



COLORADO
Science Content Standards Grades 5-8
Science Level Red, Science Level Green, Science Level Blue © 2005

CONTENT STANDARDS	PAGE REFERENCES		
	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
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			
<ul style="list-style-type: none"> identifying and evaluating alternative explanations and procedures; 	SE: 27-30 <i>Lab 31</i> <i>Accidents in Science 552</i> TWE: ACT 608	SE: 190-192 <i>Model and Invent Lab 138-139, 582-583</i> <i>Use the Internet Lab 738-739</i> TWE: R 166	SE: 319, 388-391, 405-413, 434-435 <i>Science and Society 56, 658</i> TWE: DIN 274 FYI 10
<ul style="list-style-type: none"> using examples to demonstrate that scientific ideas are used to explain previous observations and to predict future events (for example, plate tectonics and future earthquake activity); 	SE: 6-7, 136-143, 194-200, 237-243, 288-297, 356-362 TWE: D 7 LD 141 DI 142 R 143	SE: 58-61, 156-166, 334-341, 600-609 <i>Applying Science 287</i> TWE: SCB 56E-F SJ 73 CC 128 IL 307 DI 545	SE: 102-105, 135, 150-153, 182-185, 196-199, 261, 314-316, 410-413 <i>Lab 200-201</i> TWE: DI 357
<ul style="list-style-type: none"> asking questions and stating hypotheses that lead to different types of scientific investigations (for example, experimentation, collecting specimens, constructing models, researching scientific literature); 	SE: 12-20 <i>MiniLAB 23</i> <i>Design Your Own Lab 88-89, 364-365</i> <i>Model and Invent Lab 306-307</i> TWE: DI 115, 213, 319, 375 IL 232	SE: 113 #26 <i>Design Your Own Lab 108-109</i> <i>Use the Internet Lab 296-297</i> TWE: IL 128, 226, 417, 453, 481, 574 SJ 281	SE: 14-15, 21-22, 50, 185 <i>Applying Math 47</i> <i>Applying Science 192</i> <i>Lab 28-29, 82-83, 140-141</i> <i>National Geographic 178-179</i> <i>Science and Society 56</i> TWE: CD 40

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<ul style="list-style-type: none"> creating a written plan for an investigation; 	SE: 189 #25 <i>Design Your Own Lab</i> 88-89, 244-245, 488-489, 520-521, 580-581 TWE: A 117, 623 DI 328	SE: <i>Design Your Own Lab</i> 108-109, 236-237, 324-325, 354-355, 390-391, 458-459, 550-551, 610-611, 674-675, 706-707	SE: 14-15 <i>Lab</i> 112-113, 392-393, 424-425, 510-511, 570-571, 598-599, 624-625 <i>Science Skill Handbook</i> 728 TWE: CU 23
<ul style="list-style-type: none"> using appropriate tools, technologies, and measurement units to gather and organize data; 	SE: <i>Use the Internet Lab</i> 152-153 <i>Lab</i> 184-185, 215, 278-279, 322, 598 <i>Design Your Own Lab</i> 332-333, 364-365, 520-521, 588-589	SE: <i>Lab</i> 35, 48-49, 168-169, 231, 538, 577, 582-583, 642-643 <i>Design Your Own Lab</i> 108-109 <i>Use the Internet Lab</i> 522-523 <i>Model and Invent Lab</i> 582-583	SE: 17, 99-100, 198-199, 213-214, 254-255, 373 <i>Lab</i> 12, 28-29, 189 <i>Science and History</i> 114
<ul style="list-style-type: none"> interpreting and evaluating data in order to formulate conclusions; 	SE: <i>Lab</i> 32-33, 183-184, 277, 414, 573 <i>Design Your Own Lab</i> 88-89, 244-245 <i>Launch Lab</i> 129 <i>MiniLAB</i> 359 <i>Model and Invent Lab</i> 396-397	SE: <i>Lab</i> 20-21, 66, 168-169, 260, 313, 424-425 <i>Design Your Own Lab</i> 108-109, 236-237, 458-459 <i>Model and Invent Lab</i> 138-139	SE: 18-19, 23 <i>Lab</i> 28-29, 112-113, 189, 326-327, 392-393, 510-511, 618 <i>Science Skill Handbook</i> 731-732
<ul style="list-style-type: none"> communicating results of their investigations in appropriate ways (for example, written reports, graphic displays, oral presentations); 	SE: 157 #28 <i>Design Your Own Lab</i> 60-61, 88-89, 488-489 <i>Use the Internet Lab</i> 152-153 <i>Communicating Your Data</i> 333 <i>Model and Invent Lab</i> 550-551 TWE: A 167, 669 DI 418	SE: <i>Communicating Your Data</i> 21, 109, 203, 267, 313, 521, 523, 583 TWE: CC 293, 541	SE: 19 <i>Lab</i> 82-83, 112-113, 392-393, 510-511, 540-541 <i>Math Skill Handbook</i> 765-766 <i>Science Skill Handbook</i> 732 <i>Technology Skill Handbook</i> 748-751 TWE: CC 22

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<ul style="list-style-type: none"> using metric units in measuring, calculating, and reporting results; 	SE: 50-54 <i>Lab 55, 298</i> <i>Design Your Own Lab 60-61, 332-333</i> <i>Applying Math 131, 134</i> <i>MiniLAB 138, 167</i>	SE: <i>Lab 168-169, 438, 488-489, 538</i> <i>Applying Math 446, 469</i> <i>MiniLAB 507, 597</i> TWE: IL 628 ACT 659	SE: 17 <i>Applying Math 77, 346, 583, 610, 698</i> <i>Lab 189, 570-571</i> <i>Math Skill Handbook 762-763</i> TWE: SJ 156
<ul style="list-style-type: none"> explaining that scientific investigations sometimes result in unexpected findings that lead to new questions and more investigations; and 	SE: <i>Accidents in Science 552</i>	SE: 6-11 <i>National Geographic 15</i> <i>Accidents in Science 298, 460, 676</i> <i>Science and History 392</i> TWE: CB 159 DI 228 HS 238 CC 451	SE: 50, 182-185, 186-187, 389, 408-411 <i>Lab 140-141</i> TWE: DIN 39 FF 21, 25
<ul style="list-style-type: none"> giving examples of how collaboration can be useful in solving scientific problems and sharing findings. 	SE: 12-17 <i>Communicating Your Data 153</i> TWE: A 41 IC 104 DI 137, 212, 345, 363, 421	SE: <i>Lab 488-489</i> TWE: DI 157, 216 IL 161 ACT 298, 346, 567 QD 471	SE: 408-411 <i>Lab 72, 392-393, 424-425, 540-541, 569, 570-571</i> <i>Science and History 426</i> TWE: DIN 39

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STANDARD 2: Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry) 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			
<ul style="list-style-type: none"> examining, describing, comparing, measuring, and classifying objects based on common physical and chemical properties (for example, states of matter, mass, volume, electrical charge, temperature, density, boiling points, pH, magnetism, solubility); 	SE: 70-79, 80-86, 93 #18 <i>Launch Lab 68</i> <i>MiniLAB 73</i> <i>Lab 87</i> TWE: SCB 68E-F ACT 77, 78	SE: 30-34, 36-40, 594-598 <i>Lab 48-49, 599</i> <i>MiniLAB 599</i> TWE: DI 595 VL 595 SJ 597 QD 598	SE: 187-188, 308, 388-389 <i>Accidents in Science 362</i> <i>Applying Math 77</i> <i>Integrate Health 452</i> <i>Lab 189, 453</i>
<ul style="list-style-type: none"> separating mixtures of substances based on their properties (for example, solubility, boiling points, magnetic properties, densities); 	SE: 115-117 <i>Applying Science 115</i> <i>Science Online 116</i> <i>Lab 118-119</i> TWE: QD 116 A 117	SE: 249 <i>Lab 78-79</i> <i>Science Online 621</i> TWE: VL 249, 621 DI 249, 623	SE: 79 <i>MiniLab 124</i> <i>National Geographic 2-3</i> <i>Science and Society 172</i> TWE: FYI 78 LD 70
<ul style="list-style-type: none"> classifying and describing matter in terms of elements, compounds, mixtures, atoms, and molecules (for example, copper is an element, water is a compound, air is a mixture); and 	SE: 106-111, 113-117 <i>Science Online 107</i> <i>Lab 112</i> <i>MiniLAB 114</i> TWE: SCB 96E ACT 108, 116 A 111	SE: 58, 90-91, 246-253, 620-625, 652 TWE: SCB 244E TPK 246 TFYI 247 QD 249, 622	SE: 421-423, 434-440, 441-447, 448-450, 452, 473-480, 494-497 <i>Applying Science 469</i> <i>Lab 453</i> <i>Science and History 512</i> TWE: TC 432
<ul style="list-style-type: none"> developing simple models to explain observed properties of matter (for example, using a particle model to account for the solubility of a substance). 	SE: 100-105 <i>MiniLAB 100</i> TWE: MM 74, 114, 568 IL 103 CFU 105, 182 DI 198	TWE: QD 119, 627 IL 226 DI 247 MM 252, 595, 621, 653	SE: <i>Lab 424-425, 481, 482-483</i> <i>MiniLab 158, 411, 475</i> TWE: DIN 474 RE 480

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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			
<ul style="list-style-type: none"> measuring quantities associated with energy forms (for example, temperature, mass, speed, distance, electrical charge, current, voltage); and 	SE: <i>Lab</i> 151, 183, 184-185, 215 <i>Applying Math</i> 171 <i>MiniLAB</i> 176 TWE: IL 141 QD 171 LD 174 A 176	SE: <i>Design Your Own Lab</i> 108-109 <i>Model and Invent Lab</i> 138-139 <i>Lab</i> 167, 168-169, 577 TWE: QD 154	SE: <i>Applying Math</i> 126, 166, 583, 649, 652, 698 <i>Extra Try at Home Lab</i> 744 #18, 746 #21 <i>Lab</i> 326-327, 598-599
<ul style="list-style-type: none"> describing qualitative and quantitative relationships, using data and observations and graphs, associated with energy transfer or energy transformation (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). 	SE: 130-135, 136-143, 144-150, 162-169, 178-182 <i>Lab</i> 151, 183, 184-185 TWE: R 135 IL 166	SE: 716-720, 721-727 <i>Design Your Own Lab</i> 108-109 <i>Lab</i> 167 <i>Model and Invent Lab</i> 202-203 TWE: LD 722	SE: 213-214, 582-583, 609-610, 648-649, 652, 698 <i>Lab</i> 189, 326-327, 510-511, 585, 624-625
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			
<ul style="list-style-type: none"> identifying and classifying factors causing change within a system (for example, force, light, heat); 	SE: 80-86, 136-143, 144-147, 162-169, 178-182 TWE: D 84 QD 110 SCB 128E IM 128F ACT 137	SE: 58-61, 96-97, 156-166, 600-609, 657-664 <i>MiniLAB</i> 251 <i>Launch Lab</i> 619 TWE: LD 94, 164, 655	SE: 40-42, 50-51, 159, 195-197, 210-213, 229-231, 503-508, 612-615 <i>Lab</i> 112-113 <i>National Geographic</i> 152

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<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 (for example, boiling a liquid; comparing the force, distance, and work involved in simple machines); 	SE: 73-75, 80-86, 93 #21, 95 #16, 136-143, 144-150, 162-169 <i>Lab 151</i> TWE: QD 75 IL 141	SE: 600-609, 657-664, 721-727 <i>Applying Skills 70</i> TWE: SJ 73 A 183 LD 596 IL 604, 628 IP 658	SE: 530-531, 534-538, 557-559, 567-568, 591-597, 612-615 <i>Lab 510-511, 655</i> <i>National Geographic 2-3, 565</i> <i>Science and History 512</i> <i>Science and Society 572</i>
<ul style="list-style-type: none"> observing and gathering data to support the concept of conservation of mass within a closed system (for example, precipitation reaction, forming mixtures, gas production); 	SE: 84-86, 93 #16, 93 #25, 100 <i>Applying Science 85</i> <i>Section Review 105</i> TWE: IL 85 A 86 TFYI 100 LD 101	SE: 61, 548-549, 609 <i>Section Review 61</i>	SE: 496-497 <i>Applying Science 498</i>
<ul style="list-style-type: none"> describing, measuring (for example, temperature, mass, volume, melting point of a substance) and calculating quantities before and after a chemical or physical change within a system (for example, temperature change, mass change, specific heat); and 	SE: 73-75, 80-86 <i>MiniLAB 84</i> <i>Design Your Own Lab 88-89</i> <i>Lab 118-119</i> TWE: SJ 82 QD 82 IM 96F D 182	SE: <i>MiniLAB 95, 507, 596</i> <i>Lab 167, 665</i> TWE: QD 75	SE: 40-42, 50-51, 159, 195-197, 210-213, 229-231, 504-508, 612-615 <i>Lab 112-113</i> <i>National Geographic 152</i>
<ul style="list-style-type: none"> describing, measuring (for example, time, distance, mass, force) and calculating quantities that characterize moving objects and their interactions within a system (for example, force, velocity, acceleration, potential energy, kinetic energy). 	SE: 130-135, 136-143 <i>Applying Math 131, 132, 134, 141</i> <i>Lab 152-153</i> TWE: SCB 128E IL 141 LD 141	SE: 670-673, 684-689, 690-693, 694-700, 702-705 <i>MiniLAB 687</i> <i>Applying Math 688, 695</i> <i>Lab 701</i> <i>Design Your Own Lab 706-707</i>	SE: 524-527, 530-531, 534-536, 552-553, 556-561, 563-568 <i>Lab 539, 540-541, 570-571</i> <i>National Geographic 537</i>

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STANDARD 3: Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. (Focus: Biology-- Anatomy, Physiology, Botany, Zoology, Ecology) 3.1 Students know and understand the characteristics of living things, the diversity of life, and how living things interact with each other and with their environment. As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> constructing and using classification systems based on the structure of organisms; 	SE: 498-500, 501-505, 506-511, 530-534, 535-539, 541-544, 545-549 TWE: SCB 496E-F, 528E-F DI 548	SE: 218-220, 232-233, 505 <i>Launch Lab</i> 213 <i>National Geographic</i> 504 <i>Lab</i> 521 TWE: SCB 212E, 498E DI 219 ACT 220	SE: 106-107 <i>National Geographic</i> 51 TWE: AS 110
<ul style="list-style-type: none"> describing the importance of plant and animal adaptations, including local examples; 	SE: 535, 539, 541-544 <i>MiniLAB</i> 546 TWE: A 395 CFU 505, 625 VL 537, 541 ACT 547	SE: 152-155, 334-341, 502, 559 #18 <i>Launch Lab</i> 333 <i>Lab</i> 342 TWE: DI 153 MM 154 ACT 336, 503	SE: 50, 52, 109 <i>Lab</i> 54-55, 112-113 <i>National Geographic</i> 51 TWE: CD 126 VL 125
<ul style="list-style-type: none"> creating and interpreting food chains and food webs; 	SE: 391-395, 633-635 <i>Science Online</i> 392 TWE: MM 391, 634 DI 393 V 393 ACT 393, 634 CFU 635	SE: 544-549, 555 #26 TWE: V 545 DI 545, 547 ACT 545 IL 546 A 549	SE: 106-107, 136-139 TWE: FF 108
<ul style="list-style-type: none"> explaining the interaction and interdependence of nonliving and living components within ecosystems; and 	SE: 389-395, 618-625, 627-632 <i>Lab</i> 626 TWE: V 393, 621 ACT 619 A 625 D 630 CFU 632	SE: 532-537, 539-543 <i>Lab</i> 538 <i>Applying Math</i> 555 TWE: SCB 530E DI 533 QD 533 AIL 550	SE: 95-97, 98-105, 106-110, 122-128, 130-135, 137-139, 150-153, 154-161, 163-169 TWE: TC 92

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<ul style="list-style-type: none"> describing how an environment's ability to provide food, water, space, and essential nutrients determines carrying capacity. 	SE: 627-632, 641 #21 <i>Applying Science</i> 631 TWE: SJ 629 DI 631	SE: 539-543, 555 #19 <i>Launch Lab</i> 531 <i>Design Your Own Lab</i> 550-551 TWE: SCB 530F ACT 541 QD 541	SE: 98-105, 106-110
3.2 Students know and understand interrelationships of matter and energy in living systems. As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> describing the basic processes of photosynthesis and respiration and their importance to life (for example, set up a terrarium or aquarium and make changes such as blocking out light); 	SE: 180, 377, 480-481, 493 #25, 567 TWE: D 377 DI 377 SCB 616E IM 616F TPK 633	SE: 261-265 <i>Lab</i> 266-267 <i>Applying Math</i> 271 TWE: IM 244F, 262 SJ 262 UAA 262 CFU 265 VL 265 AIL 266	SE: 106, 124-125, 135, 136-137 <i>Integrate Chemistry</i> 107 <i>Lab</i> 140-141 <i>National Geographic</i> 134 TWE: FF 108 FYI 138
<ul style="list-style-type: none"> comparing and contrasting food webs within and between different ecosystems (for example, grasslands, tundra, marine) and predicting the consequences of disrupting one of the organisms in a food web; 	SE: 391-393, 633-635 TWE: MM 391, 634 CC 391 D 392 V 393 DI 393 VL 634	SE: <i>Applying Science</i> 546 TWE: DI 545 CD 547	SE: 138 TWE: CU 110, 139 DIN 137 IM 173 MM 108 VL 109
<ul style="list-style-type: none"> describing ways (for example, digestion, transport of nutrients by circulatory system) that multicellular organisms get food and other matter to their cells; 	SE: 484, 563-568 <i>Design Your Own Lab</i> 488-489 <i>Launch Lab</i> 559 <i>Section Review</i> 572 TWE: TFYI 563, 564 FF 563	SE: 371-376, 400-404, 429 #18 <i>Integrate Health</i> 404 <i>Lab</i> 424-425 TWE: TFYI 402 CFU 404	SE: 68, 70-71, 73-77, 135 <i>Lab</i> 111, 140-141 <i>Launch Lab</i> 63 <i>National Geographic</i> 134 TWE: TC 62

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<ul style="list-style-type: none"> explaining the recycling of materials by determining a pathway of a substance that is important for life (for example, trace water through an ecosystem); and 	SE: 345-347, 394-395, 401 #19, 635 TWE: ACT 346 V 346 CFU 347, 395 VL 394 DI 634	SE: 101-102, 166, 548-549, 555 #27	SE: 107, 130-131, 132-133, 135 <i>Lab 129</i> <i>National Geographic 134</i>
<ul style="list-style-type: none"> describing the role of organisms in the decomposition and recycling of dead organisms (for example, bacteria's role in the decomposition and recycling of matter from a dead animal). 	SE: 391-395, 401 #20, 634, 641 #24 <i>Section Review 395</i> TWE: MM 391 V 393 QD 634	SE: 544-549, 555 #20 TWE: CD 548	SE: 107, 109, 132, 135 <i>Lab 129</i> <i>National Geographic 134</i> TWE: DI 658
3.3 Students know and understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> describing the observable components and functions of a cell (for example, cell membrane, nucleus, cytoplasm, chloroplasts; movement of molecules into and out of cells); 	SE: 476-481, 493 #26 <i>MiniLAB 480</i> TWE: SCB 474E-F MM 478 DI 478, 479 UAA 479 R 481	SE: 221-230, 254-258 <i>MiniLAB 225</i> <i>National Geographic 259</i> <i>Lab 260</i> TWE: IL 227 DI 227, 228 MM 228 LD 256	SE: 68, 73-77 <i>Lab 72</i> <i>National Geographic 69</i> TWE: UA 70
<ul style="list-style-type: none"> comparing and contrasting the basic structures and functions of different types of cells (for example, single-celled organisms in pond water, Elodea, onion cell, human cheek cell); 	SE: 478-479, 483-487, 493 #24 <i>Launch Lab 475</i> <i>Lab 482</i> <i>MiniLAB 484</i> TWE: A 475 DI 485 QD 485 CFU 487	SE: 254-258, 261-265 <i>Lab 231</i> TWE: ACT 224 QD 224, 264 VL 227 CFU 230, 258 A 230	SE: 68, 73-77 <i>Lab 72</i> <i>National Geographic 69</i> TWE: UA 70

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<ul style="list-style-type: none"> describing the growth and development of several organisms (for example, embryonic development of a vertebrate); 	SE: 502-505, 512-513, 536-537, 577-579 <i>Lab</i> 519, 540 <i>MiniLAB</i> 578 TWE: VL 513 IL 513 ACT 537	SE: 215, 479-487 <i>Integrate Health</i> 215 <i>MiniLAB</i> 482 <i>Science Stats</i> 490 TWE: TPK 479 IL 481 QD 485 MM 485 R 487	SE: 40-42, 132 <i>Lab</i> 140-141 TWE: IL 47
<ul style="list-style-type: none"> describing the structures and functions of human body systems; and 	SE: 560-572, 574-579 <i>Launch Lab</i> 559 <i>MiniLAB</i> 569 <i>Science Online</i> 571 TWE: IL 538 SCB 558E-F LD 562 TFYI 563 DI 566	SE: 371-376, 377-380, 400-404, 412-418, 419-423, 434-437, 439-443, 444-448, 449-457, 468-472	SE: 68, 70-71, 73-78 <i>Lab</i> 72 <i>National Geographic</i> 69
<ul style="list-style-type: none"> describing and giving examples of noncommunicable diseases and communicable diseases (for example, heart disease and chicken pox). 	TWE: TFYI 561, 576 DI 564 ACT 564, 565 CC 570 A 605	SE: 232-235, 374-375, 381-388 <i>Science and History</i> 356 <i>Science Online</i> 376 TWE: CC 225 DI 234, 375, 383 ACT 387	SE: 7-8 <i>Integrate History</i> 75 TWE: SJ 77 TPK 6
3.4 Students know and understand how organisms change over time in terms of biological evolution and genetics. As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> describing the purpose of body cell division and sex cell division; 	SE: 590-597 <i>MiniLAB</i> 593 TWE: TFYI 592, 595 VL 592 QD 592 LD 594 DI 595 CFU 597 A 597	SE: 276-282, 284-289 <i>Lab</i> 283 TWE: SCB 274E-F DI 279, 286 LD 280 MM 287 ACT 287 CFU 289	SE: <i>Integrate Life Science</i> 423

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<ul style="list-style-type: none"> describing the role of chromosomes and genes in heredity (for example, genes control traits, while chromosomes are made up of many genes); and 	SE: 590-597, 599-605 <i>MiniLAB 601</i> <i>Applying Math 603</i> <i>Use the Internet Lab 606-607</i> TWE: SCB 588E IM 588F D 600 UAA 602 CFU 605	SE: 290-295, 306-312, 314-320, 321-323 <i>Applying Science 287</i> <i>MiniLAB 308</i> <i>Lab 313</i> <i>Design Your Own Lab 324-325</i> TWE: LD 317	SE: 38-42, 44-46 <i>Applying Math 47</i>
<ul style="list-style-type: none"> describing evidence that reveals changes or constancy in groups of organisms over geologic time. 	SE: 555 #23	SE: 296-297, 334-341, 343-349, 350-353 <i>Design Your Own Lab 354-355</i> TWE: SCB 332E IM 332F DI 336 CFU 349 A 353	SE: 274-278, 281-284, 286, 289-291, 293 <i>Accidents in Science 264</i> <i>Lab 294-295</i> TWE: TC 270
STANDARD 4: Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography) 4.1 Students know and understand the composition of Earth, its history, and the natural processes that shape it. As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> explaining how minerals, rocks, and soils form; 	SE: 256-264, 265-271, 272-276, 320-321 <i>Lab 277</i> TWE: SCB 254E-F DI 257 D 266 QD 267 MM 269	SE: 30-34, 58-61, 62-65, 67-70, 71-77 <i>Lab 35, 66</i> <i>MiniLAB 59</i> TWE: SJ 73 A 537	SE: 124, 219-224, 250-255 <i>Integrate Chemistry 228</i> <i>Lab 129</i> TWE: AS 231

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	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
<ul style="list-style-type: none"> explaining how fossils are formed and used as evidence to indicate that life has changed through time; 	SE: 271 <i>MiniLAB 271</i> TWE: CB 552	SE: 343-349, 350-353 <i>Science Online 345</i> <i>Integrate Earth Science 347</i> <i>Applying Math 359</i> TWE: ACT 344 MM 345 DI 351	SE: 243-247, 274, 277-278, 284, 289-290 <i>Lab 262-263</i> <i>National Geographic 283</i> TWE: A 285 LD 281 MM 275
<ul style="list-style-type: none"> modeling natural processes that shape Earth's surface (for example, weathering, erosion, mountain building, volcanic activity); and 	SE: 316-319, 323-331 <i>Launch Lab 315</i> <i>MiniLAB 319</i> TWE: IL 317 ACT 317 LD 318 DI 319 MM 327, 329	SE: <i>Launch Lab 559</i> TWE: MM 9 D 73	SE: <i>Applying Science 192</i> <i>Lab 225, 232-233</i> <i>Launch Lab 181</i> <i>MiniLab 184, 220</i> TWE: DIN 183, 196 MM 197 QD 191, 223
<ul style="list-style-type: none"> explaining the distribution and causes of natural events (for example, earthquakes, volcanoes, landslides). 	SE: 292-297, 299-305, 313 #15, 323-325 TWE: SCB 286E-F TFYI 296 D 296 VL 302 V 324 ACT 324	SE: <i>Science and Society 204</i>	SE: 191-192, 194-195, 215, 219-224, 227-229 <i>Lab 200-201</i> <i>National Geographic 193</i> TWE: FYI 197, 198 TPK 226
4.2 Students know and understand the general characteristics of the atmosphere and fundamental processes of weather. As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> describing the basic composition, properties, and structure of the atmosphere (for example, the range and distribution of temperature and pressure in the troposphere and stratosphere); 	SE: 342-345 <i>Section Review 347</i> TWE: SCB 340E TFYI 343 SJ 344 UAA 344 VL 344 DI 345 D 345	SE: 90-97 <i>Science Online 92</i> TWE: SCB 88E VL 91 IM 92 TFYI 93, 95 R 97 CFU 97	SE: 123, 344 <i>Integrate Chemistry 281</i> <i>Integrate Earth Science 128</i> TWE: FYI 220

CONTENT STANDARDS	PAGE REFERENCES		
	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
<ul style="list-style-type: none"> observing, measuring, and recording changes in weather conditions (for example, humidity, temperature, air pressure, cloud types, wind, precipitation); 	SE: 348-355 <i>Science Online</i> 350 <i>Lab</i> 363 <i>Design Your Own Lab</i> 364-365 TWE: QD 349 ACT 350, 360 DI 351, 352 IL 353	SE: <i>Applying Science</i> 94 <i>MiniLAB</i> 120, 135 <i>Model and Invent Lab</i> 138-139 TWE: QD 93 DI 106 ACT 106 LD 120 IL 128 CC 128	SE: 127-128 TWE: DIN 125
<ul style="list-style-type: none"> explaining how atmospheric circulation is driven by solar heating (for example, the transfer of energy by radiation, convection, conduction); and 	SE: 174-177, 348-355, 371 #11 TWE: SCB 340E LD 354	SE: 99-102, 103-107 <i>MiniLAB</i> 101 <i>Design Your Own Lab</i> 108-109 TWE: SCB 88E IM 88F TPK 99 DI 100 UAA 100 CFU 102	SE: 127, 613-614 <i>Applying Math</i> 126
<ul style="list-style-type: none"> describing large-scale and local weather systems (for example, fronts, air masses, storms). 	SE: 356-362 <i>Science Online</i> 357 <i>MiniLAB</i> 359 <i>Lab</i> 363 TWE: SCB 340F DI 357, 361 TFYI 358 MM 360 A 362	SE: 126-133, 143 #28 TWE: UP 87 SCB 116F TFYI 129, 132 QD 130 R 133 CFU 133 A 133	SE: 127-128

CONTENT STANDARDS	PAGE REFERENCES		
	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
4.3 Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment.			
As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> investigating and comparing the properties and behavior of water in its solid, liquid, and gaseous states; 	SE: 74-75, 347 <i>MiniLAB 347</i> TWE: QD 75 FF 109 SJ 109 A 347 D 658	SE: 253, 662-665 <i>Lab 665</i> TWE: CFU 253 VL 663	SE: 477 <i>Integrate Physics 473</i> <i>Lab 618</i> <i>MiniLab 614</i> TWE: LD 616
<ul style="list-style-type: none"> describing the distribution and circulation of the world's water through oceans, glaciers, rivers, groundwater, and atmosphere; and 	SE: 345-347, 369 #21 TWE: ACT 346 V 346 DI 346, 658 CFU 347	SE: 101-102, 533, 548 TWE: SJ 101 TFYI 548 IM 548	SE: 123, 130-131, 136-137, 163-165 <i>Integrate Life Science 617</i> <i>Lab 170-171</i> <i>Science and Language Arts 30</i> <i>Science and Society 172</i>
<ul style="list-style-type: none"> describing the composition and physical characteristics of oceans (for example, currents, waves, features of the ocean floor, salinity). 	SE: 374-378, 380-384, 385-388 <i>Launch Lab 373</i> <i>Science Online 377, 381</i> <i>MiniLAB 383</i> <i>Model and Invent Lab 396-397</i> TWE: IM 372F QD 375	SE: <i>Science Stats 644</i> TWE: CFU 166	SE: 166-169, 186-188 <i>Lab 189</i> <i>MiniLab 292</i> <i>National Geographic 216</i>

CONTENT STANDARDS	PAGE REFERENCES		
	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
4.4 Students know the structure of the solar system, composition and interactions of objects in the universe, and how space is explored. As students in grades 5-8 extend their knowledge, what they know and are able to do includes			
<ul style="list-style-type: none"> describing the basic components, composition, size, and theories of origin of the solar system; 	SE: 448-455, 469 #23 <i>MiniLAB 450</i> <i>Applying Science 453</i> TWE: SCB 438E VL 449 ACT 450, 452 LD 450 CFU 455	SE: 194-201, 207 #21 <i>Science Online 198</i> TWE: DI 195 IL 199 CFU 201 A 201	SE: 336-338, 342-347, 348-355, 356-359, 378 <i>Lab 360-361</i> <i>National Geographic 339</i> TWE: TC 334
<ul style="list-style-type: none"> explaining the effects of relative motion and positions of the Sun, Earth, and Moon (for example, seasons, eclipses, moon phases, tides); 	SE: 440-446 <i>MiniLAB 441</i> <i>Science Online 444</i> <i>Lab 447</i> TWE: SCB 438E IM 441 VL 442, 443 A 446 R 446	SE: 178-183, 184-192 <i>Science Online 181</i> <i>MiniLAB 186</i> <i>Model and Invent Lab 202-203</i> TWE: TFYI 179 LD 180 R 183 ACT 187 QD 189	SE: 309-311, 312-316 <i>Lab 321, 326-327</i> <i>Launch Lab 305</i> TWE: CD 307 RE 320 TC 304
<ul style="list-style-type: none"> comparing Earth to other planets (for example, size, composition, relative distance from the Sun); and 	SE: 450-454, 469 #16 <i>Applying Science 453</i> <i>Applying Skills 455</i> TWE: ITI 432 SCB 438E IM 438F QD 451 R 455	SE: 102, 194-201 TWE: SCB 176F SJ 196 ACT 197 QD 200 R 201 TFYI 570	SE: 340, 342-347, 348-355 <i>Lab 341, 360-361</i>

CONTENT STANDARDS	PAGE REFERENCES		
	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
<ul style="list-style-type: none"> identifying technology needed to explore space (for example, telescopes, spectrometers, spacecraft, life support systems). 	SE: 408-413, 415-422, 423-429 <i>Lab 414</i> <i>Science Online 449</i> TWE: SCB 406E-F MM 425 DI 451 SJ 452 A 455	TWE: CC 188 D 191 DI 191, 197 TPK 194 TFYI 198	SE: 345 <i>Applying Science 319</i> TWE: AS 347 IL 346
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			
<ul style="list-style-type: none"> investigating and describing the extent of human uses of renewable and non-renewable resources (for example, forests, fossil fuels); 	SE: 646-653, 655-662 <i>Launch Lab 645</i> <i>Lab 654</i> <i>Design Your Own Lab 668-669</i> TWE: UP 127 SCB 644E CD 651 A 653	SE: 560-566, 729-737 <i>National Geographic 567</i> <i>Use the Internet Lab 738-739</i> TWE: AR 561 DI 565, 567 R 737	SE: 122-128, 131, 133, 135, 157, 159, 164-165 <i>National Geographic 134</i> <i>Science and Society 172</i> TWE: CC 151 RE 139
<ul style="list-style-type: none"> describing advantages and disadvantages that might accompany the introduction of a new technology (for example, mountain bikes, cellular telephones, pagers); 	SE: <i>Science and Society 432, 490</i> TWE: TFYI 46 CB 154 DI 418 CC 425, 652, 661 SCB 644E	SE: <i>Science and Society 140, 708</i> <i>Model and Invent Lab 582-583</i> TWE: V 567 SJ 735 AIL 738	SE: 9 <i>Integrate Life Science 617</i> <i>National Geographic 2-3, 90-91, 400-401, 712</i> TWE: A 26 DI 25 FYI 10
<ul style="list-style-type: none"> describing how the use of technology can help solve an individual or community problem (for example, using catalytic converters on automobiles to help reduce air pollution); and 	SE: 655-662 <i>Science and History 582</i> <i>Science Online 591, 653</i> TWE: UP 127 CC 350 DI 647 TFYI 659 QD 661	SE: 578-581 <i>Science Online 580</i> <i>National Geographic 608</i> TWE: DI 579 A 581	SE: 24-25, 507, 642 <i>Lab 454-455, 540-541</i> <i>National Geographic 2-3, 675</i> <i>Science and Society 572, 600</i> TWE: CU 27

CONTENT STANDARDS	PAGE REFERENCES		
	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
<ul style="list-style-type: none"> describing how people use science and technology in their professions. 	SE: 11, 408-413, 415-422, 423-429 <i>Science Online</i> 361 <i>Integrate Careers</i> 418 <i>Integrate Physics</i> 577 TWE: TFYI 25 ACT 398 SJ 411	SE: 9, 134-136 <i>Integrate Career</i> 196, 263 <i>National Geographic</i> 222-223 TWE: QD 9 NG 87 TPK 196 SJ 292 CC 326	SE: 26, 217 <i>Accidents in Science</i> 716 <i>Integrate Career</i> 317, 444, 467, 622 <i>Science and History</i> 426
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			
<ul style="list-style-type: none"> explaining why a controlled experiment must have comparable results when repeated; 	SE: 27-29 <i>Section Review</i> 30 TWE: D 29	SE: 12-18 <i>Science Skill Handbook</i> 751-756	SE: 22-23, 48 TWE: A 22
<ul style="list-style-type: none"> giving examples of how scientific knowledge changes as new knowledge is acquired and previous ideas are modified (for example, through space exploration); 	SE: 26, 98-105 <i>Science and History</i> 90, 120, 218 <i>Integrate Health</i> 99 TWE: CD 18 CC 99 VL 103	SE: 178-179, 221-223, 290-295, 306-312, 321-323, 334-341 TWE: ACT 179 MM 195 R 230 DI 294	SE: 44-48, 50-52, 159, 182-185, 195-199, 274-276 <i>Integrate History</i> 75 <i>Lab</i> 140-141 <i>Science and Society</i> 172 TWE: DIN 152
<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; 	SE: <i>Science and History</i> 34, 582 <i>Integrate Careers</i> 442 TWE: CC 47, 570 CD 75, 416, 479 DI 104, 452	SE: <i>Science and History</i> 50, 238, 356 <i>Accidents in Science</i> 298 TWE: CD 188, 226, 278, 382 SJ 222 CC 379	SE: 26, 45, 50-52, 182-185, 389, 405-413 <i>Integrate History</i> 582 TWE: CC 557 DIN 39 FF 21, 477 FYI 7, 552

CONTENT STANDARDS	PAGE REFERENCES		
	<i>Science Level Red</i>	<i>Science Level Green</i>	<i>Science Level Blue</i>
<ul style="list-style-type: none"> identifying, comparing, and predicting variables and conditions related to change (for example, climate, population, motion); 	SE: <i>Lab</i> 32-33 <i>Design Your Own Lab</i> 88-89, 244-245, 332-333, 488-489, 520-521, 636-637 TWE: QD 18	SE: <i>Lab</i> 167, 424-425 <i>Design Your Own Lab</i> 324-325, 354-355, 390-391, 458-459, 550-551, 706-707 TWE: A 18	SE: 40-42, 50-53, 130-131, 150-153, 312-316, 382-385, 388-391 <i>National Geographic</i> 104, 134, 621
<ul style="list-style-type: none"> identifying and illustrating natural cycles within systems (for example, water, planetary motion, geological changes, climate); and 	SE: 275-276, 345-347, 354-355, 387, 440-446 <i>Lab</i> 447 TWE: VL 275 R 277 ACT 347 CFU 347	SE: 101-102, 166, 180-183, 185-190, 476-477, 548-549 <i>Lab</i> 478 TWE: R 102 CD 182	SE: 130-133, 135-139, 309-311, 312-316, 340, 560-561 <i>Lab</i> 321, 341 <i>National Geographic</i> 134 TWE: DI 357
<ul style="list-style-type: none"> using a model to predict change (for example, computer simulation, video sequence, stream table). 	SE: <i>Launch Lab</i> 315 <i>Design Your Own Lab</i> 332-333 <i>Model and Invent Lab</i> 396-397 <i>MiniLAB</i> 546 <i>Lab</i> 626 TWE: A 177 QD 267 IL 289 ACT 293, 294	SE: <i>Lab</i> 166, 313, 424-425 <i>Model and Invent Lab</i> 202-203 <i>MiniLAB</i> 281, 291, 339 <i>Applying Math</i> 311 TWE: CFU 312	SE: <i>Lab</i> 200-201, 321, 341, 540-541, 569, 570-571 <i>Launch Lab</i> 433 <i>MiniLab</i> 195 <i>National Geographic</i> 104

Codes Used for TWE Pages

Science Level Red

A	Assessment
ACT	Activity
CB	Content Background
CC	Curriculum Connection
CD	Cultural Diversity
CFU	Check for Understanding
D	Discussion
DI	Differentiated Instruction
FF	Fun Fact
IC	Integrate Careers
IL	Inquiry Lab
IM	Identifying Misconceptions
ITI	Investigate the Issue
LD	Lab Demonstration
MM	Make a Model
QD	Quick Demo
R	Reteach
SCB	Science Content Background
SJ	Science Journal
TFYI	Teacher FYI
TPK	Tie to Prior Knowledge
UAA	Use an Analogy
UP	Unit Projects
V	Visualizing
VL	Visual Learning

Science Level Green

A	Assessment
ACT	Activity
AIL	Alternative Inquiry Lab
AR	Active Reading
CB	Content Background
CC	Curriculum Connection
CD	Cultural Diversity
CFU	Check for Understanding
D	Discussion
DI	Differentiated Instruction
HS	Historical Significance
IL	Inquiry Lab
IM	Identifying Misconceptions
IP	Integrate Physics
LD	Lab Demonstration
MM	Make a Model
NG	National Geographic
QD	Quick Demo
R	Reteach
SCB	Science Content Background
SJ	Science Journal
TFYI	Teacher FYI
TPK	Tie to Prior Knowledge
UAA	Use an Analogy
UP	Unit Projects
V	Visualizing
VL	Visual Learning

Science Level Blue

A	Activity
AS	Assessment
CC	Curriculum Connection
CD	Cultural Diversity
CU	Check for Understanding
DI	Discussion
DIN	Differentiated Instruction
FF	Fun Fact
FYI	Teacher FYI
IL	Inquiry Lab
IM	Identifying Misconceptions
LD	Lab Demonstration
MM	Make a Model
QD	Quick Demo
RE	Reteach
SJ	Science Journal
TC	Theme Connection
TPK	Tie to Prior Knowledge
UA	Use an Analogy
VL	Visual Learning