



Life Science

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STANDARDS		PAGE REFERENCES
<p>Scientific Inquiry (Nature of Science Unifying Concept A)</p> <p>Scientific inquiry is the process by which humans systematically examine the natural world. Scientific inquiry is a human endeavor and involves observation, reasoning, insight, energy, skill, and creativity. Scientific inquiry is used to formulate and test explanations of nature through observation, experiments, and theoretical or mathematical models. Scientific explanations and evidence are constantly reviewed and examined by others. Questioning, response to criticism and open communication are integral to the process of science.</p>		
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>		
<p>N.8.A Students understand that scientific knowledge requires critical consideration of verifiable evidence obtained from inquiry and appropriate investigations.</p>		
N.8.A.1	Students know how to identify and critically evaluate information in data, tables, and graphs. E/S	<p>Student Edition:</p> <p>9</p> <p><i>Applying Math</i> 716</p> <p><i>Applying Science</i> 11, 439</p> <p><i>Lab</i> 379, 603, 642-643</p> <p><i>Lab: Design Your Own</i> 28-29, 174-175</p> <p><i>Math Skills Handbook</i> 845-846</p> <p><i>MiniLAB</i> 9</p> <p>Teacher Wraparound Edition:</p> <p>A 140; Act 227; CC 16</p>

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N.8.A.2	Students know how to critically evaluate information to distinguish between fact and opinion. E/S	Student Edition: 6-10 <i>Applying Science</i> 198 Teacher Wraparound Edition: AR 256; CC 40; IM 41, 45, 70, 82, 114, 161
N.8.A.3	Students know that different explanations can be given for the same evidence. E/S	Student Edition: 9, 10, 155-157, 160-161, 171, 406, 780 <i>Applying Science</i> 219 <i>Integrate History</i> 417 <i>Science Online</i> 780 Teacher Wraparound Edition: DIF 781
N.8.A.4	Students know how to design and conduct a controlled experiment. E/L	Student Edition: 8-9 <i>Lab: Design Your Own</i> 28-29, 56-57, 144-145, 174-175, 200-201, 292-293, 350-351, 418-419, 558-559 <i>Science Skill Handbook</i> 802-810 Teacher Wraparound Edition: TFYI 9, 127
N.8.A.5	Students know how to use appropriate technology and laboratory procedures safely for observing, measuring, recording, and analyzing data. E/L	Student Edition: 12-13 <i>Lab</i> 46, 86-87, 221, 752 <i>Lab: Design Your Own</i> 200-201, 350-351, 672-673 <i>Launch Lab</i> 37 <i>MiniLAB</i> 779 <i>Reference Handbook</i> 847 <i>Science Skill Handbook</i> 806-808, 812-813 <i>Technology Skill Handbook</i> 828-830 Teacher Wraparound Edition: QD 12; SCB 36F
N.8.A.6	Students know that scientific inquiry includes evaluating results of scientific investigations, experiments, observations, theoretical and mathematical models, and explanations proposed by other scientists. E/S	Student Edition: 8-10, 19, 21, 110-112 <i>Applying Math</i> 44 <i>Applying Science</i> 157 <i>Lab</i> 80 <i>MiniLAB</i> 40, 187 <i>National Geographic</i> 20 <i>Time: Science and History</i> 560 Teacher Wraparound Edition: DI 98; LD 53; TFYI 10

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N.8.A.7	Students know there are multiple methods for organizing items and information. E/S	Student Edition: 9 <i>Lab: Design Your Own</i> 28-29, 174-175, 418-419 <i>Lab: Model and Invent</i> 230-231 <i>Math Skill Handbook</i> 845-846 <i>Science Skill Handbook</i> 809-810 Teacher Wraparound Edition: AS 27
Science, Technology, and Society (Nature of Science Unifying Concept B) Technology defines a society or era. It can shape the environment in which people live, and it has increasingly become a larger part of people's lives. While many of technology's effects on society are regarded as desirable, other effects are seen as less desirable. Instruction in this area should not be solely in science or technology courses, but should be shared by science, math, technology, social studies and language arts. The development and use of technology affects society and the environment in which we live, and at the same time society influences the development of technology and its impact on culture.		
By the end of grade band, students know and are able to do everything required in earlier grades and:		
N.8.B Students understand the interactions of science and society in an ever-changing world.		
N.8.B.1	Students understand that consequences of technologies can cause resource depletion and environmental degradation, but technology can also increase resource availability, mitigate environmental degradation, and make new resources economical.	Student Edition: 141-143, 770-776, 778-786 <i>Integrate Career</i> 228 <i>Lab: Design Your Own</i> 200-201 <i>National Geographic</i> 777 <i>Science Stats</i> 146 <i>Section Review</i> 143 (#2, #3) <i>Time: Science and Society</i> 232, 294, 762 Teacher Wraparound Edition: AS 776; CDIV 142; SJ 101, 112; VL 142
N.8.B.2	Students know scientific knowledge is revised through a process of incorporating new evidence gained through ongoing investigation and collaborative discussion. E/S	Student Edition: 8-10, 19, 21, 110-112, 154-157 <i>National Geographic</i> 21 <i>Oops! Accidents in Science</i> 118 <i>Time: Science and History</i> 58 Teacher Wraparound Edition: CB 146; CC 113; DI 114; TFYI 10, 21; VL 20

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<p>Heredity (Life Science Unifying Concept A)</p> <p>Heredity is the genetic passing of a set of instructions from generation to generation. These instructions are encoded as DNA and may manifest themselves as characteristics. Some characteristics are inherited, and some result from interactions with the environment.</p>		
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>		
<p>L.8.A Students understand the role of genetic information in the continuation of a species.</p>		
L.8.A.1	Students know that heredity is the passage of genetic instructions from one generation to the next generation. E/S	<p>Student Edition: 17, 110-111, 126, 154 <i>Lab</i> 133 <i>Launch Lab</i> 125 <i>National Geographic</i> 129</p> <p>Teacher Wraparound Edition: AIL 174; TFYI 17; TPK 126, 134; VL 132</p>
L.8.A.2	Students know changes in genes of eggs and sperm can cause changes in inherited characteristics. E/S	<p>Student Edition: 109, 114-115, 138, 143, 158-159 <i>Lab: Use the Internet Lab</i> 116-117</p> <p>Teacher Wraparound Edition: A 117; D 138; LD 137; TFYI 137, 142</p>
L.8.A.3	Students know organisms can be bred for specific characteristics. I/L	<p>Student Edition: 128, 140, 143, 279 <i>Integrate Environment</i> 142 <i>National Geographic</i> 108, 129 <i>Section Review</i> 140 (#5)</p> <p>Teacher Wraparound Edition: DI 139; R 161; TFYI 273</p>
L.8.A.4	Students know that some characteristics of an organism are the result of a combination of interaction with the environment and genetic information. E/S	<p>Student Edition: 158-159, 312, 456-461 <i>Integrate Environment</i> 284 <i>MiniLAB</i> 305 <i>Science Stats</i> 202 <i>Time: Science and Society</i> 294</p> <p>Teacher Wraparound Edition: AP 152; VL 223</p>

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<p>Structure of Life (Life Science Unifying Concept B)</p> <p>All living things are composed of cells. Cells range from very simple to very complex and have structures which perform functions for the organism. Cells and structures can be damaged or fail because of intrinsic failures or disease.</p>		
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>		
<p>L.8.B Students understand that living things are composed of cells, which are specialized in multicellular organisms to perform a variety of life functions.</p>		
L.8.B.1	Students know all organisms are composed of cells, which are the fundamental units of life. E/S	<p>Student Edition: 14, 38-39, 51, 96, 241, 330 <i>Section Review</i> 51 (#2)</p> <p>Teacher Wraparound Edition: TBI 36</p>
L.8.B.2	Students know cells grow, divide, and take in nutrients which they use to provide energy for cell functions. E/S	<p>Student Edition: 16, 74-78, 96-100 <i>Launch Lab</i> 65, 95 <i>MiniLAB</i> 101 <i>National Geographic</i> 79</p> <p>Teacher Wraparound Edition: Act 79; DIF 99; QD 99; UA 77; VL 79</p>
L.8.B.3	Students know some organisms are made of just one cell and that multicellular organisms can consist of thousands to millions of cells working together. E/S	<p>Student Edition: 14, 45, 186-187, 189, 212-213, 217 <i>Section Review</i> 45 (#4)</p> <p>Teacher Wraparound Edition: D 39; QD 39; SCB 36E</p>
L.8.B.4	Students know cells combine to form tissues that combine to form organs and organ systems that are specialized to perform life functions. E/S	<p>Student Edition: 39, 45, 252-255, 330, 485, 490, 493, 496, 525-529, 540-545, 551, 570-571, 578-579 <i>Integrate Health</i> 255 <i>Section Review</i> 45 (#3)</p> <p>Teacher Wraparound Edition: DI 580; TFYI 257; TPK 38</p>
L.8.B.5	Students know disease can result from defects in body systems or from damage caused by infection. E/S	<p>Student Edition: 54, 197, 555, 557, 576, 581, 652-656, 657-658, 662-663 <i>Integrate Health</i> 77, 217 <i>Time: Science and History</i> 176</p> <p>Teacher Wraparound Edition: A 187; D 586; T 485; VL 53</p>

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<p>Organisms and Their Environment (Life Science Unifying Concept C)</p> <p>A variety of ecosystems and communities exist on Earth. Ecosystems are dynamic interactions of organisms and their environment. Ecosystems have distinct characteristics and components that allow certain organisms to thrive. Change in one or more components can affect the entire ecosystem.</p>		
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>		
<p>L.8.C Students understand how living and nonliving components of ecosystems interact.</p>		
L.8.C.1	Students know how matter and energy are transferred through food webs in an ecosystem. E/S	<p>Student Edition: 82, 214, 307, 331, 696-697, 727-729 <i>Lab</i> 730-731</p> <p>Teacher Wraparound Edition: DI 727; MM 698</p>
L.8.C.2	Students know how to characterize organisms in any ecosystem by their functions. E/S	<p>Student Edition: 82, 696-698, 726 <i>Reading Check</i> 697</p> <p>Teacher Wraparound Edition: TFYI 287</p>
E.8.C.3	Students will evaluate how changes in environments can be beneficial or harmful. E/S	<p>Student Edition: 342, 740-741, 743, 778-786 <i>Integrate Career</i> 717 <i>Integrate Earth Science</i> 363 <i>Integrate Environment</i> 284 <i>Lab</i> 787 <i>National Geographic</i> 749 <i>Science Online</i> 780</p> <p>Teacher Wraparound Edition: CB 30; DI 779; SJ 214</p>
L.8.C.4	Students know inter-related factors affect the number and type of organisms an ecosystem can support. E/S	<p>Student Edition: 247, 685, 688-691, 712-718 <i>Applying Science</i> 248, 691 <i>Lab: Design Your Own</i> 702-703 <i>MiniLAB</i> 689 <i>National Geographic</i> 694 <i>Time: Science and History</i> 704 <i>Time: Science and Society</i> 30</p> <p>Teacher Wraparound Edition: TFYI 745; TPK 688</p>

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<p>Diversity of Life (Life Science Unifying Concept D) Evidence suggests that living things change over periods of time. These changes can be attributed to genetic and/or environmental influences. This process of change over time is called biological evolution. The diversity of life on Earth is classified using objective characteristics. Scientific classification uses a hierarchy of groups and subgroups based on similarities that reflect evolutionary relationships.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>L.8.D Students understand that life forms change over time, contributing to the variety of organisms found on the Earth.</p>	
<p>L.8.D.1 Students know species can be identified and classified based upon their characteristics. (8.8.6) E/S</p>	<p>Student Edition: 23, 24-26, 154, 245 <i>Lab</i> 261 <i>Lab: Model and Invent</i> 230-231 <i>Launch Lab</i> 5 <i>Time: Science and Society</i> 30 Teacher Wraparound Edition: AC 26; IL 23</p>
<p>L.8.D.2 Students know fossils provide evidence of how life and environmental conditions have changed throughout geologic time. E/S</p>	<p>Student Edition: 163-165, 167, 171-173, 228, 241, 406, 417, 435 <i>Integrate Earth Science</i> 167 <i>National Geographic</i> 166 <i>Science Online</i> 165 <i>Section Review</i> 169 (#2) Teacher Wraparound Edition: Act 164; FF 173; SJ 164</p>
<p>L.8.D.3 Students know an organism's behavior is based on both experience and on the species' evolutionary history. E/S</p>	<p>Student Edition: 158, 456-461, 462-464, 468-469 <i>Lab</i> 471 <i>Science Online</i> 468 Teacher Wraparound Edition: FF 457; IM 466; LD 458; TBI 454; TC 4, 454; TFYI 460, 465</p>