



STANDARDS	PAGE REFERENCES
<b>Physical Science Content Standards</b>	
<b>H.1 <u>Structure and Function</u>: A system's characteristics, form, and function are attributed to the quantity, type, and nature of its components.</b>	
<p>H.1P.1 Explain how atomic structure is related to the properties of elements and their position in the Periodic Table. Explain how the composition of the nucleus is related to isotopes and radioactivity.</p>	<p><b>Student Edition:</b> 182-194, 117-124 MiniLab 193, 120 ChemLab 126</p> <p><b>Teacher Wraparound Edition:</b> Demonstration 190 Quick Demo 123 Identify Misconceptions 117</p>
<p>H.1P.2 Describe how different types and strengths of bonds affect the physical and chemical properties of compounds.</p>	<p><b>Student Edition:</b> 210-217, 225–228, 240-247, 267-270 MiniLab 227, 242 ChemLab 230 Data Analysis Lab 216, 269</p> <p><b>Teacher Wraparound Edition:</b> Quick Demo 211, 226</p>

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<p><b>H.2 Interaction and Change: The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter.</b></p>	
<p>H.2P.1 Explain how chemical reactions result from the making and breaking of bonds in a process that absorbs or releases energy. Explain how the rate of a chemical reaction is affected by temperature, pressure, and concentration.</p>	<p><b>Student Edition:</b> 280-283, 514-528, 534-540, 558-562, 568-571 Launch Lab 281, 515, 559 MiniLab 526, 571 ChemLab 550, 584</p> <p><b>Teacher Wraparound Edition:</b> Demonstration 284, 518, 568 Quick Demo 518, 536, 537, 561, 569 Identify Misconceptions 520, 570</p>
<p>H.2P.2 Explain how physical and chemical changes demonstrate the law of conservation of mass.</p>	<p><b>Student Edition:</b> 77-79, 105, 285-288, 368-371</p> <p><b>Teacher Wraparound Edition:</b> Quick Demo 285, 368, 369 ChemLab 390 Identify Misconceptions 286</p>
<p>H.2P.3 Describe the interactions of energy and matter including the law of conservation of energy.</p>	<p><b>Student Edition:</b> 71-72, 77, 514-517, 525-528, 530-531 Problem-Solving Lab 72, 531 LaunchLab 514</p> <p><b>Teacher Wraparound Edition:</b> Quick Demo 517, 530 Demonstration 518-519</p>
<p>H.2P.4 Apply the laws of motion and gravitation to describe the interaction of forces acting on an object and the resultant motion.</p>	<p><b>Student Edition:</b> 16, 411-414, 269-270 ChemLab 432</p> <p><b>Teacher Wraparound Edition:</b> Demonstration 76-77 Quick Demo 76, 268, 411</p>

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<p><b>H.3 Scientific inquiry is the investigation of the natural world by a systematic process that includes proposing a testable question or hypothesis and developing procedures for questioning, collecting, analyzing, and interpreting multiple forms of accurate and relevant data to produce justifiable evidence-based explanations and new explorations.</b></p>	
<p>H.3S.1 Based on observations and science principles formulate a question or hypothesis that can be investigated through the collection and analysis of relevant information.</p>	<p><b>Student Edition:</b> 4-8, 12-16, 20-22 Launch Lab 31 MiniLab 13 Problem-Solving Lab 326, 842 ChemLab 24, 164, 584</p> <p><b>Teacher Wraparound Edition:</b> 26T Quick Demo 14</p>
<p>H.3S.2 Design and conduct a controlled experiment, field study, or other investigation to make systematic observations about the natural world, including the collection of sufficient and appropriate data.</p>	<p><b>Student Edition:</b> 14 Launch Lab 101 MiniLab 242, 457, 648 ChemLab 310, 356, 432</p> <p><b>Teacher Wraparound Edition:</b> Identify Misconceptions 15</p>
<p>H.3S.3 Analyze data and identify uncertainties. Draw a valid conclusion, explain how it is supported by the evidence, and communicate the findings of a scientific investigation.</p>	<p><b>Student Edition:</b> Data Analysis Lab 216, 269, 691, 768, 805 Launch Lab 205 ChemLab 390, 506 MiniLab 39, 342</p> <p><b>Teacher Wraparound Edition:</b> Chemistry Project 729</p>
<p>H.3S.4 Identify examples from the history of science that illustrate modification of scientific knowledge in light of challenges to prevailing explanations.</p>	<p><b>Student Edition:</b> 102-104, 108-109, 112-114, 174-181 Timeline 110-111, 290-291, 636-637</p> <p><b>Teacher Wraparound Edition:</b> Quick Demo 174 Demonstration 112-113</p>
<p>H.3S.5 Explain how technological problems and advances create a demand for new scientific knowledge and how new knowledge enables the creation of new technologies</p>	<p><b>Student Edition:</b> 17, 22, 108 How It Works 125, 309, 549, 733, 775 Timeline 882-883</p> <p><b>Teacher Wraparound Edition:</b> Chemistry Journal 888</p>

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<p><b>H.4 Engineering design is a process of formulating problem statements, identifying criteria and constraints, proposing and testing possible solutions, incorporating modifications based on test data, and communicating the recommendations.</b></p>	
<p>H.4D.1 Define a problem and specify criteria for a solution within specific constraints or limits based on science principles. Generate several possible solutions to a problem and use the concept of trade-offs to compare them in terms of criteria and constraints.</p>	<p>The following references can be used to meet this objective.</p> <p><b>Student Edition:</b>            Problem Solving Lab 50            Data Analysis Lab 216            Inquiry Extension in ChemLab 164</p> <p><b>Teacher Wraparound Edition:</b>            Chemistry Project 51</p>
<p>H.4D.2 Create and test or otherwise analyze at least one of the more promising solutions. Collect and process relevant data. Incorporate modifications based on data from testing or other analysis.</p>	<p>The following references can be used to meet this objective.</p> <p><b>Student Edition:</b>            Problem Solving Lab 72            Data Analysis Lab 269            Inquiry Extension in ChemLab 230</p> <p><b>Teacher Wraparound Edition:</b>            Chemistry Journal 268</p>
<p>H.4D.3 Analyze data, identify uncertainties, and display data so that the implications for the solution being tested are clear.</p>	<p>The following references can be used to meet this objective.</p> <p><b>Student Edition:</b>            Problem Solving Lab 150, 180            Data Analysis Lab 387, 478            Inquiry Extension in ChemLab 356</p> <p><b>Teacher Wraparound Edition:</b>            Chemistry Project 142</p>
<p>H.4D.4 Recommend a proposed solution, identify its strengths and weaknesses, and describe how it is better than alternative designs. Identify further engineering that might be done to refine the recommendations.</p>	<p>The following references can be used to meet this objective.</p> <p><b>Student Edition:</b>            Problem Solving Lab 294            Data Analysis Lab 691            Inquiry Extension in ChemLab 550</p> <p><b>Teacher Wraparound Edition:</b>            Chemistry Project 427</p>

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<p>H.4D.5 Describe how new technologies enable new lines of scientific inquiry and are largely responsible for changes in how people live and work.</p>	<p><b>Student Edition:</b>  17, 22  How It Works 125, 309, 549, 733, 775  Timeline 882-883</p> <p><b>Teacher Wraparound Edition:</b>  Chemistry Journal 835</p>
<p>H.4D.6 Evaluate ways that ethics, public opinion, and government policy influence the work of engineers and scientists, and how the results of their work impact human society and the environment.</p>	<p><b>Student Edition:</b>  880-884, 886  How It Works 271, 309, 549  Timeline 882-883</p> <p><b>Teacher Wraparound Edition:</b>  Chemistry Journal 690, 882</p>