



# EARTH SCIENCE

*Geology, the Environment,  
and the Universe*

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| <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><br/>11-16<br/><i>MiniLab</i> 12<br/><i>GeoLab</i> 20-21, 70-71, 114-115, 174-175, 232-233, 292-293, 406-407, 618-619<br/><i>Design Your Own GeoLab</i> 92-93, 378-379<br/><b>Teacher Wraparound Edition:</b><br/>A 71, 115; P 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><br/>14-16<br/><i>GeoLab</i> 20-21, 70-71, 114-115, 174-175, 232-233, 292-293, 406-407<br/><i>Design Your Own GeoLab</i> 92-93, 378-379, 676-677<br/><i>Problem-Solving Lab</i> 111<br/><b>Teacher Wraparound Edition:</b><br/>A 21; CB 15; D 15</p> |

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| <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><br/>13, 17-19<br/><i>GeoLab</i> 20-21, 70-71, 114-115, 174-175, 232-233, 292-293, 406-407<br/><i>Design Your Own GeoLab</i> 92-93, 378-379, 676-677, 704-705</p> <p><b>Teacher Wraparound Edition:</b><br/>CB 4D; DI 13</p>                                       |
| <p>4. compare observations of the real world to a mental model resulting from hypothetical, unobservable entities. (e.g., atom, expanding universe)</p>   | <p><b>Student Edition:</b><br/>18, 32-36, 54-59<br/><i>Problem-Solving Lab</i> 63<br/><i>MiniLab</i> 79</p> <p><b>Teacher Wraparound Edition:</b><br/>A 59; CL 64, 248; D 32; DI 32, 67; DIS 65; ITI 56; M 62, 81</p>  |
| <p>5. identify strengths, weaknesses, and assess the validity of the experimental design of an investigation through analysis and evaluation.</p>   | <p><b>Student Edition:</b><br/><i>GeoLab</i> 20-21, 70-71, 114-115, 174-175, 618-619, 826-827<br/><i>Design Your Own GeoLab</i> 92-93, 378-379, 676-677, 704-705, 798-799</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><br/>443-447, 448-454, 455-459, 460-463, 473, 484-487, 492 #9, 509-510<br/><i>MiniLab</i> 456<br/><i>GeoLab</i> 516-517<br/><i>GeoDigest</i> 546-549</p> <p><b>Teacher Wraparound Edition:</b><br/>AC 457; ITI 509; R 549; TPK 455</p>                             |
| <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><br/>77-83, 84-91, 99-106, 107-113, 121-127, 128-132, 133-139<br/><i>Earth Science Online</i> 85<br/><i>Problem-Solving Lab</i> 88, 110<br/><i>Discovery Lab</i> 99<br/><i>MiniLab</i> 108</p> <p><b>Teacher Wraparound Edition:</b><br/>CB 76D, 98C-98D; R 86</p> |

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| 3. use fossils and technology to describe the geological timeline.  | <p><b>Student Edition:</b><br/>553-556, 557-561, 562-565, 566-569, 584-588, 589-593<br/><i>Design Your Own GeoLab</i> 570-571</p> <p><b>Teacher Wraparound Edition:</b><br/>CB 555, 576C-576D, 602; CD 591; CL 615; ESJ 592; P 605</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><b>Student Edition:</b><br/>299-304, 305-311, 312-316, 317-321<br/><i>GeoLab</i> 292-293<br/><i>Earth Science Online</i> 309<br/><i>Problem-Solving Lab</i> 318<br/><i>Mapping GeoLab</i> 322-323<br/><i>Internet GeoLab</i> 352-353</p> <p><b>Teacher Wraparound Edition:</b><br/>A 291, 316, 321; ACT 310; CFU 316; DI 317</p> |
| 5. explain the impact of terrestrial, solar, oceanic, and atmosphere conditions on global climatic patterns.  | <p><b>Student Edition:</b><br/>359-363, 369-374, 375-377, 404, 411 #23<br/><i>Discovery Lab</i> 359<br/><i>GeoDigest</i> 437<br/><i>Science &amp; the Environment</i> 490</p> <p><b>Teacher Wraparound Edition:</b><br/>A 373, 374; CFU 363, 374; CON 371; DI 362; M 373</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><b>Student Edition:</b><br/>775-779, 793-797, 805-812, 813-820, 821-825, 833-838, 839-846, 847-851</p> <p><b>Teacher Wraparound Edition:</b><br/>A 825; CB 804C-804D, 832C-832D, 837; CFU 825; DI 822; ITI 795</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><b>Student Edition:</b><br/>747-752, 847-851<br/><i>Discovery Lab</i> 775<br/><i>Science in the News</i> 800, 828<br/><i>Science &amp; Technology</i> 854<br/><i>National Geographic Expeditions</i> 902-907</p> <p><b>Teacher Wraparound Edition:</b><br/>AC 314; AS 907; ITP 849</p>   |

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| <b>Content Standard 5—Students understand how scientific knowledge and technological developments impact today’s societies and cultures.</b>                                     |   |
| <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><br/> <i>Science &amp; the Environment</i> 260<br/> <i>Science in the News</i> 294<br/> <i>Science &amp; Technology</i> 324, 854<br/> <b>Teacher Wraparound Edition:</b><br/> AC 14; CB 7, 260; R 377</p>                   |
| <p>2. give examples of scientific innovation challenging commonly held perceptions.</p>  | <p><b>Student Edition:</b><br/> 448-454<br/> <b>Teacher Wraparound Edition:</b><br/> AC 842; CB 4C, 9; DI 848</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><br/> ACT 596; DIS 632; TPK 11</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><br/> 157-158, 254-257, 376-377, 664-668, 690-697, 716-723, 724-729, 730-733<br/> <i>Science &amp; the Environment</i> 176, 234<br/> <b>Teacher Wraparound Edition:</b><br/> A 723; CB 710C-710D; E 90; EC 9; TS 294</p>    |
| <b>Content Standard 6—Students understand historical developments in science and technology.</b>   |   |
| <p>1. give examples of scientific discoveries and describe the interrelationship between technological advances and scientific understanding.</p>                                | <p><b>Student Edition:</b><br/> 37-41, 312-316<br/> <i>Science &amp; Technology</i> 22, 72, 466<br/> <b>Teacher Wraparound Edition:</b><br/> CB 449; DI 109; EC 39; P 314, 756; TS 72</p>   |
| <p>2. analyze and illustrate the historical impact of scientific and technological advances.</p>   | <p><b>Student Edition:</b><br/> 365-366, 443-447, 448-454, 455-459, 460-463, 775-779, 842-843<br/> <i>Science &amp; Technology</i> 72<br/> <i>Science &amp; Math</i> 770<br/> <b>Teacher Wraparound Edition:</b><br/> AC 314, 842; CB 442C; P 753</p> |
| <p>3. describe, explain, and predict science as a human endeavor.</p>  | <p><b>Student Edition:</b><br/> 443-447<br/> <b>Teacher Wraparound Edition:</b><br/> AC 28; CD 906; CL 446; E 6; ESJ 6; TS 234; UAA 13</p>  |