



## 8<sup>th</sup> Grade Science Curriculum Bundle #4

<b>Title</b>	 	<b>Suggested Dates</b>
Matter: Interactions and Reactions		Oct 25 – Nov 12 (15 days)

Big Idea/Enduring Understanding	Guiding Questions
The physical and chemical properties of substances are determined by their atomic and molecular structures.	<p>How are chemical and physical properties of matter related to the structure of matter?</p> <p>Why do chemists use chemical symbols, formulas and equations?</p> <p>What causes chemical reactions that affect our daily lives?</p>

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>8.5 Matter and energy. The student knows that matter is composed of atoms and has chemical and physical properties. The student is expected to:</b></p> <p><b>8.5D</b> recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts</p>	<p><b>Including:</b></p> <p>---Use formulas to represent a chemical reaction</p> <ul style="list-style-type: none"> <li>• Subscript</li> <li>• Coefficient</li> <li>• Yields</li> <li>• Product</li> <li>• Reactant</li> </ul> <p>---Classify substances as</p> <ul style="list-style-type: none"> <li>• Elements</li> <li>• Compounds</li> </ul> <p>---Differentiate between</p> <ul style="list-style-type: none"> <li>• Elements</li> <li>• Compounds</li> <li>• Molecules</li> <li>• Atoms</li> </ul> <p><u>Teacher Notes:</u> Plan to review 6.5B, recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere.</p>	<p><b>Textbook: pp 115-116</b>  <b><u>VOCABULARY:</u></b> element, compound, molecule, subscript, coefficient, yield, product, reactant, precipitate, catalyst, inhibitor, tarnish, oxidation, chemical equations, balanced equation, chemical change, physical change, Law of Conservation of Mass, and equilibrium.</p> <p><b><u>Assessment:</u></b>                      Structure and Properties of Matter</p> <p><b><u>Activities:</u></b>                      Counting Atoms In Compounds <b>CORE</b>                      Elements and Compounds Venn Diagram <b>CORE</b>                      Atoms, Elements, and Molecules Practice <b>CORE</b>                      Counting Atoms 1                      Counting Atoms 2                      Counting Atoms Worksheet</p> <p><b>PreAP:</b>                      Discuss Covalent and Ionic Bonds                      Bonding Power Point                      Bonding Basics                      Bonding Basics-Covalent Bonds                      Bonding Basics-Ionic Bonds                      Bond with a Class Mate @ <a href="http://www.Sciencespot.net">www.Sciencespot.net</a></p>

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<p><b>8.5 Matter and energy. The student knows that matter is composed of atoms and has chemical and physical properties. The student is expected to:</b></p> <p><b>8.5E</b> investigate how evidence of chemical reactions indicate that new substances with different properties are formed</p>	<p><b>Including:</b>          ---Recognize that formulas and equations express what happens in a chemical reaction</p> <p>--- Observe and recognize signs of chemical change:</p> <ul style="list-style-type: none"> <li>• Color change</li> <li>• Odor</li> <li>• Precipitate formation</li> <li>• Production of a gas</li> </ul> <p><b>Teacher Note:</b> Plan to review 7.6B, distinguish between physical and chemical changes in matter in the digestive systems.</p> <p>Substances react chemically in characteristic ways with other substances to form new substances with different characteristic properties.</p> <p>When substances interact to form new substances, the atoms that make up the molecules of the original substances combine in new ways and are made up of the same set of elements.</p>	<p><b>Textbook: pp 114, 117-118</b></p> <p><b>Assessment:</b>  <b>Can also use the following as a pre-assessment:</b>  <b>Uncovering Student Ideas in Science</b>, Keeley. Vol. 1, #12, The Rusty Nails</p> <p><b>Activities:</b>          LTF #3: A Cool Chemical Reaction Chem/Physics p. 270 <b>CORE</b>          Fast Rusting (Demo)          Chemical Reactions Lab          Chemical Changes Graphic Organizer          Chemical or Physical Change          Bagful of Chemicals Station Lab          Its in the Bag Lab          Marshmallow Puff Man (physical/chemical change)</p> <p><b>Technology: Vernier CBL Labs</b>          #15 How Low Can You Go?</p> <p><b>PreAP:</b>          Discuss Energy change as endothermic and exothermic</p>
<p><b>8.5 Matter and energy. The student knows that matter is composed of atoms and has chemical and physical properties. The student is expected to:</b></p> <p><b>8.5F</b> recognize whether a chemical equation containing coefficients is balanced or not and how that relates to the law of conservation of mass.</p>	<p>---Law of conservation of mass</p> <ul style="list-style-type: none"> <li>• If the number of atoms stays the same no matter how the same atoms are rearranged, then their total mass stays the same.</li> <li>• No matter how substances within a closed system interact with one another, or how they combine, break apart, the total mass of the system remains the same.</li> </ul> <p>---Count atoms to determine if chemical equation is balanced or not. At this grade level, items that include chemical equations will focus on identifying rearrangement of atoms.</p> <p><b>Teacher Note:</b> Students will not be required to balance chemical equations. Pre-AP extension may include balancing equations and differentiating between chemical reactions such as single and double replacement, decomposition and synthesis.</p>	<p><b>Textbook: pp 118-120</b></p> <p><b>Activities:</b>          Recognizing Balanced and Unbalanced Equations <b>CORE</b>          Balanced Budget Chemistry          Mass Transit (Conservation of Mass)          Law of Conservation of Matter          Balancing Chemical Equations Activity          Balancing Equation Table</p> <p><b>PreAP:</b>          Balancing Act <b>CORE</b>          Balancing Equation Challenge          Balancing Equations 1 and 2          Formula Balance          Balancing Equations</p> <p><b>Holt Math Skills for Science</b>          #50 Balancing Chemical Equations</p>

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<p><b>8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</b></p> <p><b>8.3B</b> use models to represent aspects of the natural world such as an atom, <b>a molecule</b>, space, or a geologic feature</p>	<p><b>Including:</b> ---Molecular models</p> <p><u>Teacher Note:</u> Other listed models will be addressed in other bundles.</p>	<p><b>Activity:</b> Making Molecule Lab <b>CORE</b></p>
<p><b>8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</b></p> <p><b>8.3C</b> identify advantages and limitations of models such as size, scale, properties, and materials;</p>	<p><b>Including:</b> ---Distinguish between limitation and advantages of models.</p> <p>Such as: Molecular models</p> <p><u>Teacher Note:</u> Plan to review 7.6C, recognize how large molecules are broken down into smaller molecules such as carbohydrates can be broken down into sugars.</p>	<p><b>Activity:</b> Making Molecule Lab <b>CORE</b></p>