

8th Grade Science Curriculum Bundle #3



Title	Suggested Dates
Matter: Its Structure and Properties	Oct 4 – Oct 22 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
Everything in the universe is made up of atoms which are in turn made up of protons, neutrons and electrons. The subatomic particle configuration determines how different atoms make different elements.	How is it that everything is made from the elements on the periodic table? What makes each atom/element unique? How do observable properties of matter enable us to determine the structure of atoms?

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>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:</p> <p>8.5A describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud</p>	<p>Including: ---States of Matter Parts: ---Neutrons ---Protons ---Electrons</p> <ul style="list-style-type: none"> • Dense • Electron cloud • Energy level • Empty space • Moving electrons • Electron configuration (2-8-8-2) up to atomic number 20 <p>---Electron cloud ---Nucleus ---Mass comparison and location of subatomic particles</p> <p><u>Teacher Note:</u> Describe structure and parts in elements up to atomic number 20 ONLY.</p> <p>The atoms of any element are like other atoms of the same element but are different from the atoms of other elements.</p>	<p>Textbook: pp 716, 44-46 VOCABULARY: chemistry, chemist, atoms, element, nucleus, proton, neutron, electron, subatomic particles, atoms, element, periodic table, energy levels, electron cloud, atomic number, atomic mass, atomic weight, valence electron, metal, nonmetal, metalloid, solid, liquid, gas, sublimation, plasma, group, and period.</p> <p>Activities: Proton, Neutron and Electron Practice Worksheet ; Use worksheet to create Neil Bohr models CORE What is Matter (pg 1) Atomic Musical Chairs Solids Liquids Gas States of Matter LTF #15 States of Matter Chem/Physics p. 411</p> <p>PreAP: LTF #8: Electron Configuration and Orbital Notation Chem/Physics p. 314 Electron Configuration Power point</p>

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<p>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:</p> <p>8.5B identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity</p>	<p>Including:</p> <p>---Mass</p> <ul style="list-style-type: none"> • Atomic number and atomic mass relationship to atomic particles • Average atomic mass rounds to mass number • Atomic number and atomic mass in relation to the Periodic Table. <p>---Electrical charge</p> <ul style="list-style-type: none"> • Neutrality • Valence electrons <p><u>Teacher Note:</u> There are groups of elements that have similar properties, including highly reactive metals, less-reactive metals, highly reactive non-metals (such as Cl, F, and O) and some almost completely non-reactive gases (such as He and Ne)</p>	<p>Textbook: pp 45-47</p> <p>Activities: Periodic Table Basics Activity Part I</p> <p>Technology: Adopt An Element Proton Don (on line game used to learn symbols) http://www.funbrain.com/periodic/index.html</p> <p>PreAP: Discuss Ions Periodic Table Basics Part II CORE</p>
<p>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:</p> <p>8.5C interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements</p>	<p>Including:</p> <p>---Periods</p> <p>---Groups or Families</p> <p>---Explain how elements are classified in the Periodic Table as</p> <ul style="list-style-type: none"> • Solid/liquid/gas/plasma • Valence electrons • Metals • Nonmetals • Metalloids • Atomic number • Atomic mass/weight <p><u>Teacher Note:</u> It is not necessary to teach ions or bonding.</p> <p>Plan to review 7.6A, identify that organic compounds contain carbon and other elements such as hydrogen, oxygen, phosphorus, nitrogen or sulfur.</p> <p>Plan to review 6.6A, compare metals, nonmetals and metalloids using physical properties such as luster, conductivity or malleability.</p>	<p>Textbook: pp 60-71</p> <p>Assessments: Atoms and the Periodic Table Test Chemistry Review Uncovering Student Ideas in Science, Keeley. Vol 3 #1, Pennies</p> <p>Activities: Missing Cousin Lab CORE http://www.allperiodictables.com/aptpages/apt_1_CC_Ler.html Which Group Are You In? (Reinforcement #3 in One Stop Planner) Periodic Table Families Alien Lab One for the Money TAKS formatted Periodic Table</p>
<p>8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p>	<p>Including:</p> <p>---Neil Bohr Models</p> <p>---Lewis Dot Models</p>	<p>Activities: Bohr Models 2D-3D Electron Dot Models (ATE p. 90) Lewis Dot Diagram</p>

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<p>8.3B use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature</p>	<p><u>Teacher Note:</u> Other models will be used in other bundles.</p>	
<p>8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>8.3C identify advantages and limitations of models such as size, scale, properties, and materials</p>	<p>Including: --- Distinguish between limitations and advantages of models</p> <p>Such as: --- Atom models ---Lewis Dot models</p> <p><u>Teacher Note:</u> All matter is made up of atoms, which are far too small to see directly through a microscope.</p>	<p><u>Activities:</u> Bohr Models 2D-3D Electron Dot Models (ATE p. 90) Lewis Dot Diagram</p>
<p>8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>8.3D relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content</p>	<p>Including: ---Historical atomic theory</p> <p>Such as: --- Rutherford, Democritus, Dalton, Thompson, Bohr, Schrodinger, Heisenberg, Lavoisier, Lelior, Mendeleev, Albert Einstein, Enrico Fermi</p>	<p><u>Activities:</u> Atomic Structure and History Power point</p> <p>PreAP: LTF # 5: Rutherford Simulation Chem/Physics p. 286</p>