

Middle School Science: Curriculum Map for Grade 8

Second Nine Weeks

| State Standards | Embedded Standards | Learning Outcomes | Adopted Resources* | Core Ideas |
|---|--|---|---|---|
| Unit 2.1 Periodic Table of the Elements, 4 Weeks | | | | |
| <p>GLE 0807.9.1 Understand that all matter is made up of atoms.</p> <p>GLE 0807.9.2 Explain that matter has properties that are determined by the structure and arrangement of its atoms.</p> <p>GLE 0807.9.6 Use the periodic table to determine the characteristics of an element</p> | <p>GLE 0807.Inq.2 Use appropriate tools and techniques to gather, organize, analyze, and interpret data.</p> <p>GLE 0807.Inq.5 Communicate scientific understanding using descriptions, explanations, and models</p> | <p>Investigate the properties of selected elements and create a classification system for these elements.</p> <p>Explain how the periodic table is organized.</p> <p>Explain why elements in a group often have similar properties.</p> <p>Differentiate metals, nonmetals, and metalloids based on their properties and location on the periodic table of elements.</p> <p>Predict the properties of an element based on its location in the periodic table.</p> | <p><i>Holt Science and Technology TE:</i> Chapter 8 Section 1: Three States of Matter, p.208-213. Ch. 10 Section 2: The Atom, p. 266-273. Ch 11 Section 1:Arranging the Elements and Section 2 : Grouping the Elements p. 282-299.</p> <p><i>STCMS Properties of Matter TG,</i> Lesson 21, p. 241-262.</p> <p>Gizmos: Element Builder</p> | <p>NGSS Practice 2: Developing and using models</p> <p>NGSS Practice 6: Constructing explanations (for science) and designing solutions (for engineering.)</p> <p>CCSS Writing: Conduct short research projects to answer a questions (including a self-generated question,) drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.</p> <p>CCSS Writing: Draw evidence from informational texts to support analysis, reflection, and research.</p> <p>CCSS Mathematics: Define, evaluate, and compare functions.</p> |

*The TOOLBOX contains additional resources for each unit.

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| Unit 2.2 Chemical Reactions, 5 Weeks | | | | |
| <p>GLE 0807.9.3 Interpret data from an investigation to differentiate between physical and chemical changes.</p> <p>GLE 0807.9.8 Interpret the events represented by a chemical equation.</p> <p>GLE 0807.9.7 Explain the Law of Conservation of Mass.</p> | <p>GLE 0807.Inq.3 Synthesize information to determine cause and effect relationships between evidence and explanations.</p> <p>GLE 0807.Inq.5 Communicate scientific understanding using descriptions, explanations, and models.</p> | <p>Create a model to explain what happens to chemical bonds during a chemical reaction.</p> <p>Illustrate how chemical reactions produce new substances that have different chemical and physical properties.</p> <p>Interpret and write simple chemical formulas.</p> <p>Represent chemical changes with word equations and/or balanced chemical equations.</p> <p>Relate a balanced chemical equation to the law of conservation of mass.</p> <p>Design an experiment to evaluate factors that affect the rate of a reaction.</p> | <p><i>Holt Science and Technology TE:</i> Ch. 13 Section 1: Forming New Substances and Section 2: Chemical Formulas and Equations and Section 3: Types of Chemical Reactions and Section 4: Energy and Rates of Chemical Reactions p. 332-353</p> <p><i>STCMS Properties of Matter TG,</i> Lesson 22, p. 263-274.</p> <p>Gizmo: Balancing Chemical Equations and Chemical Equations</p> | <p>NGSS Practice 2: Developing and using models</p> <p>NGSS Practice 5: Using mathematics and computational thinking</p> <p>NGSS Practice 6: Constructing explanations (for science) and designing solutions (for engineering.)</p> <p>NGSS Practice 8: Obtaining, evaluating, and communicating information.</p> <p>CCSS Reading: Determine the meaning of symbols, key terms, and other domain-specific words as they are used in specific scientific or technical context relevant to grade 6-8 texts and topics.</p> |

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| Unit 2.1 Periodic Table of the Elements, 4 Weeks | |
| Unit 2.1 Periodic Table of Elements Plans | The Periodic Table -lesson plan including Unit Plan and multimedia from American Chemical Society (ACS) http://www.middleschoolchemistry.com/lessonplans/chapter4/lesson2 |
| Unit 2.1 Periodic Table of Elements Background for Teachers | Explaining Matter with Elements, Atoms, and Molecules: Characteristics of Elements – free two hour, on-line interactive inquiry-based content module for teachers from NSTA Learning Center. You don't have to be a member of NSTA to use this free resource. http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EAM.1.1 |
| Unit 2.1 Periodic Table of Elements Student Activities | <p>Adopt an Element Project/Activity – students research an element, complete an informational sheet, and create an advertisement. Includes links for student research and printable materials - http://www.sciencespot.net/Pages/classchem.html#Anchor4.</p> <p>This site provides an interactive periodic table with online quizzes for the student - http://www.teachersdomain.org/asset/phy03_int_ptable/.</p> <p>For an interactive game that helps students learn the element names and chemical symbols use this Proton Don resource - http://www.funbrain.com/funbrain/periodic/.</p> <p>Chem4kids provides a comprehensive, student-friendly, tutorial with very good graphics and quizzes on the periodic table of elements (and many other chemistry topics for middle school.) http://www.chem4kids.com/files/elem_intro.html</p> |
| Unit 2.1 Periodic Table of Elements Other Resources | This online periodic table from the scientists at the University of Rottingham, contains video clips of every element on the periodic table of elements that can be viewed simply by clicking on the element. This is very useful when teaching about the similar chemical and physical properties found in each of the groups/families on the periodic table, and allowing students to see some real life applications of the various elements. http://www.periodicvideos.com/ |

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BCS 2014

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|---|--|
| Unit 2.2 Chemical Reactions, 5 Weeks | |
| Unit 2.2 Chemical Reactions Plans | "What is a chemical reaction?" Lesson from the American Chemical Society (ACS) provides free lessons plans, activities, and multimedia at this site: http://www.middleschoolchemistry.com/lessonplans/chapter6/lesson1 "Controlling" the amount of products in a chemical reaction" is also from ACS, http://www.middleschoolchemistry.com/lessonplans/chapter6/lesson2 . This lesson has everything necessary for teaching how the number of reactants affects the number of products in a reaction, and that the atoms in the product must also be present in the reactant. |
| Unit 2.2 Chemical Reactions Background for Teachers | Another useful interactive tutorial for balancing equations is http://funbasedlearning.com/chemistry/chemBalancer/default.htm . A tutorial on types of chemical equations is available at http://misterguch.brinkster.net/6typesofchemicalrxn.html . This includes sample problems and a helpful checklist on determining types of equations. |
| Unit 2.2 Chemical Reactions Student Activities | Student balancing equations game, you can decide on the number of questions and between 3 difficulty levels - http://education.jlab.org/elementbalancing/ Hands on activity which uses index cards to balance equations is found at http://www.middleschoolscience.com/balance.html . This link includes explanations for the teacher, answers, and pdf of cards and all materials. •STCMS Properties of Matter, Lesson 24, Countering Corrosion |
| Unit 3.2 Chemical Reactions Other Resources | A host of links including, activities, lesson plans, labs, handouts, PowerPoint, and video clips about chemical reactions and equations can be found at http://www.nclark.net/ChemicalReactions#Activities |

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