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| STANDARDS | PAGE REFERENCES |
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| Grade Level Expectation: Eighth Grade | |
| Concepts and skills students master: 1. Identify and calculate the direction and magnitude of forces that act on an object, and explain the results in the object's change of motion | |
| Evidence Outcomes | |
| Students can: a. Predict and evaluate the movement of an object by examining the forces applied to it | Student Edition: 54-58, 62-64, 66, 70-72 <i>Launch Lab</i> 62 <i>Skill Practice</i> 60 Teacher Edition: DI 55, 57, 63, 71; GQ 55, 56, 58, 63; HDFCM 62; IF 54; OF 70; TD 57, 67, 71; WMIG 61 |

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| b. Use mathematical expressions to describe the movement of an object | Student Edition: 19, 29, 65, 73 <i>Lab</i> 34-35 <i>Math Skills</i> 19, 24, 29, 33, 65, 67, 73, 75, 81 <i>MiniLab</i> 30 <i>Skill Practice</i> 25 Teacher Edition: DI 23; TD 31 |
| c. Develop and design a scientific investigation to collect and analyze speed and acceleration data to determine the net forces acting on a moving object | Student Edition: <i>Lab</i> 76-77 <i>MiniLab</i> 50, 57, 64 <i>Skill Practice</i> 60, 68 Teacher Edition: TD 63 |
| Concepts and skills students master: 2. There are different forms of energy, and those forms of energy can be changed from one form to another – but total energy is conserved | |
| Evidence Outcomes | |
| Students can: a. Gather, analyze, and interpret data to describe the different forms of energy and energy transfer | Student Edition: 161-165, 169-173, 198, 205-206, 210-211, 436, 529-530, 565-566 <i>Lab</i> 186-187, 220-221 <i>Launch Lab</i> 169, 215, 539, 573 <i>MiniLab</i> 164, 173, 359 <i>Skill Practice</i> 175, 203 Teacher Edition: DI 163, 165, 173, 531; GQ 204, 530; TD 205, 211; V 204 |
| b. Develop a research-based analysis of different forms of energy and energy transfer | Student Edition: <i>Lab</i> 186-187, 220-221, 706-707, 742-743 <i>Launch Lab</i> 169, 215, 539, 573 <i>MiniLab</i> 164, 173, 359 <i>Skill Practice</i> 175, 203, 613 Teacher Edition: TD 205, 211, 565 |

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| <p>c. Use research-based models to describe energy transfer mechanisms, and predict amounts of energy transferred</p> | <p>Student Edition: <i>Lab</i> 220-221, 706-707, 742-743 <i>Launch Lab</i> 539, 573 <i>MiniLab</i> 164, 359 <i>Skill Practice</i> 203, 613</p> <p>Teacher Edition: TD 205, 211, 565</p> |
| <p>Concepts and skills students master:</p> <p>3. Distinguish between physical and chemical changes, noting that mass is conserved during any change</p> | |
| <p>Students can:</p> <p>a. Identify the distinguishing characteristics between a chemical and a physical change</p> | <p>Student Edition: 249-252, 257, 419-420 <i>Chapter Review</i> 267 #16 <i>Lab</i> 262-263 <i>Launch Lab</i> 256, 436 <i>Lesson Review</i> 261 #8 <i>MiniLab</i> 258</p> <p>Teacher Edition: DI 251, 257, 421; GQ 252, 419; RS 251; SCC 257; SCR 420; TD 255, 419</p> |
| <p>b. Gather, analyze, and interpret data on physical and chemical changes</p> | <p>Student Edition: <i>Lab</i> 262-263, 442-443 <i>Launch Lab</i> 249, 256, 419, 436 <i>MiniLab</i> 251, 258 <i>Skill Practice</i> 290, 428</p> <p>Teacher Edition: DI 251, 287; TD 287, 289</p> |
| <p>c. Gather, analyze, and interpret data that show mass is conserved in a given chemical or physical change</p> | <p>Student Edition: <i>Launch Lab</i> 249, 419</p> <p>Teacher Edition: TD 253, 289</p> |

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| <p>d. Identify evidence that suggests that matter is always conserved in physical and chemical changes</p> | <p>Student Edition: 252, 259, 288, 424-425 <i>Launch Lab</i> 249, 419 <i>Lesson Review</i> 261 #7</p> <p>Teacher Edition: CM 424; GQ 288; TD 249, 253, 289; VL 252</p> |
| <p>e. Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate physical and chemical changes</p> | <p>Student Edition: <i>Extension</i> 405 <i>It's Your Turn</i> 280, 434</p> <p>Teacher Edition: DI 287, 421, 431, 439, 467</p> |
| <p>Concepts and skills students master:</p> <p>4. Recognize that waves such as electromagnetic, sound, seismic, and water have common characteristics and unique properties</p> | |
| <p>Students can:</p> <p>a. Compare and contrast different types of waves</p> | <p>Student Edition: 531-535 <i>Lesson Review</i> 536 #2, #4, #6 <i>MiniLab</i> 531</p> <p>Teacher Edition: DI 533, 535; GQ 535; RS 535</p> |
| <p>b. Describe for various waves the amplitude, frequency, wavelength, and speed</p> | <p>Student Edition: 539-543, 573-575 <i>Chapter Review</i> 559 #23 <i>Lab</i> 554-555 <i>MiniLab</i> 541 <i>Skill Practice</i> 545</p> <p>Teacher Edition: AE 539; DI 541, 543, 575; GQ 541, 542, 573, 575; RS 543; VL 540</p> |
| <p>c. Describe the relationship between pitch and frequency in sound</p> | <p>Student Edition: 575-576 <i>Skill Practice</i> 581</p> <p>Teacher Edition: DI 575; GQ 575; RS 575, 577</p> |

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| <p>d. Develop and design a scientific investigation regarding absorption, reflection, and refraction of light</p> | <p>Student Edition: <i>Launch Lab</i> 643 <i>MiniLab</i> 549, 645, 652 <i>Skill Practice</i> 648</p> <p>Teacher Edition: DI 639; TD 647, 651</p> |
| Grade Level Expectation: Seventh Grade | |
| <p>Concepts and skills students master:</p> <p>1. Mixtures of substances can be separated based on their properties such as solubility, boiling points, magnetic properties, and densities</p> | |
| Evidence Outcomes | |
| <p>Students can:</p> <p>a. Identify properties of substances in a mixture that could be used to separate those substances from each other</p> | <p>Student Edition: 235-236, 244-245, 454-457 <i>Lesson Review</i> 246 #4 <i>Standardized Test Practice</i> 269 #13</p> <p>Teacher Edition: DI 235; GQ 235, 236, 245; MCBS 457; SCB 228E; TD 235, 453, 463; VL 245</p> |
| <p>b. Develop and design a scientific investigation to separate the components of a mixture</p> | <p>Student Edition: <i>Launch Lab</i> 453 <i>MiniLab</i> 456</p> <p>Teacher Edition: TD 245, 453</p> |
| Grade Level Expectation: Sixth Grade | |
| <p>Concepts and skills students master:</p> <p>1. All matter is made of atoms, which are far too small to see directly through a light microscope. Elements have unique atoms and thus, unique properties. Atoms themselves are made of even smaller particles</p> | |
| Evidence Outcomes | |
| <p>Students can:</p> <p>a. Identify evidence that suggests there is a fundamental building block of matter</p> | <p>Student Edition: 231-232, 315-322, 382 <i>Launch Lab</i> 326</p> <p>Teacher Edition: GQ 231, 382; TA 315; TD 233</p> |

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| <p>b. Use the particle model of matter to illustrate characteristics of different substances</p> | <p>Student Edition: 128, 208, 274-278, 292-293, 463 <i>Launch Lab</i> 273, 282 <i>MiniLab</i> 209 <i>Skill Practice</i> 290</p> <p>Teacher Edition: DDM 128; DI 463; GQ 278; PS 275; TA 315; TD 209, 273, 279; VL 274, 276, 277, 293</p> |
| <p>c. Develop an evidence based scientific explanation of the atomic model as the foundation for all chemistry</p> | <p>Student Edition: 231-232, 315-322, 326-327, 382-384 <i>MiniLab</i> 232, 320</p> <p>Teacher Edition: DI 233, 319, 383; GQ 310, 320, 321; PA 317; RS 317, 385; SCB 228E; TSR 319; VE 384; VL 232</p> |
| <p>d. Find and evaluate appropriate information from reference books, journals, magazines, online references, and databases to compare and contrast historical explanations for the nature of matter</p> | <p>Historical explanations for the nature of matter are discussed in the following material:</p> <p>Student Edition: 313-322 <i>MiniLab</i> 320 <i>Science & Society</i> 324</p> <p>Teacher Edition: CD 315; DI 315, 317, 321; GQ 313; SCB 310E; TAM 317</p> |
| <p>Concepts and skills students master:</p> <p>2. Atoms may stick together in well-defined molecules or be packed together in large arrays. Different arrangements of atoms into groups compose all substances</p> | |
| <p>Evidence Outcomes</p> | |
| <p>Students can:</p> <p>a. Explain the similarities and differences between elements and compounds</p> | <p>Student Edition: 233-234, 390, 454 <i>Chapter Review</i> 409 #17 <i>Lab</i> 404-405 <i>Launch Lab</i> 390 <i>MiniLab</i> 394</p> <p>Teacher Edition: C 234; GQ 390; RS 455; VL 234</p> |

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| b. Identify evidence suggesting that atoms form into molecules with different properties than their components | Student Edition: 231-234, 392, 421, 492 <i>Lab</i> 404-405 <i>Launch Lab</i> 390 <i>Lesson Review</i> 395 #4 <i>Standardized Test Practice</i> 411 #10 Teacher Edition: CC 257; CCM 392; TD 391; V 488; VL 421 |
| c. Find and evaluate information from a variety of resources about molecules | Student Edition: <i>Lab</i> 514-515 <i>Launch Lab</i> 499 <i>Skill Practice</i> 506 Teacher Edition: DI 425, 503, 511 |
| Concepts and skills students master: 3. The physical characteristics and changes of solid, liquid, and gas states can be explained using the particulate model | |
| Evidence Outcomes | |
| Students can: a. Explain how the arrangement and motion of particles in a substance such as water determine its state | Student Edition: 241, 274-278 <i>Lab</i> 298-299 <i>Launch Lab</i> 273 <i>Skill Practice</i> 290 Teacher Edition: GQ 241; PS 275; TD 241, 273, 279; VL 241, 274, 276 |
| b. Distinguish between changes in temperature and changes of state using the particle model of matter | Student Edition: 250-251, 282-287 <i>Skill Practice</i> 290 Teacher Edition: DI 285; EC 284; IM 270H; KPE 282; SCB 270F; TD 281, 283, 285; TE 283; VL 250, 284 |

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| <p>Concepts and skills students master:</p> | |
| <p>4. Distinguish among, explain, and apply the relationships among mass, weight, volume, and density</p> | |
| <p>Evidence Outcomes</p> | |
| <p>Students can:</p> <p>a. Explain that the mass of an object does not change, but its weight changes based on the gravitational forces acting upon it</p> | <p>Student Edition: 47-48, 242 <i>Chapter Review 267 #13</i> <i>Lesson Review 51 #2</i> <i>MiniLab 242</i></p> <p>Teacher Edition: GQ 48; SDP 242; VL 244</p> |
| <p>b. Predict how changes in acceleration due to gravity will affect the mass and weight of an object</p> | <p>Student Edition: 48 <i>Standardized Test Practice 82 #3</i></p> <p>Teacher Edition: GQ 48; SDP 242</p> |
| <p>c. Predict how mass, weight, and volume affect density</p> | <p>Student Edition: 128, 243 <i>Math Skills 267</i></p> <p>Teacher Edition: CD 128; GQ 243</p> |
| <p>d. Measure mass and volume, and use these quantities to calculate density</p> | <p>Student Edition: 128 <i>Lesson Review 246 #9</i> <i>Math Skills 243</i> <i>Skill Practice 247</i></p> <p>Teacher Edition: CD 128; DI 243</p> |
| <p>e. Use tools to gather, view, analyze, and report results for scientific investigations about the relationships among mass, weight, volume, and density</p> | <p>Student Edition: <i>Lab 146-147</i> <i>Skill Practice 247</i></p> <p>Teacher Edition: DI 243</p> |