><i>Use appropriate tools to collect, record, and analyze information, including lab journals/notebooks, anemometers, psychrometers, spectrosopes, and other equipment as needed to teach the curriculum.</i></p>	
<p><b>8.4 The student knows how to use a variety of tools and methods to conduct science inquiry.</b></p> <p>8.4B Extrapolate from collected information to make predictions.</p>	<p><b>Such as:</b>            --- extrapolating using graph and data tables to predict expected results.</p>	