



Physical Science

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STANDARDS	PAGE REFERENCES
Grade 6	
Strand 1: Properties and Principles of Matter and Energy	
1. Changes in properties and states of matter provide evidence of the atomic theory of matter	
A. Objects, and the materials they are made of, have properties that can be used to describe and classify them	
<p><i>Scope and Sequence – Properties of and Changes in Matter</i></p> <p>a. Recognize matter is anything that has mass and volume</p>	<p>Student Edition: 19, 450-456, 458-459, 476-480, 485-486, 512-515, 570-582, 584-591, 758-763</p> <p>Teacher Wraparound Edition: TC 448, 568; TPK 512</p> <p>Teacher Resources: <i>Fast File: Classification of Matter</i> 13-16 <i>Fast File: Solids, Liquids, and Gases</i> 9-11</p>

STANDARDS	PAGE REFERENCES
<p>b. Describe and compare the volumes (the amount of space an object occupies) of objects or substances directly, using a graduated cylinder, and/or indirectly, using displacement methods</p>	<p>Student Edition: 18, 485-486 <i>LAB 27</i> <i>Mini LAB 19</i> <i>National Geographic 20</i> <i>Science Skill Handbook 794</i></p> <p>Teacher Wraparound Edition: CC 18</p> <p>Teacher Resources: <i>Fast File: Solids, Liquids, and Gases 3, 9-11</i></p>
<p>c. Describe and compare the masses (amounts of matter) of objects to the nearest gram using a balance</p>	<p>Student Edition: 15, 19, 78, 632-633 <i>LAB 686-687</i> <i>National Geographic 20</i> <i>Science Skill Handbook 794</i></p> <p>Teacher Wraparound Edition: D 78; QD 633; SJ 15</p> <p>Teacher Resources: <i>Fast File: Chemical Reactions 9-11</i> <i>Fast File: Solids, Liquids, and Gases 9-11</i> <i>Fast File: Solutions 13-16</i></p>
<p>d. Classify the types of matter in an object into pure substances or mixtures using their specific physical properties</p>	<p>Student Edition: 450-454, 458, 570-577, 578-582, 584-591, 602-603, 615-621 <i>Integrate Earth Science 456</i> <i>LAB 457</i> <i>Launch LAB 569, 601</i></p> <p>Teacher Wraparound Edition: D 454; FYI 453</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving 5, 15</i> <i>Fast File: Classification of Matter 5-6</i></p>

STANDARDS	PAGE REFERENCES
<p>B. Properties of mixtures depend upon the concentrations, properties, and interactions of particles</p>	
<p><i>Scope and Sequence – Properties of and Changes in Matter</i></p> <p>a. Describe the properties of each component in a mixture/solution and their distinguishing properties (e.g., salt water, oil and vinegar, pond water, Kool-Aid)</p>	<p>Student Edition: 452-455, 458-461, 577, 664-665, 676-677, 759-763, 767-770</p> <p><i>Integrate Earth Science</i> 456 <i>LAB</i> 457 <i>Launch LAB</i> 663 <i>National Geographic</i> 666 <i>Science and History</i> 528</p> <p>Teacher Wraparound Edition: CU 456; D 454; DI 459, 591; FF 669; FYI 453, 665; TPK 450, 578, 664, 671; USW 455</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 5 <i>Fast File: Classification of Matter</i> 5-6, 13-16</p>
<p>b. Describe appropriate ways to separate the components of different types of mixtures (sorting, evaporation, filtration, magnets, boiling, chromatography, screening)</p>	<p>Student Edition: 459-463, 577, 736-737</p> <p><i>Extra Try at Home Lab</i> 809 #19 <i>Integrate Career</i> 576 <i>Launch LAB</i> 449, 663 <i>Mini LAB</i> 453, 574</p> <p>Teacher Wraparound Edition: A 665; D 498; DI 459; LD 460; QD 737; VL 461</p> <p>Teacher Resources: <i>Fast File: Classification of Matter</i> 3, 9-12</p>
<p>c. Predict how various solids (soluble/insoluble) behave (e.g., dissolve, settle, float) when mixed with water</p>	<p>Student Edition: 485-486, 664-670, 671-673, 700-701</p> <p><i>LAB</i> 686-687 <i>Mini LAB</i> 453, 486</p> <p>Teacher Wraparound Edition: FYI 453; QD 665; TPK 485</p> <p>Teacher Resources: <i>Fast File: Classification of Matter</i> 3 <i>Fast File: Solids, Liquids, and Gases</i> 3 <i>Fast File: Solutions</i> 3, 7-8</p>

STANDARDS	PAGE REFERENCES
<p>C. Properties of matter can be explained in terms of moving particles too small to be seen without tremendous magnification</p>	
<p><i>Scope and Sequence – Properties of and Changes in Matter</i></p> <p>a. Recognize evidence (e.g., diffusion of food coloring in water, light reflecting off of dust particles in the air, condensation of water vapor by increased pressure or decreased temperature) that supports the theory that matter is composed of small particles (atoms, molecules) that are in constant, random motion</p>	<p>Student Edition: 158-160, 164-167, 327, 476-480, 509, 667, 676-679 <i>LAB 171</i> <i>Launch LAB 157</i> <i>National Geographic 510</i></p> <p>Teacher Wraparound Edition: FF 480; LD 478; SJ 482; VL 159, 161, 677</p> <p>Teacher Resources: <i>Fast File: Thermal Energy 5-6</i></p>
<p>D. Physical changes in the state of matter that result from thermal changes can be explained by the Kinetic Theory of Matter</p>	
<p><i>Scope and Sequence – Earth’s Resources</i></p> <p>a. Describe the relationship between the change in the volume of water and changes in temperature as it relates to the properties of water (i.e., water expands and becomes less dense when frozen)</p>	<p>Student Edition: 481-482</p> <p>Teacher Wraparound Edition: FF 159; VL 482</p> <p>Also see Glencoe’s <i>Physics: Principles and Problems</i> © 2005 pages 359-360.</p> <p>Also see Glencoe’s <i>Physical Science with Earth Science</i> © 2006 page 647.</p>

STANDARDS	PAGE REFERENCES
G. Properties of objects and states of matter can change chemically and/or physically	
<p><i>Scope and Sequence – Properties of and Changes in Matter</i></p> <p>a. Recognize and classify changes in matter as chemical and/or physical</p>	<p>Student Edition: 460-464, 490-495, 632-634, 641-645, 664-667, 681-682, 707-708, 736-737 <i>Accidents in Science</i> 654 <i>Integrate Environment</i> 637 <i>LAB</i> 466-467 <i>National Geographic</i> 647 <i>Use the Internet LAB</i> 652-653</p> <p>Teacher Wraparound Edition: FYI 642; IM 644; QD 464, 647; SJ 462; TPK 641; VL 461</p> <p>Teacher Resources: <i>Fast File: Classification of Matter</i> 4, 7-8 <i>Fast File: Solids, Liquids, and Gases</i> 5-6, 13-18 <i>Fast File: Solutions</i> 3, 27</p>
<p>b. Identify chemical changes (i.e., rusting, oxidation, burning, decomposition by acids, decaying, baking) in common objects (i.e., rocks such as limestone, minerals, wood, steel wool, plants) as a result of interactions with sources of energy or other matter that form new substances with different characteristic properties</p>	<p>Student Edition: 461-465, 632-634, 641-645, 707-711 <i>Accidents in Science</i> 654 <i>Integrate Environment</i> 637 <i>LAB</i> 466-467, 651 <i>Launch LAB</i> 631 <i>Science and Society</i> 718 <i>Use the Internet LAB</i> 652-653</p> <p>Teacher Wraparound Edition: CD 643; CU 640; D 635; IL 462; IM 644; QD 463, 464, 573, 633, 642; TPK 641</p> <p>Teacher Resources: <i>Fast File: Chemical Reactions</i> 4, 13-16 <i>Fast File: Classification of Matter</i> 4, 7-12, 13-16</p>

STANDARDS	PAGE REFERENCES
<p>c. Identify physical changes in common objects (e.g., rocks, minerals, wood, water, steel wool, plants) and describe the processes which caused the change (e.g., weathering, erosion, cutting, dissolving)</p>	<p>Student Edition: 164-167, 460-461, 476-483, 490-495, 664-667, 681-682, 736-737</p> <p><i>Integrate Earth Science</i> 295</p> <p>LAB 484, 686-687</p> <p><i>Launch LAB</i> 157</p> <p>Teacher Wraparound Edition: LD 478; MM 461; QD 464, 492, 572; UA 165</p> <p>Teacher Resources: <i>Fast File: Classification of Matter</i> 13-16 <i>Fast File: Solids, Liquids, and Gases</i> 4, 5-6, 13-18</p>
<p>I. Mass is conserved during any physical or chemical change</p>	
<p><i>Scope and Sequence – Properties of and Changes in Matter</i></p> <p>a. Demonstrate and provide evidence that mass is conserved during a physical change</p>	<p>Student Edition: 460, 464</p> <p>Teacher Wraparound Edition: CU 465; IM 464, 469; QD 464</p> <p>Teacher Resources: 448F</p>
<p>2. Energy has a source, can be transferred, and can be transformed into various forms but is conserved between and within systems</p>	
<p>A. Forms of energy have a source, a means of transfer (work and heat), and a receiver</p>	
<p><i>Scope and Sequence – Forms of Energy: Light</i></p> <p>a. Identify sources of visible light (e.g., the Sun and other stars, flint, bulb, flames, lightning)</p>	<p>Student Edition: 196, 207-208, 363, 384, 386-388, 389-390, 394-396, 432-434</p> <p><i>Design Your Own LAB</i> 214-215</p> <p><i>Integrate Life Science</i> 392</p> <p><i>National Geographic</i> 197, 397</p> <p>Teacher Wraparound Edition: A 396; FF 387; FYI 391; QD 397; TC 382</p> <p>Teacher Resources: <i>Fast File: Energy Sources</i> 9-12 <i>Fast File: Light</i> 4, 9-12</p>

STANDARDS	PAGE REFERENCES
<p>b. Describe evidence (i.e., cannot bend around walls) that visible light travels in a straight line, using the appropriate tools (i.e., pinhole viewer, ray box, laser pointer)</p>	<p>Student Edition: 306-307, 416</p> <p>Teacher Wraparound Edition: QD 397</p> <p>Also see Glencoe's <i>Physics: Principles and Problems</i> © 2005 pages 431-432.</p>
<p>c. Compare the reflection of visible light by various surfaces (i.e., mirror, smooth and rough surfaces, shiny and dull surfaces, moon)</p>	<p>Student Edition: 385-386, 416-422, 433 <i>LAB</i> 423</p> <p>Teacher Wraparound Edition: A 385; CU 388; D 420</p> <p>Teacher Resources: <i>Fast File: Light 35-37</i></p>
<p>d. Compare the refraction of visible light passing through different transparent and translucent materials (e.g., prisms, water, a lens)</p>	<p>Student Edition: 384, 386-388, 424-431, 432-437 <i>LAB</i> 405, 438-439</p> <p>Teacher Wraparound Edition: FF 387; LD 426; R 388; SJ 386; TPK 424; USW 385</p> <p>Teacher Resources: <i>Fast File: Light 3, 5-6, 9-12, 35-37</i> <i>Fast File: Mirrors and Lenses 4, 7-8, 13-16, 19-22</i></p>
<p>e. Predict how different surfaces (transparent, translucent, opaque) and lenses (convex, concave) affect the behavior of visible light rays and the resulting image of an object</p>	<p>Student Edition: 384-386, 417-422, 424-427, 429-431, 436-437 <i>LAB</i> 405, 423, 438-439 <i>Science and Society</i> 440</p> <p>Teacher Wraparound Edition: CU 388; D 420; FYI 419; LD 426; USW 385</p> <p>Teacher Resources: <i>Fast File: Light 3, 5-6</i> <i>Fast File: Mirrors and Lenses 3, 4, 9-12, 13-16</i></p>

STANDARDS	PAGE REFERENCES
f. Identify receivers of visible light energy (e.g., eye, photocell)	<p>Student Edition: 271-272, 363, 390-391, 399, 404, 427-429, 436-437 <i>National Geographic</i> 430, 660-661</p> <p>Teacher Wraparound Edition: FF 363; FYI 427; QD 428; VL 272, 391</p> <p>Teacher Resources: <i>Fast File: Light 9-12, 13-16</i></p>
g. Recognize that an object is “seen” only when the object emits or reflects light to the eye	<p>Student Edition: 384, 390, 427-429 <i>Science and Society</i> 440</p> <p>Teacher Wraparound Edition: CD 428; TPK 424</p> <p>Teacher Resources: <i>Fast File: Mirrors and Lenses 3</i></p>
h. Recognize differences in wavelength and energy levels within that range of visible light that can be seen by the human eye are perceived as differences in color	<p>Student Edition: 360, 363, 390-391</p> <p>Teacher Wraparound Edition: FF 363, 396; FYI 391; IM 390; QD 362</p> <p>Teacher Resources: <i>Fast File: Light 9-12</i></p>
<p><i>Scope and Sequence – Forms of Energy: Sound</i></p> i. Describe how sound energy is transferred by wave-like disturbances that spread away from the source through a medium	<p>Student Edition: 322-324, 327-329, 339, 341-343 <i>National Geographic</i> 340</p> <p>Teacher Wraparound Edition: FYI 328, 341; IM 324; R 326; TC 320</p> <p>Teacher Resources: <i>Fast File: Sound 3, 5-6, 9-10, 33-35</i></p>

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<p>j. Predict how the properties of the medium (e.g., air, water, empty space, rock) affect the speed of different types of mechanical waves (i.e., earthquake, sound)</p>	<p>Student Edition: 290-293, 323-324 <i>LAB 302</i> <i>Mini LAB 323</i></p> <p>Teacher Wraparound Edition: FYI 294, 324; R 326</p> <p>Teacher Resources: <i>Fast File: Sound 3, 18, 25</i> <i>Fast File: Waves 5-6, 33-35</i></p>
<p>C. Electromagnetic energy from the Sun (solar radiation) is a major source of energy on Earth</p>	
<p><i>Scope and Sequence — Forms of Energy: Light</i></p> <p>a. Recognize energy from the Sun is transferred to Earth in a range of wavelengths and energy levels, including visible light, infrared radiation, and ultraviolet radiation</p>	<p>Student Edition: 173-174, 270, 271-272, 360-365, 553 <i>LAB 277</i> <i>Launch LAB 255, 353</i> <i>Science Stats 182</i></p> <p>Teacher Wraparound Edition: CB 182; D 175, 365; FYI 362; SJ 111; USW 553</p> <p>Teacher Resources: <i>Fast File: Electromagnetic Waves 9-11, 39-42</i> <i>Fast File: Energy Sources 4-6, 13-16</i> <i>Fast File: Light 9-12</i> <i>Fast File: Thermal Energy 3</i></p>
<p><i>Scope and Sequence – Characteristics of Living Organisms</i></p> <p>b. Recognize the Sun is the source of almost all energy used to produce the food for living organisms</p>	<p>Student Edition: <i>Integrate Environment 111</i></p> <p>Teacher Wraparound Edition: SJ 111</p> <p>Also see Glencoe's <i>Science Level Blue</i> © 2005 pages 106, 124, 136.</p>

STANDARDS	PAGE REFERENCES
Grade 7	
Strand 1: Properties and Principles of Matter and Energy	
1. Changes in properties and states of matter provide evidence of the atomic theory of matter	
D. Physical changes in the state of matter that result from thermal changes can be explained by the Kinetic Theory of Matter	
<p><i>Scope and Sequence – Weather and Climate</i></p> <p>a. Describe the relationship between temperature and the movement of atmospheric gases (i.e., warm air rises due to expansion of the volume of gas, cool air sinks due to contraction of the volume of gas)</p>	<p>Student Edition: 158-160, 167, 476-481, 494-495 <i>National Geographic</i> 166, 197</p> <p>Teacher Wraparound Edition: VCC 166</p> <p>Teacher Resources: <i>Fast File: Solids, Liquids, and Gases</i> 13-18, 31</p>
I. Mass is conserved during any physical or chemical change	
<p><i>Scope and Sequence – Weather and Climate</i></p> <p>a. Explain that the amount of matter remains constant while being recycled through the water cycle</p>	<p>Teacher Wraparound Edition: IM 464</p> <p>Also see Glencoe's <i>Science Level Blue</i> © 2005 pages 130-131.</p>
2. Energy has a source, can be transferred, and can be transformed into various forms but is conserved between and within systems	
A. Forms of energy have a source, a means of transfer (work and heat), and a receiver	
<p><i>Scope and Sequence – Forms of Energy: Heat</i></p> <p>a. Recognize thermal energy as the random motion (kinetic energy) of molecules or atoms within a substance</p>	<p>Student Edition: 158-160, 164-167, 476-483, 490, 494-495 <i>Launch LAB</i> 157, 475</p> <p>Teacher Wraparound Edition: LD 478; TC 156, 474; UA 165</p> <p>Teacher Resources: <i>Fast File: Solids, Liquids, and Gases</i> 4-6, 13-18 <i>Fast File: Thermal Energy</i> 4-6, 20-22</p>

STANDARDS	PAGE REFERENCES
<p>b. Use the kinetic molecular model to explain changes in the temperature of a material</p>	<p>Student Edition: 158-160, 164-167, 476-480, 490, 494-495, 678-679 <i>Launch LAB</i> 157, 475, 484</p> <p>Teacher Wraparound Edition: TC 156, 474</p> <p>Teacher Resources: <i>Fast File: Solids, Liquids, and Gases</i> 5-6, 13-18 <i>Fast File: Thermal Energy</i> 20-22</p>
<p>c. Recognize thermal energy is transferred as heat from warmer objects to cooler objects until both reach the same temperature (equilibrium)</p>	<p>Student Edition: 159-160, 164-167, 168-170, 172-179 <i>LAB</i> 171, 180-181</p> <p>Teacher Wraparound Edition: FF 177; IL 174; MM 178; R 170; SJ 160; TPK 164</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 5 <i>Fast File: Energy Sources</i> 5-6, 13-16 <i>Fast File: Thermal Energy</i> 4, 7-8, 22, 27-28</p>
<p>d. Recognize the type of materials that transfer energy by conduction, convection, and/or radiation</p>	<p>Student Edition: 161-163, 164-167, 168-169, 173-174 <i>LAB</i> 171, 180-181, 484</p> <p>Teacher Wraparound Edition: IL 174; R 163, 170; TPK 158, 164</p> <p>Teacher Resources: <i>Fast File: Energy Sources</i> 5-6, 13-16</p>
<p>e. Describe how heat is transferred by conduction, convection, and radiation, and classify examples of each</p>	<p>Student Edition: 158-163, 164-167, 172-175 <i>LAB</i> 171, 180-181 <i>Mini LAB</i> 168 <i>National Geographic</i> 166</p> <p>Teacher Wraparound Edition: IM 167; SJ 160; TC 156, TPK 164; USW 167</p> <p>Teacher Resources: <i>Fast File: Thermal Energy</i> 3, 4, 5-6, 7-8, 22</p>

STANDARDS	PAGE REFERENCES
<p>f. Classify common materials (e.g., wood, foam, plastic, glass, aluminum foil, soil, air, water) as conductors or insulators of thermal energy</p>	<p>Student Edition: 164-165, 168-170 <i>Mini LAB</i> 169</p> <p>Teacher Wraparound Edition: D 161; DI 168; FYI 169; TPK 164; VIR 170</p> <p>Teacher Resources: <i>Fast File: Thermal Energy 4</i></p>
<p>g. Predict the differences in temperature over time on different colored (black and white) objects placed under the same heat source</p>	<p>Student Edition: <i>LAB</i> 277</p> <p>Teacher Resources: <i>Fast File: Energy Sources 5-6</i></p> <p>Also see Glencoe's <i>Physical Science with Earth Science</i> © 2006 pages 485, 507.</p>
<p><i>Scope and Sequence – Forms of Energy: Electricity and Magnetism</i></p> <p>h. Describe the interactions (i.e., repel, attract) of like and unlike charges (i.e., magnetic, static electric, electrical)</p>	<p>Student Edition: 192-193, 196, 198-199, 224-226, 229-230, 232-237</p> <p><i>Applying Science</i> 228 <i>Integrate Earth Science</i> 227 <i>Mini LAB</i> 198 <i>National Geographic</i> 197</p> <p>Teacher Wraparound Edition: CD 226; FYI 232; R 199, 230; SJ 193; TPK 192; UA 236</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 3, 18, 37-40 <i>Fast File: Magnetism and Its Uses</i> 3-4, 9-12, 27-28, 44</p>
<p>i. Diagram and identify a complete electric circuit by using a source (battery), means of transfer (wires), and receiver (resistance bulbs, motors, fans)</p>	<p>Student Edition: 200-201, 204-205, 207-210</p> <p><i>Design Your Own LAB</i> 214-215 <i>Integrate Physics</i> 216</p> <p>Teacher Wraparound Edition: A 209; AS 205; CYD 215; LD 208; MM 210; TPK 207</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 7-8, 11-14, 17, 29, 30, 45-46</p>

STANDARDS	PAGE REFERENCES
<p>j. Observe and describe the evidence of energy transfer in a closed series circuit</p>	<p>Student Edition: 201, 204-205, 207-208 <i>Design Your Own LAB</i> 214-215 <i>Integrate Health</i> 205 LAB 206 <i>Mini LAB</i> 202</p> <p>Teacher Wraparound Edition: CD 210; CU 205; LD 208; QD 201</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 5-6, 9-10, 11-14, 45</p>
<p>k. Describe the effects of resistance (number of receivers), amount of voltage (number of energy sources), and kind of transfer materials on the current being transferred through a circuit (e.g., brightness of light, speed of motor)</p>	<p>Student Edition: 201-205, 210, 242-244 <i>Design Your Own LAB</i> 214-215 <i>Integrate Physics</i> 216 LAB 206, 245</p> <p>Teacher Wraparound Edition: AS 237; MM 210</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 4, 5-6, 7-8</p>
<p>l. Classify materials as conductors or insulators of electricity when placed within a circuit (e.g., wood, pencil lead, plastic, glass, aluminum foil, lemon juice, air, water)</p>	<p>Student Edition: 195, 203-205 LAB 206</p> <p>Teacher Wraparound Edition: D 194; DI 195</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 5-6, 31-33</p>
<p>m. Diagram and distinguish between complete series and parallel circuits</p>	<p>Student Edition: 207-208 <i>Design Your Own LAB</i> 214-215 <i>Integrate Physics</i> 216</p> <p>Teacher Wraparound Edition: AS 213; LD 208; QD 209</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 7-8, 11-14, 30, 31-33, 45-46</p>

STANDARDS	PAGE REFERENCES
<p>n. Identify advantages and disadvantages of series and parallel circuits</p>	<p>Student Edition: 207-209 <i>Design Your Own LAB</i> 214-215 <i>Integrate Physics</i> 216</p> <p>Teacher Wraparound Edition: AS 215; LD 208; QD 209</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 7-8, 11-14, 30, 45-46</p>
<p>C. Electromagnetic energy from the Sun (solar radiation) is a major source of energy on Earth</p>	
<p><i>Scope and Sequence – Weather and Climate</i></p> <p>a. Identify solar radiation as the primary source of energy for weather phenomena</p>	<p>Student Edition: 196 <i>Integrate Earth Science</i> 176 <i>National Geographic</i> 197</p> <p>Teacher Wraparound Edition: AIL 180; CB 182</p> <p>Also see Glencoe’s <i>Science Level Blue</i> © 2005 pages 127-128.</p>
<p>F. Energy can change from one form to another within systems, but the total amount remains the same</p>	
<p><i>Scope and Sequence – Energy Transformations</i></p> <p>a. Identify the different energy transformations that occur between different systems (e.g., chemical energy in battery converted to electricity in circuit converted to light and heat from a bulb)</p>	<p>Student Edition: 100-105, 107-108, 114-115, 201-203, 207-209, 238-240, 261, 266, 271-275 <i>Integrate Environment</i> 111 <i>LAB</i> 106, 277 <i>Launch LAB</i> 99 <i>National Geographic</i> 110, 241, 647</p> <p>Teacher Wraparound Edition: AS 115; FF 101; R 105; VL 108</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 9-10, 29 <i>Fast File: Electromagnetic Waves</i> 4, 13-15 <i>Fast File: Energy</i> 4, 5-6, 7-8, 13-15, 29 <i>Fast File: Energy Sources</i> 5-6, 9-11, 13-16 <i>Fast File: Light</i> 4</p>

STANDARDS	PAGE REFERENCES
<p>b. Recognize that, during an energy transformation, heat is often transferred from one object (system) to another because of a difference in temperature</p>	<p>Student Edition: 159-163, 164-165, 168-170, 172-174, 176-179</p> <p>Teacher Wraparound Edition: DI 168; FYI 178; IL 174; SJ 160</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving 5</i> <i>Fast File: Energy Sources 13-16</i> <i>Fast File: Thermal Energy 4, 9-12, 27, 30, 47</i></p>
<p>c. Recognize energy is not lost but conserved as it is transferred and transformed</p>	<p>Student Edition: 107-109, 111-112, 135</p> <p><i>Design Your Own LAB 116-117</i> <i>LAB 106</i></p> <p>Teacher Wraparound Edition: LD 110; QD 108</p> <p>Teacher Resources: <i>Fast File: Energy 5-6, 7-8, 9-12, 28</i></p>
<p>Strand 2: Properties and Principles of Force and Motion</p>	
<p>1. The motion of an object is described by its change in position relative to another object or point</p>	
<p>A. The motion of an object is described as a change in position, direction, and speed relative to another object (frame of reference)</p>	
<p><i>Scope and Sequence – Force, Motion, and Work</i></p> <p>a. Describe the circular motion of a moving object as the result of a force acting toward the center</p>	<p>Student Edition: 48, 81-82</p> <p>Teacher Wraparound Edition: DI 81</p> <p>Teacher Resources: <i>Fast File: Forces 4, 28, 38</i></p> <p>Also see Glencoe’s <i>Science Level Blue</i> © 2005 pages 560-561.</p>
<p>b. Classify different types of motion (e.g., straight line, projectile, circular, vibrational)</p>	<p>Student Edition: 38-42, 48, 79-82</p> <p>Teacher Wraparound Edition: DI 81; QD 41</p> <p>Also see Glencoe’s <i>Science Level Blue</i> © 2005 pages 522-532, 560-561.</p>

STANDARDS	PAGE REFERENCES
c. Given an object in motion, calculate its speed (distance/time)	<p>Student Edition: 38-43, 298-299, 323, 358 <i>Design Your Own LAB</i> 58-59 <i>Integrate Astronomy</i> 39 <i>Launch LAB</i> 37</p> <p>Teacher Wraparound Edition: DI 42; FYI 298; IM 43; QD 41</p> <p>Teacher Resources: <i>Fast File: Motion</i> 3, 27</p>
d. Interpret a line graph representing an object's motion in terms of distance over time (speed) using metric units	<p>Student Edition: 39-43 <i>Design Your Own LAB</i> 58-59</p> <p>Teacher Wraparound Edition: AS 46, VL 39, 43</p> <p>Teacher Resources: <i>Fast File: Motion</i> 13-15, 20, 47-48</p>
2. Forces affect motion	
A. Forces are classified as either contact forces (pushes, pulls, friction, buoyancy) or non-contact forces (gravity, magnetism), that can be described in terms of direction and magnitude	
<p><i>Scope and Sequence – Force, Motion, and Work</i></p> <p>a. Identify and describe the types of forces acting on an object in motion, at rest, floating/sinking (i.e., type of force, direction, amount of force in Newtons)</p>	<p>Student Edition: 68-73, 75-82, 112, 234-237 <i>LAB</i> 89 <i>Launch LAB</i> 67 <i>National Geographic</i> 85</p> <p>Teacher Wraparound Edition: CU 82; DI 71, 77; FYI 78; QD 39; USW 81, VL 84</p> <p>Teacher Resources: <i>Fast File: Motion</i> 5-6, 7-8, 19, 20, 29, 33-34</p>

STANDARDS	PAGE REFERENCES
<p>b. Compare the forces acting on an object by using a spring scale to measure them to the nearest Newton</p>	<p>Student Edition: 78-79 <i>LAB 57</i> <i>Model and Invent LAB 148-149</i></p> <p>Teacher Wraparound Edition: A 79, 144; CU 137; QD 128</p> <p>Teacher Resources: <i>Fast File: Forces 47-48</i> <i>Fast File: Work and Machines 7-8</i></p>
<p>B. Every object exerts a gravitational force on every other object</p>	
<p><i>Scope and Sequence – Force, Motion, and Work</i></p> <p>a. Recognize every object exerts a gravitational force of attraction on every other object</p>	<p>Student Edition: 75-82 <i>Integrate Earth Science 79</i> <i>Launch LAB 67</i></p> <p>Teacher Wraparound Edition: FF 76; FYI 78; QD 77</p> <p>Teacher Resources: <i>Fast File: Forces 20, 31</i></p>
<p>b. Recognize an object's weight is a measure of the gravitational force of a planet/moon acting on that object</p>	<p>Student Edition: 77-79 <i>Science Online 76</i></p> <p>Teacher Wraparound Edition: A 77; D 78</p> <p>Teacher Resources: <i>Fast File: Forces 19, 49</i></p> <p>Also see Glencoe's <i>Science Level Blue</i> © 2005 page 345.</p>

STANDARDS	PAGE REFERENCES
<p>c. Compare the amount of gravitational force acting between objects (which is dependent upon their masses and the distance between them)</p>	<p>Student Edition: 76-77 <i>Launch LAB 67</i> <i>Science and History 92</i> <i>Science Online 76</i></p> <p>Teacher Wraparound Edition: FF 76; FYI 78</p> <p>Teacher Resources: <i>Fast File: Forces 47-48, 49</i></p>
<p>D. Newton’s Laws of Motion explain the interaction of mass and forces, and are used to predict changes in motion</p>	
<p><i>Scope and Sequence – Force, Motion, and Work</i></p> <p>a. Compare the effects of balanced and unbalanced forces (including magnetic, gravity, friction, push or pull) on an object’s motion</p>	<p>Student Edition: 52-56, 68-74, 75-82, 83-88 <i>Design Your Own LAB 58-59</i> <i>LAB 57, 89</i> <i>Launch LAB 67</i></p> <p>Teacher Wraparound Edition: CU 56; IM 53; MM 54; TPK 68</p> <p>Teacher Resources: <i>Fast File: Motion 19, 29</i></p>
<p>b. Explain that when forces (including magnetic, gravity, friction, push or pull) are balanced, objects are at rest or their motion remains constant</p>	<p>Student Edition: 52-55, 74, 75-82, 83-84 <i>LAB 57, 89</i> <i>Launch LAB 67</i></p> <p>Teacher Wraparound Edition: A 79; CU 56; DI 74, 77; IM 53; MM 54; SJ 73</p> <p>Teacher Resources: <i>Fast File: Motion 19, 29</i></p>

STANDARDS	PAGE REFERENCES
<p>c. Explain that a change in motion is the result of an unbalanced force acting upon an object</p>	<p>Student Edition: 52-56, 68-73, 75-82, 83-88 <i>Design Your Own LAB</i> 58-59 <i>LAB</i> 57 <i>Launch LAB</i> 67</p> <p>Teacher Wraparound Edition: MM 54; R 56; SJ 73; TPK 68</p> <p>Teacher Resources: <i>Fast File: Motion</i> 19, 29</p>
<p>d. Explain how the acceleration of a moving object is affected by the amount of net force applied and the mass of the object</p>	<p>Student Edition: 47-50, 52-53, 68-70, 73-74, 77-78 <i>LAB</i> 57</p> <p>Teacher Wraparound Edition: D 69, 74; R 56; SJ 73; TPK 68</p> <p>Teacher Resources: <i>Fast File: Motion</i> 5-6, 21, 28, 33-34</p>
<p>F. Simple machines (levers, inclined planes, wheels and axles, pulleys) affect the forces applied to an object and/or direction of movement as work is done</p>	
<p><i>Scope and Sequence – Force, Motion, and Work</i></p>	
<p>a. Recognize examples of work being done on an object (force applied and distance moved in the direction of the applied force) with and without the use of simple machines</p>	<p>Student Edition: 126-128, 132-133, 134-135, 138-139 <i>Launch LAB</i> 125</p> <p>Teacher Wraparound Edition: DI 133; QD 128; SJ 134; TC 124; TPK 132; VL 135</p> <p>Teacher Resources: <i>Fast File: Work and Machines</i> 7-8, 13-18, 29</p>
<p>b. Calculate the amount of work done when a force is applied to an object over a distance ($W = F \times d$)</p>	<p>Student Edition: 127-129, 134-135 <i>Applying Math</i> 128 <i>Mini LAB</i> 129 <i>Model and Invent LAB</i> 148-149</p> <p>Teacher Wraparound Edition: CU 131; D 128; QD 128</p> <p>Teacher Resources: <i>Fast File: Work and Machines</i> 3, 7-8, 13-18, 29</p>

STANDARDS	PAGE REFERENCES
<p>c. Explain how simple machines affect the amount of effort force, distance through which a force is applied, and/or direction of force while doing work</p>	<p>Student Edition: 132-135, 138-139, 141-145 <i>LAB 147</i> <i>Launch LAB 125</i> <i>Model and Invent LAB 148-149</i> <i>National Geographic 140</i></p> <p>Teacher Wraparound Edition: A 133, 144; D 141; QD 135, 139; TC 124</p> <p>Teacher Resources: <i>Fast File: Work and Machines 4, 5-6, 7-8, 13-18</i></p>
<p>d. Recognize the amount of work output is never greater than the amount of work input, with or without the use of a simple machine</p>	<p>Student Edition: 134-135, 136-137</p> <p>Teacher Wraparound Edition: A 144; CU 137; QD 135; SJ 134</p> <p>Teacher Resources: <i>Fast File: Work and Machines 5-6, 7-8, 13-18</i></p>
<p>e. Evaluate simple machine designs to determine which design requires the least amount of effort force and explain why</p>	<p>Student Edition: 136-137, 138-139, 141-142 <i>Mini LAB 134</i> <i>Model and Invent LAB 148-149</i></p> <p>Teacher Wraparound Edition: A 144; CU 137; LD 142; SJ 134; VL 135</p> <p>Teacher Resources: <i>Fast File: Work and Machines 4, 7-8, 13-18</i></p>

STANDARDS	PAGE REFERENCES
Grade 8	
Strand 1: Properties and Principles of Matter and Energy	
1. Changes in properties and states of matter provide evidence of the atomic theory of matter	
A. Objects, and the materials they are made of, have properties that can be used to describe and classify them	
<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <p>a. Recognize elements (unique atoms) and compounds (molecules or crystals) are pure substances that have characteristic properties</p>	<p>Student Edition: 450-452, 516-519, 520-523, 570-577, 578-582, 584-589</p> <p><i>LAB 457, 583</i></p> <p><i>National Geographic 590</i></p> <p>Teacher Wraparound Edition: CC 461; DI 521; IL 523; QD 572; SJ 452; TPK 516, 578</p> <p>Teacher Resources: <i>Fast File: Classification of Matter 5-6, 37-40</i> <i>Fast File: Elements and Their Properties 13-16, 19, 22, 27-29</i></p>
<p>b. Describe the physical and chemical properties (e.g., magnetic attraction, conductivity, melting point and boiling point, reactivity) of pure substances (elements or compounds) (e.g., copper wire, aluminum wire, iron, charcoal, sulfur, water, salt, sugar, sodium bicarbonate, galena, quartz, magnetite, pyrite) using appropriate senses and tools</p>	<p>Student Edition: 450-452, 458-465, 476-480, 570-577, 578-582, 584-591, 641-645</p> <p><i>Design Your Own LAB 592-593</i></p> <p><i>Integrate Environment 637</i></p> <p><i>LAB 583</i></p> <p><i>Science Stats 468</i></p> <p>Teacher Wraparound Edition: D 452, 461; FYI 585</p> <p>Teacher Resources: <i>Fast File: Classification of Matter 5-6, 37-40</i> <i>Fast File: Elements and Their Properties 7-8, 33-36</i> <i>Fast File: Properties of Atoms and The Periodic Table 9-11</i></p>

STANDARDS	PAGE REFERENCES
C. Properties of matter can be explained in terms of moving particles too small to be seen without tremendous magnification	
<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <p>a. Describe evidence (e.g., diffusion of colored material into clear material such as water; light reflecting off of dust particles in air; changes in physical properties and reactivity such as gold hammered into foil, oil spreading on the surface of water, decay of organic matter, condensation of water vapor by increased pressure) that supports the theory that matter is composed of moving particles too small to be seen (atoms, molecules)</p>	<p>Student Edition: 455, 476-479, 481-483, 490-495, 506-507, 511 <i>Integrate Astronomy</i> 480</p> <p>Teacher Wraparound Edition: FF 492; IM 480; LD 478; QD 455; R 511; SJ 482; TC 474</p> <p>Teacher Resources: <i>Fast File: Classification of Matter</i> 19-20 <i>Fast File: Solids, Liquids, and Gases</i> 35-37</p>
D. Physical changes in the state of matter that result from thermal changes can be explained by the Kinetic Theory of Matter	
<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <p>a. Using the Kinetic Theory model, illustrate and account for the physical properties (i.e., shape, volume, malleability, viscosity) of a solid, liquid, or gas in terms of the arrangement and motion of molecules in a substance</p>	<p>Student Edition: 476-480, 482-483, 490-495, 570-571, 586 <i>Design Your Own LAB</i> 592-593</p> <p>Teacher Wraparound Edition: IL 575; LD 478; QD 477; R 483; USW 493</p> <p>Teacher Resources: <i>Fast File: Classification of Matter</i> 13-16 <i>Fast File: Solids, Liquids, and Gases</i> 22, 23, 29, 49</p>
<p>b. Use the Kinetic Theory model to explain changes in the volume, shape, and viscosity of materials in response to temperature changes during a phase change</p>	<p>Student Edition: 476-480, 482 <i>LAB</i> 484</p> <p>Teacher Wraparound Edition: AIL 496; IM 499; SJ 481, 482; UA 477</p> <p>Teacher Resources: <i>Fast File: Solids, Liquids, and Gases</i> 5-6, 31, 35-37, 49-50</p>

STANDARDS	PAGE REFERENCES
<p>c. Predict the effect of transfer on the physical properties of a substance as it changes to or from a solid, liquid, or gas (i.e., phase changes that occur during freezing, melting, evaporation, boiling, condensation)</p>	<p>Student Edition: 476-482 <i>LAB 484</i></p> <p>Teacher Wraparound Edition: D 498; FF 159; IM 478, 499; SJ 481, 482; UA 477</p> <p>Teacher Resources: <i>Fast File: Solids, Liquids, and Gases 5-6, 35-37, 49-50</i> <i>Fast File: Thermal Energy 28, 33-35</i></p>
<p>F. The periodic table organizes the elements according to their atomic structure and chemical reactivity</p>	
<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <p>a. Recognize more than 100 known elements (unique atoms) exist that may be combined in nature or by man to produce compounds that make up the living and nonliving substances in the environment (Do NOT assess memorization of the Periodic Table)</p>	<p>Student Edition: 516-519, 570-577, 578-582, 584-589, 602-606, 615-621, 682-685, 726-730, 731-734, 736-741, 742-747, 771-776</p> <p><i>Integrate Astronomy 524</i> <i>Integrate Environment 637</i> <i>LAB 733, 748-749</i> <i>Reference Handbooks 848-849</i></p> <p>Teacher Wraparound Edition: CC 572; DI 581, 587; FF 522; FYI 585, 586; IL 523; IM 521; R 582</p> <p>Teacher Resources: <i>Fast File: Elements and Their Properties 19-22, 40, 41-44</i> <i>Fast File: New Materials Through Chemistry 5-6, 13-15</i> <i>Fast File: Organic Compounds 3, 5-6, 7-8</i> <i>Fast File: Properties of Atoms and The Periodic Table 9-11</i></p>

STANDARDS	PAGE REFERENCES
I. Mass is conserved during any physical or chemical change	
<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <p>a. Provide evidence that mass is conserved during a chemical change in a closed system (e.g., vinegar + baking soda, mold growing in a closed container, steel wool rusting)</p>	<p>Student Edition: 465, 632-633, 638-640 <i>Applying Math</i> 463 <i>Mini LAB</i> 636</p> <p>Teacher Wraparound Edition: IM 644; QDS 633; R 465</p> <p>Teacher Resources: <i>Fast File: Chemical Reactions</i> 9-11, 27, 28, 32</p>
<p><i>Scope and Sequence – Rock Cycle and Plate Tectonics</i></p> <p>b. Explain that the amount of matter remains constant while being recycled through the rock cycle</p>	<p>See Glencoe’s <i>Physical Science with Earth Science</i> © 2006 pages 634-65.</p>
<p><i>Scope and Sequence – Cells and Body Systems</i></p> <p>c. Explain that the amount of matter remains constant while being recycled through food chains and food webs</p>	<p>See Glencoe’s <i>Science Level Blue</i> © 2005 pages 137-139.</p>
2. Energy has a source, can be transferred, and can be transformed into various forms but is conserved between and within systems	
A. Forms of energy have a source, a means of transfer (work and heat), and a receiver	
<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <p>a. Recognize chemical energy is stored in chemical compounds (e.g., energy stored in and released from food molecules, batteries, nitrogen explosives, fireworks, organic fuels)</p>	<p>Student Edition: 101, 108, 114-115, 256-257, 640, 646, 727-730, 736-737, 745 <i>Integrate Environment</i> 111 <i>National Geographic</i> 647 <i>Use the Internet LAB</i> 652-653</p> <p>Teacher Wraparound Edition: FYI 737, 745; IM 114; QD 728; TPK 256, 646; VL 108</p> <p>Teacher Resources: <i>Fast File: Chemical Reactions</i> 7-8, 21-22, 30 <i>Fast File: Energy</i> 20, 22, 27, 37-39</p>

STANDARDS	PAGE REFERENCES
<p>F. Energy can change from one form to another within systems, but the total amount remains the same</p>	
<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <p>a. Identify the evidence of different energy transformations (e.g., explosion of light, heat, and sound, temperature change, electrical charge) that may occur as chemical energy is released during a chemical reaction</p>	<p>Student Edition: 108, 259-261, 465, 572-573, 641, 646, 648 <i>LAB 651</i> <i>National Geographic 647</i></p> <p>Teacher Wraparound Edition: A 649; CB 498; CU 650; D 461; DI 260, 639; LD 579, 648; TPK 632; VL 108</p> <p>Teacher Resources: <i>Fast File: Chemical Reactions 34</i> <i>Fast File: Thermal Energy 13-15</i></p>
<p>Grade 8</p>	
<p>Strand 7: Scientific Inquiry</p>	
<p>1. Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking</p>	
<p>A. Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation</p>	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Formulate testable questions and hypotheses</p>	<p>Student Edition: 8, 12 <i>Design Your Own LAB 58-59, 116-117, 214-215, 246-247, 344-345</i> <i>Science and History 376</i> <i>Science Skill Handbook 788, 791</i> <i>Use the Internet LAB 278-279, 652-653</i></p> <p>Teacher Wraparound Edition: A 9; DI 7; FF 8</p> <p>Teacher Resources: <i>Fast File: The Nature of Science 19, 37-38, 39-42</i></p>

STANDARDS	PAGE REFERENCES
<p>b. Recognize the importance of the independent variable, dependent variables, control of constants, and multiple trials to the design of a valid experiment</p>	<p>Student Edition: 9 <i>Design Your Own LAB</i> 58-59, 116-117, 214-215, 246-247, 344-345, 406-407 <i>LAB</i> 466-467 <i>Science Skill Handbook</i> 792-795</p> <p>Teacher Wraparound Edition: DI 10</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 9-12, 33-34</p>
<p>c. Design and conduct a valid experiment</p>	<p>Student Edition: 8-10 <i>Design Your Own LAB</i> 58-59, 116-117, 214-215, 246-247, 344-345, 406-407 <i>LAB</i> 466-467 <i>Science Skill Handbook</i> 791-796</p> <p>Teacher Wraparound Edition: QD 10; R 13</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 20, 27, 37-38</p>
<p>d. Evaluate the design of an experiment and make suggestions for reasonable improvements or extensions of an experiment</p>	<p>Student Edition: 8-10 <i>Design Your Own LAB</i> 58-59, 116-117, 214-215, 246-247, 344-345, 406-407 <i>LAB</i> 466-467 <i>Science Skill Handbook</i> 796</p> <p>Teacher Wraparound Edition: A 9; D 8; QD 10; R 13</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 9-11, 20, 27, 37-38</p>

STANDARDS	PAGE REFERENCES
<p>e. Recognize that different kinds of questions suggest different kinds of scientific investigations (e.g., some involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve making observations in nature; some involve discovery of new objects and phenomena; and some involve making models)</p>	<p>Student Edition: 7, 12 <i>Integrate Physics</i> 30 <i>LAB</i> 583, 777, 778-779 <i>Model and Invent LAB</i> 148-149, 438-439 <i>National Geographic</i> 2-3, 286-287, 660-661 <i>Science and Society</i> 150, 718, 780 <i>Science Skill Handbook</i> 788, 795-796 <i>Use the Internet LAB</i> 278-279</p> <p>Teacher Wraparound Edition: A 11; FF 8; QD 10</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 4, 7, 13, 18, 21</p>
<p>f. Acknowledge that there is no fixed procedure called “the scientific method,” but that some investigations involve systematic observations, carefully collected and relevant evidence, logical reasoning, and some imagination in developing hypotheses and other explanations</p>	<p>Student Edition: 7-8 <i>Accidents in Science</i> 624, 654, 750 <i>Design Your Own LAB</i> 58-59, 344-345 <i>LAB</i> 466-467, 496-497, 778-779 <i>Science and History</i> 92, 118, 376 <i>Science and Language Arts</i> 30 <i>Science Skill Handbook</i> 788</p> <p>Teacher Wraparound Edition: CU 13; IL 12; QD 10; TC 4</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 19, 27, 33, 39-40</p>

STANDARDS	PAGE REFERENCES
B. Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Make qualitative observations using the five senses</p>	<p>Student Edition:</p> <p><i>Design Your Own LAB</i> 406-407</p> <p><i>Extra Try at Home Labs</i> 805 #11, 806 #13</p> <p><i>Integrate Earth Science</i> 463</p> <p><i>LAB</i> 206, 338, 366, 405</p> <p><i>Launch LAB</i> 321, 569</p> <p><i>Mini LAB</i> 323, 330, 387</p> <p><i>Science and Society</i> 346</p> <p>Teacher Wraparound Edition:</p> <p>DI 403; IL 328; QD 331, 336, 362, 397; R 359; TPK 322, 327</p> <p>Teacher Resources:</p> <p><i>Critical Thinking/Problem Solving</i> 10</p> <p><i>Fast File: Light</i> 3, 5-6, 9-11</p> <p><i>Fast File: Sound</i> 3, 4, 5-6</p>
<p>b. Determine the appropriate tools and techniques to collect data</p>	<p>Student Edition:</p> <p>17-21, 24, 163, 198-199</p> <p><i>Design Your Own LAB</i> 58-59, 214-215</p> <p><i>Extra Try at Home Labs</i> 800 #1</p> <p><i>LAB</i> 57, 778-779</p> <p><i>Model and Invent LAB</i> 148-149</p> <p><i>National Geographic</i> 20, 555</p> <p><i>Science and History</i> 248</p> <p><i>Science Skill Handbook</i> 793-795</p> <p><i>Technology Skill Handbook</i> 814-815</p> <p>Teacher Wraparound Edition:</p> <p>A 17, 79; QD 53</p> <p>Teacher Resources:</p> <p><i>Fast File: The Nature of Science</i> 3, 4, 9-12, 30</p>

STANDARDS	PAGE REFERENCES
<p>c. Use a variety of tools and equipment to gather data (e.g., microscopes, thermometers, analog and digital meters, computers, spring scales, balances, metric rulers, graduated cylinders, stopwatches)</p>	<p>Student Edition: 17-21, 24, 163, 198-199 <i>Design Your Own LAB</i> 58-59, 214-215 <i>Extra Try at Home Labs</i> 800 #1, 801 #3, 802 #6 <i>LAB 57</i>, 466-467, 778-779 <i>Model and Invent LAB</i> 148-149 <i>National Geographic</i> 20 <i>Science and History</i> 248, 314 <i>Science Skill Handbook</i> 793-795 <i>Technology Skill Handbook</i> 814-815</p> <p>Teacher Wraparound Edition: A 17, 79; QD 53</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 3, 4, 9-12, 30</p>
<p>d. Measure length to the nearest millimeter, mass to the nearest gram, volume to the nearest milliliter, force (weight) to the nearest Newton, temperature to the nearest degree Celsius, time to the nearest second</p>	<p>Student Edition: 17-21 <i>Design Your Own LAB</i> 28-29, 58-59 <i>LAB 57</i>, 90-91, 180-181, 680, 778-779 <i>Launch LAB</i> 37 <i>Model and Invent LAB</i> 148-149</p> <p>Teacher Wraparound Edition: D 16; QD 17</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 3, 4, 7-8, 9-12</p>

STANDARDS	PAGE REFERENCES
<p>e. Compare amounts/measurements</p>	<p>Student Edition: 21, 78-79, 141-142 <i>Design Your Own LAB</i> 28-29 <i>Integrate Earth Science</i> 45-46 <i>LAB 27</i>, 90-91, 147, 484, 778-779 <i>Launch LAB</i> 5 <i>Math Skill Handbook</i> 827-828 <i>Model and Invent LAB</i> 148-149 <i>Use the Internet LAB</i> 278-279, 652-653</p> <p>Teacher Wraparound Edition: A 78; DI 20; LD 142</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 5-6, 7-8, 28</p>
<p>f. Judge whether measurements and computation of quantities are reasonable</p>	<p>Student Edition: <i>Applying Math</i> 40, 69, 86, 102, 104, 128, 130, 162, 211, 212, 299, 463</p> <p>Teacher Wraparound Edition: D 128, 130; QD 41, 102, 161</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 13-15, 33-34</p>
<p>g. Calculate the range and average/mean of a set of data</p>	<p>Student Edition: 42 <i>Extra Math Problems</i> 844 #244, 845 # 268, #270 <i>LAB</i> 106 <i>Math Skill Handbook</i> 823</p> <p>Teacher Wraparound Edition: CC 130; DI 42; VL 43; USW 10</p> <p>Teacher Resources: <i>Fast File: Atomic Structure and The Periodic Table</i> 13-16 <i>Fast File: Forces</i> 9-12, 13-16</p>

STANDARDS	PAGE REFERENCES
C. Evidence is used to formulate explanations	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Use quantitative and qualitative data as support for reasonable explanations (conclusions)</p>	<p>Student Edition:</p> <p><i>Applying Science</i> 228, 269, 766 <i>LAB</i> 366, 680, 778-779 <i>Launch LAB</i> 353, 631 <i>Mini LAB</i> 460, 698 <i>Model and Invent LAB</i> 148-149 <i>Science and History</i> 376, 528 <i>Science and Society</i> 346, 718 <i>Use the Internet LAB</i> 278-279, 652-653</p> <p>Teacher Wraparound Edition:</p> <p>IL 462, 643; QD 463, 464, 634</p> <p>Teacher Resources:</p> <p><i>Fast File: Classification of Matter</i> 7-8, 9-12 <i>Fast File: The Nature of Science</i> 9-12, 13-15, 32</p>
<p>b. Use data as support for observed patterns and relationships, and to make predictions to be tested</p>	<p>Student Edition:</p> <p>7-10, 22-26 <i>Design Your Own LAB</i> 58-59, 344-345 <i>Integrate Earth Science</i> 45-46 <i>Integrate Physics</i> 30 <i>LAB</i> 302, 366, 484, 778-779 <i>Model and Invent LAB</i> 148-149 <i>Science Skill Handbook</i> 796 <i>Use the Internet LAB</i> 278-279, 652-653</p> <p>Teacher Wraparound Edition:</p> <p>CB 346; D 11, 23</p> <p>Teacher Resources:</p> <p><i>Fast File: The Nature of Science</i> 4, 9-12, 13-15</p>

STANDARDS	PAGE REFERENCES
<p>c. Recognize the possible effects of errors in observations, measurements, and calculations on the formulation of explanations (conclusions)</p>	<p>Student Edition: <i>Design Your Own LAB</i> 28-29, 58-59, 214-215, 246-247, 344-345, 406-407, 716-717 <i>LAB</i> 466-467, 622-623</p> <p>Teacher Wraparound Edition: AYD 29, 59, 215, 247, 345, 407, 467, 623, 717; DI 23</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 7-8, 9-12, 13-15</p>
<p>D. Scientific inquiry includes evaluation of explanations (hypotheses, laws, theories) in light of scientific principles (understandings)</p>	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Evaluate the reasonableness of an explanation (conclusion)</p>	<p>Student Edition: <i>Applying Math</i> 40, 69, 86, 102, 104, 128, 130, 162, 211, 212, 299, 463 <i>Applying Science</i> 228, 269 <i>Science and History</i> 118 <i>Science and Society</i> 280, 346, 718</p> <p>Teacher Wraparound Edition: D 128, 130; QD 41, 102, 161</p> <p>Teacher Resources: <i>Fast File: The Nature of Science</i> 13-15, 33-34</p>
<p>b. Analyze whether evidence (data) and scientific principles support proposed explanations (hypotheses, laws, theories)</p>	<p>Student Edition: 6-12, 45-46, 111-115, 632-634 <i>Design Your Own LAB</i> 116-117, 214-215, 246-247, 344-345, 406-407, 592-593, 716-717 <i>LAB</i> 466-467, 622-623 <i>Mini LAB</i> 636 <i>Science Skill Handbook</i> 796</p> <p>Teacher Wraparound Edition: A 45; FF 8; IL 12; LD 110; SJ 11</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 4, 6, 16, 20 <i>Fast File: Chemical Reactions</i> 3, 9-11, 27, 28, 32</p>

STANDARDS	PAGE REFERENCES
E. The nature of science relies upon communication of results and justification of explanations	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Communicate the procedures and results of investigations and explanations through:</p> <ul style="list-style-type: none"> • oral presentations • drawings and maps • data tables (allowing for the recording and analysis of data relevant to the experiment, such as independent and dependent variables, multiple trials, beginning and ending times or temperatures, derived quantities) • graphs (bar, single line, pictographs) • equations and writings 	<p>Student Edition:</p> <p>7-10, 22-26, 42-43</p> <p><i>Design Your Own LAB</i> 58-59, 116-117, 214-215</p> <p><i>Extra Try at Home Labs</i> 802 #5</p> <p><i>Integrate Earth Science</i> 45-46</p> <p><i>LAB</i> 90-91, 180-181, 496-497, 686-687, 778-779</p> <p><i>Math Skill Handbook</i> 830-831</p> <p><i>Science Skill Handbook</i> 796</p> <p><i>Technology Skill Handbook</i> 815-816</p> <p>Teacher Wraparound Edition:</p> <p>A 7, 11; CYD 59, 117, 215; LD 50</p> <p>Teacher Resources:</p> <p><i>Fast File: The Nature of Science</i> 4, 9-12, 13-15</p>
Grades 6, 7, 8	
Strand 8: Impact of Science, Technology, and Human Activity	
1. The nature of technology can advance, and is advanced by, science as it seeks to apply scientific knowledge in ways that meet human needs	
A. Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Explain how technological improvements, such as those developed for use in space exploration, the military, or medicine, have led to the invention of new products that may improve lives here on Earth (e.g., new materials, freeze-dried foods, infrared goggles, Velcro, satellite imagery, robotics, lasers)</p>	<p>Student Edition:</p> <p>13, 341-343, 402-404, 762-763, 766, 767-768, 771-776</p> <p><i>Design Your Own LAB</i> 778-779</p> <p><i>Integrate Health</i> 84</p> <p><i>Integrate History</i> 429, 482</p> <p><i>National Geographic</i> 566-567, 660-661, 769</p> <p><i>Science and Society</i> 440, 780</p> <p>Teacher Wraparound Edition:</p> <p>A 402; FF 768; FYI 12, 297</p> <p>Teacher Resources:</p> <p><i>Fast File: New Materials Through Chemistry</i> 7-8, 13-16, 19-22, 28-32, 49</p>

STANDARDS	PAGE REFERENCES
<p>B. Advances in technology often result in improved data collection and an increase in scientific information</p>	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify the link between technological developments and the scientific discoveries made possible through their development (e.g., Hubble telescope and stellar evolution, composition and structure of the universe; the electron microscope and cell organelles; sonar and the composition of the Earth; manned and unmanned space missions and space exploration; Doppler radar and weather conditions; MRI and CAT-scans and brain activity)</p>	<p>Student Edition: 242-244, 264-266, 331-332, 341-343, 360-365, 367-373, 394-399, 402-404, 736-741, 762-763, 767-768</p> <p><i>Integrate History</i> 429</p> <p><i>Science and History</i> 248, 314</p> <p><i>Science and Society</i> 150, 440</p> <p>Teacher Wraparound Edition: CB 150, 314, 440; CC 227; HS 248; IA 331; SJ 371</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 3, 4, 5, 7, 15, 17, 22</p>
<p>C. Technological solutions to problems often have drawbacks as well as benefits</p>	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Describe how technological solutions to problems (e.g., storm water runoff, fiber optics, windmills, efficient car design, electronic trains without conductors, sonar, robotics, Hubble telescope) can have both benefits and drawbacks (e.g., design constraints, unintended consequences, risks) (Assess Locally)</p>	<p>Student Edition: 262-263, 267-269, 734</p> <p><i>Integrate Environment</i> 364</p> <p><i>Integrate Health</i> 205</p> <p><i>Integrate Social Studies</i> 266</p> <p><i>Science and History</i> 314, 560</p> <p><i>Science and Society</i> 280, 346, 718</p> <p><i>Use the Internet LAB</i> 652-653</p> <p>Teacher Wraparound Edition: CB 280, 718; CC 331, 417; D 269; FF 396; FYI 169; I 440</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 1, 9, 12, 16, 17, 19, 22</p>

STANDARDS	PAGE REFERENCES
<p>2. Historical and cultural perspectives of scientific explanations helps to improve understanding of the nature of science and how science knowledge and technology evolve over time</p>	
<p>A. People of different gender and ethnicity have contributed to scientific discoveries and the invention of technological innovations</p>	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Describe how the contributions of scientists and inventors, representing different cultures, races, and gender, have contributed to science, technology and human activity (e.g., George Washington Carver, Thomas Edison, Thomas Jefferson, Isaac Newton, Marie Curie, Galileo, Albert Einstein, Mae Jemison, Edwin Hubble, Charles Darwin, Jonas Salk, Louis Pasteur, Jane Goodall, Tom Akers, John Wesley Powell, Rachel Carson) (Assess Locally)</p>	<p>Student Edition: 54-55, 432-434, 485-486, 492-495, 509, 516-517, 551, 570, 586, 632-634, 758, 764</p> <p><i>Accidents in Science</i> 654, 750 <i>Integrate History</i> 549 <i>National Geographic</i> 510, 647 <i>Science and History</i> 92, 376 <i>Science and Society</i> 780</p> <p>Teacher Wraparound Edition: AE 624; CC 128, 134; CD 139, 234, 370, 428, 581, 712, 760; DI 727; FYI 433, 549, 604; SJ 242</p> <p>Teacher Resources: <i>Fast File: Electricity</i> 29 <i>Fast File: Forces</i> 30 <i>Fast File: Waves</i> 30</p>
<p>B. Scientific theories are developed based on the body of knowledge that exists at any particular time and must be rigorously questioned and tested for validity</p>	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Recognize the difficulty science innovators experience as they attempt to break through accepted ideas (hypotheses, laws, theories) of their time to reach conclusions that may lead to changes in those ideas and serve to advance scientific understanding (e.g., Darwin, Copernicus, Newton)</p>	<p>Student Edition: 45-46, 551, 634</p> <p><i>National Geographic</i> 510 <i>Science and History</i> 92, 376, 560 <i>Science and Language Arts</i> 30 <i>Science and Society</i> 780 <i>Science Online</i> 633</p> <p>Teacher Wraparound Edition: CC 633; FF 55, 357; FYI 45</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 2, 16 <i>Fast File: Energy Sources</i> 30</p>

STANDARDS	PAGE REFERENCES
<p>b. Recognize explanations have changed over time as a result of new evidence</p>	<p>Student Edition: 7, 358-359, 364, 509, 516-517, 767-768 <i>Integrate Astronomy</i> 76 <i>Integrate Physics</i> 60 <i>National Geographic</i> 510 <i>Science and History</i> 92, 118, 376, 560 <i>Science and Society</i> 280</p> <p>Teacher Wraparound Edition: CB 376; CD 772; DI 727; FF 357; FYI 53, 69, 358; I 92, 242; IM 196, 201</p> <p>Teacher Resources: <i>Fast File: New Materials Through Chemistry</i> 7-8, 19, 30, 31, 49</p>
<p>3. Science and technology affect, and are affected by, society</p>	
<p>B. Social, political, economic, ethical, and environmental factors strongly influence, and are influenced by, the direction of progress of science and technology</p>	
<p><i>Scope and Sequence: All Units</i></p> <p>a. Describe ways in which science and society influence one another (e.g., scientific knowledge and the procedures used by scientists influence the way many individuals in society think about themselves, others, and the environment; societal challenges often inspire questions for scientific research; social priorities often influence research priorities through the availability of funding for research)</p>	<p>Student Edition: 51, 55-56, 79-82, 762-763 <i>Accidents in Science</i> 624, 750 <i>Integrate Health</i> 84 <i>National Geographic</i> 85 <i>Science and History</i> 92, 248, 314, 376, 528, 560 <i>Science and Society</i> 150, 280, 346, 440, 718, 780</p> <p>Teacher Wraparound Edition: CD 8, 84; D 55</p> <p>Teacher Resources: <i>Fast File: New Materials Through Chemistry</i> 7-8, 9-11, 13-16</p>

STANDARDS	PAGE REFERENCES
<p>b. Identify and evaluate the physical, social, economic, and/or environmental problems that may be overcome using science and technology (e.g., the need for alternative fuels, human travel in space, AIDS)</p>	<p>Student Edition: 260-263, 267-270, 271-276, 762-763, 767-770 <i>Design Your Own LAB</i> 344-345 <i>Integrate Astronomy</i> 524 <i>National Geographic</i> 430 <i>Science and Society</i> 280, 346, 718 <i>Use the Internet LAB</i> 278-279</p> <p>Teacher Wraparound Edition: D 371, 434; II 280; TC 254</p> <p>Teacher Resources: <i>Critical Thinking/Problem Solving</i> 5, 7, 8, 9, 12, 14, 15, 17, 19, 20, 22</p>