



# Physical Science with Earth Science

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STANDARDS	PAGE REFERENCES
<p><b>Content Standard 1—Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate thinking skills associated with this procedural knowledge.</b></p>	
<p>1. generate a question, identify dependent and independent variables, formulate testable, multiple hypotheses, plan an investigation, predict its outcome, safely conduct the scientific investigations, and collect and analyze data.</p>	<p><b>Student Edition:</b> 6-13 <i>Design Your Own Lab</i> 88-89, 144-145, 242-243, 344-345, 414-415, 446-447, 540-541, 568-569 <i>Lab</i> 278-279, 741, 742-743, 776-777 <b>Teacher Wraparound Edition:</b> A 13; R 13</p>
<p>2. select and accurately use appropriate tools including technology to make measurements (in metric units), gather, process and analyze data from scientific investigations using appropriate mathematical analysis, error analysis, and graphical representation.</p>	<p><b>Student Edition:</b> 14-21, 22-26 <i>MiniLab</i> 19, 25 <i>Design Your Own Lab</i> 88-89, 144-145, 344-345, 414-415, 446-447, 540-541, 568-569 <i>Lab</i> 175, 278-279, 507, 559</p>
<p>3. critically review evidence, communicate and defend results, and recognize that the results of a scientific investigation are always open to revision by further investigations.</p>	<p><b>Student Edition:</b> 6-13 <i>Design Your Own Lab</i> 28-29, 88-89, 144-145, 242-243, 344-345, 414-415, 446-447, 540-541, 568-569 <i>Lab</i> 278-279, 507, 741, 742-743 <b>Teacher Wraparound Edition:</b> A 445</p>

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4. compare observations of the real world to a mental model resulting from hypothetical, unobservable entities. (e.g., atom, expanding universe)	<p><b>Student Edition:</b> 11, 218-222, 254-259, 578-583 <i>MiniLab</i> 219, 581</p> <p><b>Teacher Wraparound Edition:</b> ACT 11; CFU 265, 361, 528; MM 530; QD 221, 459; R 265; RS 219</p>
5. identify strengths, weaknesses, and assess the validity of the experimental design of an investigation through analysis and evaluation.	<p><b>Student Edition:</b> <i>Design Your Own Lab</i> 28-29, 344-345 <i>Model and Invent Lab</i> 176-177 <i>Communicating Your Data</i> 242, 447 <i>Lab</i> 636-637</p> <p><b>Teacher Wraparound Edition:</b> UP 3</p>
<p><b>Content Standard 2—Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate thinking skills associated with this knowledge.</b></p>	
1. describe experimental evidence that matter consists of molecules in motion and explain physical interactions of matter using conceptual models. (e.g., the conservation of matter, kinetic molecular theory)	<p><b>Student Edition</b> 254-259, 688-692, 694-702, 720-725, 786-790 <i>Model and Invent Lab</i> 710-711 <i>MiniLab</i> 724</p> <p><b>Teacher Wraparound Edition:</b> CFU 265; DI 691; MM 691; QD 691; R 265; SCB 686E; UAA 619</p>
2. explain the states of matter using a conceptual model consistent with kinetic molecular theory and intermolecular forces. (e.g., transition from solids to liquids to gases)	<p><b>Student Edition:</b> 254-259, 260-265 <i>Science Online</i> 261</p> <p><b>Teacher Wraparound Edition:</b> CFU 265; R 265; UAA 262</p>
3. recognize that energy is conserved and can be changed into different forms within a variety of practical and technological applications.	<p><b>Student Edition:</b> 135-143, 272-277, 438-444, 494-500, 501-506 <i>Integrate Environment</i> 139 <i>Science Online</i> 141</p> <p><b>Teacher Wraparound Edition:</b> LD 138; QD 136; SCB 126F; SJ 139; V 441; VL 136</p>

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<p>4. identify, measure, calculate, and analyze quantitative and qualitative relationships associated with matter and energy transfer or transformations, and the associated conservation laws using words, symbolic equations, and particulate representations.</p>	<p><b>Student Edition:</b>  135-143, 266-270, 734-740, 801-803  <i>Launch Lab</i> 127  <i>Lab</i> 134  <i>National Geographic</i> 138  <i>MiniLab</i> 140  <i>Design Your Own Lab</i> 144-145  <b>Teacher Wraparound Edition:</b>  A 143; DI 136; SCB 126E-F</p>
<p>5. recognize and describe how forces interact with matter. (e.g., gravitation, electromagnetic, laws of motion)</p>	<p><b>Student Edition:</b>  81-86, 98-103, 104-111, 113-117  <i>Science Online</i> 82  <i>MiniLab</i> 83  <i>Lab</i> 87, 112  <i>Design Your Own Lab</i> 88-89  <i>Launch Lab</i> 97  <i>National Geographic</i> 115  <b>Teacher Wraparound Edition:</b>  A 89; ACT 85; IL 85; LD 83</p>
<p>6. utilize thinking skills in multiple scientific contexts of increasing complexity. (e.g., mass ∞ moles ∞ number of particles)</p>	<p><b>Student Edition:</b>  128-133, 218-222, 260-265, 431-437, 438-444, 524-528, 578-583, 588-596, 654-657  <b>Teacher Wraparound Edition:</b>  DI 592; R 259</p>
<p><b>Content Standard 4—Students demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space, and demonstrate thinking skills associated with this knowledge.</b></p>	
<p>1. understand the theory of plate tectonics and how it explains the inter-relationship between earthquakes, volcanoes, and sea floor spreading.</p>	<p><b>Student Edition:</b>  354-361, 362-369, 373-378, 385#18, 387#18  <i>Science Online</i> 374  <i>Lab</i> 379  <b>Teacher Wraparound Edition:</b>  A 293, 379; CC 377; CFU 378; RS 360; SCB 352E; TFYI 82</p>

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<p>2. identify and classify rocks and minerals based on physical and chemical properties and the utilization by humans. (e.g., natural resources, building materials)</p>	<p><b>Student Edition:</b>  608-615, 617-623, 624-629, 630-635  <i>Lab</i> 616, 636-637  <i>Applying Math</i> 621  <i>Science and Society</i> 638  <b>Teacher Wraparound Edition:</b>  CB 638; CFU 615, 623; IL 614; QD 621; R 629;  SCB 606E-F</p>
<p>3. use fossils and technology to describe the geological timeline.</p>	<p><b>Student Edition:</b>  355-357, 669-675, 794-795  <i>Integrate Earth Science</i> 496  <b>Teacher Wraparound Edition:</b>  CB 673; R 675; VL 671, 672</p>
<p>4. collect and analyze local, regional predictions about weather patterns, and global weather-related data by using appropriate technology in order to make inferences and predictions about weather patterns.</p>	<p><b>Student Edition:</b>  524-528  <i>Lab</i> 523  <i>Science Online</i> 528  <b>Teacher Wraparound Edition:</b>  ACT 526; SJ 526</p>
<p>5. explain the impact of terrestrial, solar, oceanic, and atmosphere conditions on global climatic patterns.</p>	<p><b>Student Edition:</b>  193-195, 529-534, 535-539  <i>MiniLab</i> 195  <i>Lab</i> 196  <i>Integrate Earth Science</i> 258  <i>National Geographic</i> 268  <i>Science and History</i> 382  <b>Teacher Wraparound Edition:</b>  CFU 195, 534; DIS 532; PR 534; QD 533; R 534;  SCB 516E-F</p>
<p>6. describe the origin, location, and evolution of stars and their planetary systems in respect to the solar system, the milky way, the local galactic group, and the universe.</p>	<p><b>Student Edition:</b>  206-207, 220-222, 823-829, 831-835, 836-839  <i>National Geographic</i> 826  <i>Lab</i> 830  <i>Science Online</i> 834  <b>Teacher Wraparound Edition:</b>  A 222; DI 206; QD 221; R 222; RS 825; SCB 216E;  VL 221</p>

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<p>7. relate how evidence from advanced technology, applied to scientific investigations (e.g., large telescopes and space-borne observatories), has dramatically impacted our understanding of the origin, size, and evolution of the universe.</p>	<p><b>Student Edition:</b> 204-207, 818-822 <i>Science Online</i> 204, 227, 234, 821 <i>Integrate Astronomy</i> 324 <i>Integrate Career</i> 472 <b>Teacher Wraparound Edition:</b> PR 229; SCB 816E; SJ 821</p>
<p><b>Content Standard 5—Students understand how scientific knowledge and technological developments impact today’s societies and cultures.</b></p>	
<p>1. predict how key factors (e.g., technology, competitiveness, world events) affect the development and acceptance of scientific thought.</p>	<p><b>Student Edition:</b> 42-45, 46-50 <b>Teacher Wraparound Edition:</b> SCB 36E</p>
<p>2. give examples of scientific innovation challenging commonly held perceptions.</p>	<p><b>Student Edition:</b> 38-39, 218-220, 354-361 <i>Science and History</i> 120 <i>Integrate History</i> 670 <b>Teacher Wraparound Edition:</b> CB 478; SCB 216E</p>
<p>3. evaluate the ongoing, collaborative scientific process by gathering and critiquing information from the popular media.</p>	<p><b>Teacher Wraparound Edition:</b> A 26; ACT 23, 41; CC 10</p>
<p>4. analyze benefits, limitations, costs, consequences, and ethics involved in using scientific and technological innovations. (e.g., biotechnology, environmental issues)</p>	<p><b>Student Edition:</b> 45, 491-493, 494-500, 536-539 <i>Science Online</i> 45 <i>MiniLab</i> 47 <i>Applying Science</i> 49, 499 <i>Integrate Career</i> 114 <i>Use the Internet Lab</i> 508-509 <i>Science and Society</i> 510 <b>Teacher Wraparound Edition:</b> A 45; ACT 48; CC 495; DI 44</p>

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<p><b>Content Standard 6—Students understand historical developments in science and technology.</b></p>	
<p>1. give examples of scientific discoveries and describe the interrelationship between technological advances and scientific understanding.</p>	<p><b>Student Edition:</b>            13, 38-45, 325-326, 462-463, 469-475  <i>Integrate Earth Science</i> 11  <i>Accidents in Science</i> 60  <i>Science and Society</i> 178  <i>Science and History</i> 312, 448  <b>Teacher Wraparound Edition:</b>            SCB 36E</p>
<p>2. analyze and illustrate the historical impact of scientific and technological advances.</p>	<p><b>Student Edition:</b>            38-39, 218-222, 720-725  <i>Science and History</i> 120, 478, 810  <i>Integrate History</i> 167  <i>Science Online</i> 722, 790  <b>Teacher Wraparound Edition:</b>            CC 156, 257; DI 460; PR 360; SCB 36E; VL 41</p>
<p>3. describe, explain, and predict science as a human endeavor.</p>	<p><b>Student Edition:</b>            6-13, 50  <i>Science and Language Arts</i> 30, 90, 346, 542, 842  <i>Accidents in Science</i> 210, 712, 744  <i>Integrate Language Arts</i> 837  <b>Teacher Wraparound Edition:</b>            CD 8; UAA 8</p>