



Physical Science

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STANDARDS	PAGE REFERENCES
<p>STANDARD 1: Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations. As students in grades 5-8 extend their knowledge, what they know and are able to do includes</p>	
<ul style="list-style-type: none"> identifying and evaluating alternative explanations and procedures; 	<p>Student Edition: 7 <i>Design Your Own LAB</i> 116-117, 214-215 <i>LAB</i> 57, 405, 680, 706 <i>Model and Invent LAB</i> 148-149, 438-439 <i>Science Skill Handbook</i> 795-796 Teacher Wraparound Edition: AIL 312, 466, 496, 716; CA 302; CYD 245, 484</p>
<ul style="list-style-type: none"> using examples to demonstrate that scientific ideas are used to explain previous observations and to predict future events (<i>for example, plate tectonics and future earthquake activity</i>); 	<p>Student Edition: 516-517 <i>Integrate Earth Science</i> 11, 45 <i>LAB</i> 90-91 <i>National Geographic</i> 166, 510 <i>Time Science and History</i> 92, 376, 528, 560 Teacher Wraparound Edition: A 45; AIL 180; I 92; SJ 11</p>

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<ul style="list-style-type: none"> asking questions and stating hypotheses that lead to different types of scientific investigations (<i>for example, experimentation, collecting specimens, constructing models, researching scientific literature</i>); 	<p>Student Edition: 8 <i>Design Your Own LAB</i> 58-59, 116-117, 246-247, 344-345 <i>LAB</i> 180-181, 206 <i>Model and Invent LAB</i> 148-149 <i>Science Skill Handbook</i> 788, 791 <i>Use the Internet LAB</i> 278-279, 374-375, 526-527, 652-653</p>
<ul style="list-style-type: none"> creating a written plan for an investigation; 	<p>Student Edition: <i>Design Your Own LAB</i> 58-59, 116-117, 214-215, 246-247, 592-593, 716-717 <i>LAB</i> 466-467, 622-623 <i>Model and Invent LAB</i> 558-559 Teacher Wraparound Edition: CYD 117</p>
<ul style="list-style-type: none"> using appropriate tools, technologies, and measurement units to gather and organize data; 	<p>Student Edition: 14-19, 21 <i>Design Your Own LAB</i> 28-29, 58-59, 116-117, 214-215, 246-247, 716-717 <i>LAB</i> 27, 57, 277, 423, 484, 496-497, 651, 680 <i>LaunchLAB</i> 5 <i>MiniLAB</i> 19 <i>Model and Invent LAB</i> 148-149 <i>National Geographic</i> 20 <i>Science Skill Handbook</i> 793-794 <i>Technology Skill Handbook</i> 813-815 <i>Use the Internet LAB</i> 278-279 Teacher Wraparound Edition: A 17, 20; CC 18; D 16; QD 17; SJ 15</p>
<ul style="list-style-type: none"> interpreting and evaluating data in order to formulate conclusions; 	<p>Student Edition: 10 <i>Design Your Own LAB</i> 58-59, 116-117, 344-345, 716-717 <i>LAB</i> 90-91, 180-181, 277, 312-313, 366, 457, 484, 496-497, 622-623, 651 <i>Model and Invent LAB</i> 148-149 <i>Science Skill Handbook</i> 796 <i>Use the Internet LAB</i> 278-279 Teacher Wraparound Edition: DI 10</p>

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<ul style="list-style-type: none"> communicating results of their investigations in appropriate ways (<i>for example, written reports, graphic displays, oral presentations</i>); 	<p>Student Edition: 22-26 <i>Applying Math</i> 24 <i>Communicating Your Data</i> 91, 149, 215, 345, 405, 423 <i>MiniLAB</i> 25 <i>Science Skill Handbook</i> 796 <i>Technology Skill Handbook</i> 813-816</p> <p>Teacher Wraparound Edition: CYD 59, 89, 106, 215, 277, 279, 302, 366, 375, 405, 439, 497, 527; DI 23; LD 25; QD 24</p>
<ul style="list-style-type: none"> using metric units in measuring, calculating, and reporting results; 	<p>Student Edition: 14-19, 21 <i>Applying Math</i> 16, 40, 69, 102, 299, 487 <i>LAB</i> 27, 90-91, 180-181, 277, 312-313, 496-497 <i>Math Skill Handbook</i> 827-828 <i>MiniLAB</i> 19, 42 <i>Model and Invent LAB</i> 148-149 <i>National Geographic</i> 20</p> <p>Teacher Wraparound Edition: A 17, 20; D 16; DI 20</p>
<ul style="list-style-type: none"> explaining that scientific investigations sometimes result in unexpected findings that lead to new questions and more investigations; and 	<p>Student Edition: 10, 358, 516-517 <i>Integrate Astronomy</i> 76 <i>Oops! Accidents in Science</i> 624, 654 <i>Time Science and History</i> 376, 560 <i>Time Science and Society</i> 780</p>
<ul style="list-style-type: none"> giving examples of how collaboration can be useful in solving scientific problems and sharing findings. 	<p>Student Edition: 10, 358, 517 <i>Integrate Astronomy</i> 76 <i>Integrate Career</i> 520 <i>Time Science and History</i> 92, 560</p> <p>Teacher Wraparound Edition: AE 624; CYD 206</p>

STANDARDS	PAGE REFERENCES
<p>STANDARD 2: Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)</p>	
<p>2.1 Students know that matter has characteristic properties, which are related to its composition and structure. As students in grades 5-8 extend their knowledge, what they know and are able to do includes</p>	
<ul style="list-style-type: none"> examining, describing, comparing, measuring, and classifying objects based on common physical and chemical properties (<i>for example, states of matter, mass, volume, electrical charge, temperature, density, boiling points, pH, magnetism, solubility</i>); 	<p>Student Edition: 458-463, 476-483, 485-489, 490, 492-495 LAB 466-467, 496-497, 680, 686-687 Integrate History 482 LaunchLAB 475 MiniLAB 494</p> <p>Teacher Wraparound Edition: A 461; DI 459; LD 478; QD 463, 473, 492; R 483</p>
<ul style="list-style-type: none"> separating mixtures of substances based on their properties (<i>for example, solubility, boiling points, magnetic properties, densities</i>); 	<p>Student Edition: 459, 463 Integrate Environment 459 LaunchLAB 449 MiniLAB 486</p> <p>Teacher Wraparound Edition: CD 463; DI 459; LD 460; MM 461; QD 463; VL 461</p>
<ul style="list-style-type: none"> classifying and describing matter in terms of elements, compounds, mixtures, atoms, and molecules (<i>for example, copper is an element, water is a compound, air is a mixture</i>); and 	<p>Student Edition: 450, 452-456, 664-665, 726 LAB 457 MiniLAB 453 National Geographic 451, 666</p> <p>Teacher Wraparound Edition: A 454; D 452, 454; DI 669; IM 452; SJ 452; TPK 450, 664; VL 454</p>
<ul style="list-style-type: none"> developing simple models to explain observed properties of matter (<i>for example, using a particle model to account for the solubility of a substance</i>). 	<p>Student Edition: 476-483, 485-489, 490, 492-495, 664-665, 667, 676-679, 682-683 LAB 484, 496-497, 686-687 MiniLAB 492</p> <p>Teacher Wraparound Edition: CU 679; IL 479; LD 478; QD 477; R 483; UA 477; VL 481, 667</p>

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<p>2.2 Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). As students in grades 5-8 extend their knowledge, what they know and are able to do includes</p>	
<ul style="list-style-type: none"> measuring quantities associated with energy forms (<i>for example, temperature, mass, speed, distance, electrical charge, current, voltage</i>); and 	<p>Student Edition: 14-21 <i>Design Your Own LAB</i> 58-59, 116-117, 246-247 <i>LAB</i> 57, 106, 180-181, 302, 312-313 <i>MiniLAB</i> 42</p> <p>Teacher Wraparound Edition: LD 165; QD 41, 161</p>
<ul style="list-style-type: none"> describing qualitative and quantitative relationships, using data and observations and graphs, associated with energy transfer or energy transformation (<i>for example, speed of object vs. height of ramp; length of string vs. pitch of sound; electric current vs. volume of gas produced in electrolysis, with length of time kept constant</i>). 	<p>Student Edition: 100-105, 107-109, 111-115, 261-262, 646, 648-650 <i>Design Your Own LAB</i> 58-59, 116-117 <i>Integrate Environment</i> 111 <i>LAB</i> 338, 651 <i>LaunchLAB</i> 99 <i>MiniLAB</i> 103, 112 <i>National Geographic</i> 110, 647</p> <p>Teacher Wraparound Edition: AIL 58, 116; IL 113; LD 110; QD 104</p>
<p>2.3 Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged. As students in grades 5-8 extend their knowledge, what they know and are able to do includes</p>	
<ul style="list-style-type: none"> identifying and classifying factors causing change within a system (<i>for example, force, light, heat</i>); 	<p>Student Edition: 52-55, 68-74, 75-81, 83-84, 86-88, 158-162, 164-165, 167-170, 650 <i>Design Your Own LAB</i> 58-59 <i>LAB</i> 57, 89, 90-91 <i>National Geographic</i> 85, 166</p> <p>Teacher Wraparound Edition: D 69; DI 54, 76, 77; IL 80; IM 53; SJ 76; TFYI 69; VL 161</p>
<ul style="list-style-type: none"> identifying and predicting what will change and what will remain unchanged when matter experiences an external force or energy change (<i>for example, boiling a liquid; comparing the force, distance, and work involved in simple machines</i>); 	<p>Student Edition: 132-137, 138-139, 141-146, 158-162, 460-461 <i>MiniLAB</i> 134 <i>Model and Invent LAB</i> 148-149 <i>National Geographic</i> 140</p> <p>Teacher Wraparound Edition: A 133; DI 133; FF 159; LD 142; QD 135; VL 159, 161</p>

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<ul style="list-style-type: none"> observing and gathering data to support the concept of conservation of mass within a closed system (<i>for example, precipitation reaction, forming mixtures, gas production</i>); 	<p>Student Edition: 465, 632-633 <i>Applying Math</i> 463</p> <p>Teacher Wraparound Edition: D 635; IM 448F; QD 633; R 465; UA 633</p>
<ul style="list-style-type: none"> describing, measuring (<i>for example, temperature, mass, volume, melting point of a substance</i>) and calculating quantities before and after a chemical or physical change within a system (<i>for example, temperature change, mass change, specific heat</i>); and 	<p>Student Edition: 158-163, 458-465, 632-636 <i>Applying Math</i> 162, 463, 644 LAB 466-467 MiniLAB 460</p> <p>Teacher Wraparound Edition: IL 462; QD 459, 464; SJ 462; VL 461</p>
<ul style="list-style-type: none"> describing, measuring (<i>for example, time, distance, mass, force</i>) and calculating quantities that characterize moving objects and their interactions within a system (<i>for example, force, velocity, acceleration, potential energy, kinetic energy</i>). 	<p>Student Edition: 38-44, 47-48, 50, 52-55, 68-74, 100-105 <i>Applying Math</i> 40, 69, 102, 104 <i>Design Your Own LAB</i> 58-59 LAB 57, 90-91, 106 MiniLAB 42, 54, 103 <i>National Geographic</i> 49</p> <p>Teacher Wraparound Edition: D 44, 48, 69; DI 45, 54; QD 50, 53; SJ 44, 73</p>
<p>STANDARD 5: Students know and understand interrelationships among science, technology, and human activity and how they can affect the world. As students in grades 5-8 extend their knowledge, what they know and are able to do includes</p>	
<ul style="list-style-type: none"> investigating and describing the extent of human uses of renewable and non-renewable resources (<i>for example, forests, fossil fuels</i>); 	<p>Student Edition: 256-257, 259-263, 264-269, 271-276 <i>National Geographic</i> 258 <i>Time Science and Society</i> 280 <i>Use the Internet LAB</i> 278-279</p> <p>Teacher Wraparound Edition: AIL 278; CC 261; D 257, 261, 273, 275; DI 257; IL 260; IM 273; SJ 267</p>

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<ul style="list-style-type: none"> describing advantages and disadvantages that might accompany the introduction of a new technology (<i>for example, mountain bikes, cellular telephones, pagers</i>); 	<p>Student Edition: 13, 210, 235-237, 238-240, 267-269, 271-276 <i>Applying Science</i> 269 <i>Integrate Social Studies</i> 267 <i>National Geographic</i> 241 <i>Time Science and History</i> 248 <i>Time Science and Society</i> 280, 440 <i>Use the Internet LAB</i> 278-279</p> <p>Teacher Wraparound Edition: CC 235, 265; D 133, 280; DI 268; IM 273; TFYI 268</p>
<ul style="list-style-type: none"> describing how the use of technology can help solve an individual or community problem (<i>for example, using catalytic converters on automobiles to help reduce air pollution</i>); and 	<p>Student Edition: 132-137, 271-276 <i>Model and Invent LAB</i> 148-149 <i>National Geographic</i> 241, 397, 430, 555, 738, 769 <i>Time Science and History</i> 248 <i>Time Science and Society</i> 440</p> <p>Teacher Wraparound Edition: CD 139</p>
<ul style="list-style-type: none"> describing how people use science and technology in their professions. 	<p>Student Edition: 362-363, 365, 432-435 <i>Integrate Astronomy</i> 524 <i>Integrate Career</i> 325, 370, 520, 743 <i>Integrate Earth Science</i> 11 <i>Integrate Health</i> 363 <i>Integrate Life Science</i> 514 <i>National Geographic</i> 430, 555 <i>Time Science and History</i> 248, 314, 528 <i>Time Science and Society</i> 150, 440</p>
<p>STANDARD 6: Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines. As students in grades 5-8 extend their knowledge, what they know and are able to do includes</p>	
<ul style="list-style-type: none"> explaining why a controlled experiment must have comparable results when repeated; 	<p>Student Edition: 7-10 <i>Design Your Own LAB</i> 28-29 (Conclude and Apply) <i>Science Skill Handbook</i> 792</p> <p>Teacher Wraparound Edition: QD 10</p>

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<ul style="list-style-type: none"> giving examples of how scientific knowledge changes as new knowledge is acquired and previous ideas are modified (<i>for example, through space exploration</i>); 	<p>Student Edition: 12, 358, 434, 486, 488, 492, 507-509, 511, 516-517, 523, 544-545, 551 <i>Integrate Astronomy</i> 524 <i>Integrate History</i> 482, 540 <i>National Geographic</i> 491, 510 <i>Time Science and History</i> 376, 528, 560</p> <p>Teacher Wraparound Edition: A 510; CD 8, 538; D 8, 434; DI 359; HS 376; IL 12; IM 519; TFYI 358, 508, 547</p>
<ul style="list-style-type: none"> describing contributions to the advancement of science made by people in different cultures and at different times in history; 	<p>Student Edition: 54-55, 231, 358, 485-486, 488, 492, 494, 509-511, 516, 633-634 <i>Integrate History</i> 540 <i>National Geographic</i> 430, 510, 590, 769 <i>Oops! Accidents in Science</i> 654, 750 <i>Time Science and History</i> 92, 248, 314, 376, 528, 560, 594 <i>Time Science and Society</i> 150, 440, 780</p> <p>Teacher Wraparound Edition: A 45; CC 128, 134, 160, 194, 233, 633; CD 8, 210, 226, 428, 538, 712; DI 161, 359</p>
<ul style="list-style-type: none"> identifying, comparing, and predicting variables and conditions related to change (<i>for example, climate, population, motion</i>); 	<p>Student Edition: <i>Design Your Own LAB</i> 116-117 LAB 89, 90-91, 106, 171, 312-313, 466-467, 484, 651 <i>Model and Invent LAB</i> 148-149</p>
<ul style="list-style-type: none"> identifying and illustrating natural cycles within systems (<i>for example, water, planetary motion, geological changes, climate</i>); and 	<p>Student Edition: 82 <i>Integrate Earth Science</i> 45 <i>National Geographic</i> 166, 197</p> <p>Teacher Wraparound Edition: CC 167</p>
<ul style="list-style-type: none"> using a model to predict change (<i>for example, computer simulation, video sequence, stream table</i>). 	<p>Student Edition: <i>Design Your Own LAB</i> 58-59, 116-117 LAB 90-91, 106, 171, 302, 312-313, 557, 651 <i>MiniLAB</i> 134 <i>Model and Invent LAB</i> 148-149, 558-559</p> <p>Teacher Wraparound Edition: AIL 312</p>