



# Science

**LEVEL RED**

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## STANDARDS

## PAGE REFERENCES

### A1—Science as Inquiry and Process

**SA** Students develop an understanding of the processes and applications of scientific inquiry.

**SA1** Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.

**SA2** Students develop an understanding that the processes of science require integrity, logical reasoning, skepticism, openness, communication, and peer review.

**SA3** Students develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and local applications provide opportunity for understanding scientific concepts and global issues.

**The student develops an understanding of the processes of science by:**

[6] SA1.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating.\*

**Student Edition:**

12-17

*MiniLAB* 23, 261

*Lab* 31, 112, 215, 278-279, 313, 322

*Design Your Own Lab* 244-245

**Teacher Wraparound Edition:**

IL 85, 289, 353; LD 14; QD 23

STANDARDS	PAGE REFERENCES
[6] SA1.2 collaborating to design and conduct simple repeatable investigations. (L)	<b>Student Edition:</b> <i>Design Your Own Lab</i> 60-61, 88-89, 244-245, 323-333, 488-489, 520-521, 636-637, 668-669 <i>Lab</i> 298, 573, 626 <i>Model and Invent Lab</i> 396-397 <b>Teacher Wraparound Edition:</b> AIL 278; DI 319; IL 17
<b>The student demonstrates an understanding of the attitudes and approaches to scientific inquiry by:</b>	
[6] SA2.1 identifying and differentiating fact from opinion.	<b>Student Edition:</b> 27-30 <i>Science Skill Handbook</i> 686 <b>Teacher Wraparound Edition:</b> CFU 30; DIS 28; QD 29; TPK 27
<b>The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by:</b>	
[6] SA3.1 gathering data to build a knowledge base that contributes to the development of questions about the local environment (e.g., moose browsing, trail usage, river erosion). (L)	<b>Student Edition:</b> <i>Integrate Career</i> 13 <i>Science Online</i> 330, 629, 656 <b>Teacher Wraparound Edition:</b> ACT 657; DI 647, 657, 666; QD 8; SJ 656; VL 318, 659
<b>B1—Concepts of Physical Science</b>	
<p><b>SB</b> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><b>SB1</b> Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.</p> <p><b>SB2</b> Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.</p> <p><b>SB3</b> Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems.</p> <p><b>SB4</b> Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.</p>	
<b>The student demonstrates understanding of the structure and properties of matter by:</b>	
[6] SB1.1 using models to represent matter as it changes from one state to another.	<b>Student Edition:</b> 74 <b>Teacher Wraparound Edition:</b> CFU 79; MM 74

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<p><b>The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by:</b></p>	
<p>[6] SB2.1 recognizing that energy can exist in many forms (i.e., heat, light, chemical, electrical, mechanical).</p>	<p><b>Student Edition:</b> 162-169, 170-177, 178-182, 201-208, 226-227 <i>Launch Lab</i> 161 <i>Integrate Life Science</i> 164 <i>Lab</i> 183, 184-185 <b>Teacher Wraparound Edition:</b> CC 173; DI 168; QD 171, 179; SCB 160E-F; TPK 226</p>
<p><b>The student demonstrates understanding of the interactions between matter and energy and the effects of these interactions on systems by:</b></p>	
<p>[6] SB3.1 recognizing that most substances can exist as a solid, liquid, or gas depending on temperature.</p>	<p><b>Student Edition:</b> 73-75, 93 #23, 95 #15 <b>Teacher Wraparound Edition:</b> CC 74; QD 75; TFYI 352; VL 74</p>
<p><b>The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by:</b></p>	
<p>[6] SB4.2 stating that every object exerts gravitational force on every other object.</p>	<p><b>Student Edition:</b> 203, 323, 417, 445-446 <i>Launch Lab</i> 5 <i>National Geographic</i> 142 <b>Teacher Wraparound Edition:</b> VL 203</p>
<p>[6] SB4.3 making waves move through a variety of media. (L)</p>	<p><b>Student Edition:</b> 226-230 <i>Launch Lab</i> 225 <i>MiniLAB</i> 229, 386 <i>Lab</i> 236 <i>Design Your Own Lab</i> 244-245 <b>Teacher Wraparound Edition:</b> A 229, 235; ACT 234, 242; LD 240; QD 228, 234; R 235; TT 224E</p>

STANDARDS	PAGE REFERENCES
<b>C1—Concepts of Life Science</b>	
<p><b>SC</b> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><b>SC1</b> Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution.</p> <p><b>SC2</b> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p> <p><b>SC3</b> Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy.</p>	
<p><b>The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection and biological evolution by:</b></p>	
<p>[6] SC1.1 recognizing sexual and asexual reproduction.</p>	<p><b>Student Edition:</b> 502-503, 527 #11, #12, 574-579, 591-597 <i>MiniLAB</i> 593 <i>National Geographic</i> 596</p> <p><b>Teacher Wraparound Edition:</b> CFU 505; LD 594; R 597; SCB 588E; TFYI 595; TPK 541; V 596; VL 503</p>
<p>[6] SC1.2 recognizing that species survive by adapting to changes in their environment.</p>	<p><b>Student Edition:</b> 535, 539, 541-544 <i>MiniLAB</i> 546</p> <p><b>Teacher Wraparound Edition:</b> ACT 538, 547; CFU 544, 625; DI 533; QD 536, 624; TPK 535</p>
<p><b>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by:</b></p>	
<p>[6] SC2.1 using a <u>dichotomous key</u> to classify animals and plants into groups using external or internal features.</p>	<p><b>Student Edition:</b> 77 <i>National Geographic</i> 78</p> <p><b>Teacher Wraparound Edition:</b> ACT 78; DI 78; V 78</p>
<p>[6] SC2.2 identifying basic behaviors (e.g., migration, communication, hibernation) used by organisms to meet the requirements of life.</p>	<p><b>Student Edition:</b> 630 <i>Science Stats</i> 246, 522 <i>National Geographic</i> 621 <i>Science Online</i> 629</p> <p><b>Teacher Wraparound Edition:</b> DI 531; TFYI 630</p>

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<p>[6] SC2.3 describing the levels of organization within a human body (i.e., cells, tissues, organs, systems).</p>	<p><b>Student Edition:</b> 485-487, 493 #27 <i>National Geographic</i> 486 <i>Applying Science</i> 487</p> <p><b>Teacher Wraparound Edition:</b> A 487; ACT 486; DI 486; IL 486; IM 486; R 487; SCB 474E-F; TPK 501</p>
<p><b>The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by:</b></p>	
<p>[6] SC3.1 recognizing that organisms can cause physical and chemical changes (e.g., digestion, growth, respiration, photosynthesis) to matter and recognizing the importance of energy transfer in these changes.</p>	<p><b>Student Edition:</b> 178-182, 377, 563-567, 633-635 <i>Integrate Life Science</i> 145, 164 <i>Integrate Physics</i> 634</p> <p><b>Teacher Wraparound Edition:</b> DI 377; DIS 377, 575; TFYI 564, 633; TPK 633</p>
<p>[6] SC3.2 organizing a food web using familiar plants and animals.</p>	<p><b>Student Edition:</b> 391-395, 633-635, 641 #27 <i>Science Online</i> 392 <i>National Geographic</i> 393</p> <p><b>Teacher Wraparound Edition:</b> ACT 393, 634; CFU 635; DI 393; MM 634; V 393</p>
<p><b>D1—Concepts of Earth Science</b></p>	
<p><b>SD</b> Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences.</p> <p><b>SD1</b> Students develop an understanding of Earth’s geochemical cycles.</p> <p><b>SD2</b> Students develop an understanding of the origins, ongoing processes, and forces that shape the structure, composition, and physical history of the Earth.</p> <p><b>SD3</b> Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth’s position and motion in our solar system.</p> <p><b>SD4</b> Students develop an understanding of the theories regarding the evolution of the universe.</p>	
<p><b>The student demonstrates an understanding of geochemical cycles by:</b></p>	
<p>[6] SD1.1 exploring the rock cycle and its relationship to igneous, metamorphic, and sedimentary rocks. (L)</p>	<p><b>Student Edition:</b> 265-271, 272-276 <i>National Geographic</i> 268 <i>MiniLAB</i> 270 <i>Lab</i> 277</p> <p><b>Teacher Wraparound Edition:</b> A 271; DIS 266, 273; MM 269; QD 267, 274; SJ 267; USW 266; V 268; VL 275</p>

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[6] SD1.2 identifying the physical properties of water within the stages of the water cycle.	<p><b>Student Edition:</b> 345-347 <i>National Geographic</i> 346 <i>MiniLAB</i> 347</p> <p><b>Teacher Wraparound Edition:</b> A 347; CFU 347; DI 346; DIS 352, 658; TFYI 352; UAA 351; V 346; VL 352</p>
<b>The student demonstrates an understanding of the forces that shape Earth by:</b>	
[6] SD2.1 describing the formation and composition (i.e., sand, silt, clay, organics) of soils.	<p><b>Student Edition:</b> 320-321, 622-623 <i>MiniLAB</i> 320, 623 <i>Lab</i> 322</p> <p><b>Teacher Wraparound Edition:</b> A 322, 623; CFU 321; DI 319; IM 314F; MM 320; QD 321; R 321; TFYI 623; VL 320</p>
[6] SD2.2 identifying and describing its layers (i.e., crust, mantle, core).	<p><b>Student Edition:</b> 288-291 <i>Science Online</i> 168 <i>Launch Lab</i> 287 <i>Integrate Chemistry</i> 290</p> <p><b>Teacher Wraparound Edition:</b> CC 289; DI 291; FF 289; TFYI 291</p>
[6] SD2.3 describing how the surface can change rapidly as a result of geological activities (i.e., earthquakes, tsunamis, volcanoes, floods, landslides, avalanches).	<p><b>Student Edition:</b> 323-325 <i>Science Online</i> 302 <i>Integrate Physics</i> 325</p> <p><b>Teacher Wraparound Edition:</b> ACT 324; DI 303, 325; V 324; VL 302</p>
<b>The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by:</b>	
[6] SD3.1 connecting the water cycle to weather phenomena.	<p><b>Student Edition:</b> 345-347, 348-355, 356-362 <i>National Geographic</i> 346 <i>Science Online</i> 350</p> <p><b>Teacher Wraparound Edition:</b> ACT 346, 350; AIL 364; CFU 347, 355; DI 351, 361; DIS 351, 358; V 346</p>

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[6] SD3.2 identifying that energy transfer is affected by surface conditions (e.g., snow cover, asphalt, vegetation) and that this affects weather.	<b>Student Edition:</b> 173-173, 191 #22 <b>Teacher Wraparound Edition:</b> DIS 174
<b>The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by:</b>	
[6] SD4.1 contrasting characteristics of planets and stars. (i.e., light reflecting, light emitting, orbiting, orbited, composition.)	<b>Student Edition:</b> 408-409, 440-446, 448-455, 456-463, 469 #19, 471 #25 <i>MiniLAB</i> 450 <i>Integrate Physics</i> 458 <b>Teacher Wraparound Edition:</b> DI 458; IM 438F; LD 450
[6] SD4.2 defining a light year.	<b>Student Edition:</b> 462 <i>Applying Math</i> 463 <b>Teacher Wraparound Edition:</b> CC 459; SJ 462
<b>E1—Science and Technolo</b>	
<p><b>SE</b> Students develop an understanding of the relationships among science, technology, and society.</p> <p><b>SE1</b> Students develop an understanding of how scientific knowledge and technology are used in making decisions about issues, innovations, and responses to problems and everyday events.</p> <p><b>SE2</b> Students develop an understanding that solving problems involves different ways of thinking, perspectives, and curiosity that lead to the exploration of multiple paths that are analyzed using scientific, technological, and social merits.</p> <p><b>SE3</b> Students develop an understanding of how scientific discoveries and technological innovations affect and are affected by our lives and cultures.</p>	
<b>The student demonstrates understanding of how to integrate scientific knowledge and technology to address problems by:</b>	
[6] SE1.1 recognizing that technology cannot always provide successful solutions for problems or fulfill every human need.	<b>Student Edition:</b> <i>Integrate Astronomy</i> 51 <i>Science and Language Arts</i> 186 <i>Science and History</i> 334 <i>Science and Society</i> 432, 638 <b>Teacher Wraparound Edition:</b> DI 418

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<b>The student demonstrates an understanding that solving problems involves different ways of thinking by:</b>	
<p>[6] SE2.1 identifying and designing a solution to a problem.</p>	<p><b>Student Edition:</b>  <i>Use the Internet Lab</i> 152-153, 430-431  <i>Integrate Physics</i> 325  <i>Design Your Own Lab</i> 332-333, 464-465, 668-669  <i>Lab</i> 414  <i>Model and Invent Lab</i> 550-551  <i>Applying Science</i> 665  <b>Teacher Wraparound Edition:</b>  A 414; IL 263; MM 147, 320; UP 405, 615</p>
<p>[6] SE2.2 comparing the student’s work to the work of peers in order to identify multiple paths that can be used to investigate a question or problem. (L)</p>	<p><b>Student Edition:</b>  <i>Lab</i> 31  <i>Communicating Your Data</i> 33, 183, 185, 215, 217, 245, 298, 322, 365, 598  <i>Design Your Own Lab</i> 88-89  <i>Use the Internet Lab</i> 152-153, 430-431, 606-607</p>
<b>The student demonstrates an understanding of how scientific discoveries and technological innovations affect our lives and society by:</b>	
<p>[6] SE3.1 describing the various effects of an innovation on a <u>global level</u>.</p>	<p><b>Student Edition:</b>  410-413, 415-422, 423-429  <i>Science and History</i> 34, 218, 582  <i>Integrate History</i> 81  <i>Science Online</i> 361  <i>Lab</i> 363  <i>Science and Society</i> 490, 670  <b>Teacher Wraparound Edition:</b>  CC 416, 425; DIS 417; TFYI 46</p>

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<b>F1—Cultural, Social, Personal Perspectives, and Science</b>	
<p><b>SF</b> Students develop an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives.</p> <p><b>SF1</b> Students develop an understanding of the interrelationships among individuals, cultures, societies, science, and technology.</p> <p><b>SF2</b> Students develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world.</p> <p><b>SF3</b> Students develop an understanding of the importance of recording and validating cultural knowledge.</p>	
<p><b>The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives by:</b></p>	
<p>[6] SF1.1-SF3.1 telling a local or traditional story that explains a natural event (e.g., animal adaptation, weather, rapid changes to Earth's surface) and relating it to a scientific explanation.* (L) Cross referenced with SA3.1</p>	<p><b>Student Edition:</b> <i>Science Online</i> 146 <i>Science and Language Arts</i> 466</p> <p><b>Teacher Wraparound Edition:</b> A 447; DIS 357; HS 120</p>
<b>G1—History and Nature of Science</b>	
<p><b>SG</b> Students develop an understanding of the history and nature of science.</p> <p><b>SG1</b> Students develop an understanding that historical perspectives of scientific explanations demonstrate that scientific knowledge changes over time, building on prior knowledge.</p> <p><b>SG2</b> Students develop an understanding that the advancement of scientific knowledge embraces innovation and requires empirical evidence, repeatable investigations, logical arguments, and critical review in striving for the best possible explanations of the natural world.</p> <p><b>SG3</b> Students develop an understanding that scientific knowledge is ongoing and subject to change as new evidence becomes available through experimental and/or observational confirmation(s).</p> <p><b>SG4</b> Students develop an understanding that advancements in science depend on curiosity, creativity, imagination, and a broad knowledge base.</p>	
<p><b>The student demonstrates an understanding of the bases of the advancement of scientific knowledge by:</b></p>	
<p>[6] SG2.1 recognizing differences in results of repeated experiments.</p>	<p><b>Teacher Wraparound Edition:</b> DIS 29</p>