



Introduction to  
**Physical  
Science**  
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STANDARDS	PAGE REFERENCES
<b>Standard A: Science Connections</b>	
<b>By the end of grade eight, students will:</b>	
<p>A.8.1 Develop their understanding of the science themes by using the themes to frame questions about science-related issues and problems</p>	<p><b>Student Edition:</b> <i>Applying Science</i> 89, 111, 229, 266, 352, 390, 477, 496, 617, 651 <b>Teacher Wraparound Edition:</b> CD 390; DI 89, 111; SJ 229, 353; VL 391</p>
<p>A.8.2 Describe limitations of science systems and give reasons why specific science themes are included in or excluded from those systems</p>	<p><b>Student Edition:</b> 6, 27, 30 <b>Teacher Wraparound Edition:</b> CU 30; QD 29; TFYI 29; TPK 27; VL 28</p>
<p>A.8.3 Defend explanations and models by collecting and organizing evidence that supports them and critique explanations and models by collecting and organizing evidence that conflicts with them</p>	<p><b>Student Edition:</b> 25-26, 30 <i>Figure 23 26</i> <i>National Geographic</i> 532 <i>Section 1 Review</i> 79 #4, #6, #8 <i>Time Science and Society</i> 332 <b>Teacher Wraparound Edition:</b> A 469; CB 332; DI 350; M 332; NG 532; SJ 393; VL 25</p>

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<p>A.8.4 Collect evidence to show that models developed as explanations for events were (and are) based on the evidence available to scientists at the time</p>	<p><b>Student Edition:</b>  26, 73-79, 250, 463-465, 523-524, 530-533, 591, 625  <i>Figure 23 26</i>  <i>Integrate History 73</i>  <i>National Geographic 82, 532, 586</i></p> <p><b>Teacher Wraparound Edition:</b>  CC 73; DI 350; IL 526; NG 82, 532, 586;  SCB 518E, 612E; TFYI 82; VL 25</p>
<p>A.8.5 Show how models and explanations, based on systems, were changed as new evidence accumulated (the effects of constancy, evolution, change, and measurement should all be part of these explanations)</p>	<p><b>Student Edition:</b>  26, 73-79, 530  <i>Figure 23 26</i>  <i>National Geographic 82, 532</i>  <i>Time Science and History 94</i></p> <p><b>Teacher Wraparound Edition:</b>  D 94; FF 82; HS 94; NG 532; VL 25</p>
<p>A.8.6 Use models and explanations to predict actions and events in the natural world</p>	<p><b>Student Edition:</b>  <i>Design Your Own Lab 480-481</i>  <i>Integrate Earth Science 468</i>  <i>Integrate Social Studies 502</i>  <i>Lab 362-363, 472</i></p> <p><b>Teacher Wraparound Edition:</b>  IL 468, 526</p>
<p>A.8.7 Design real or thought investigations to test the usefulness and limitations of a model</p>	<p><b>Student Edition:</b>  <i>Chapter 11 Review 335 #29</i>  <i>Design Your Own Lab 124-125, 300-301, 480-481</i>  <i>Lab 180-181, 500, 604-605</i></p> <p><b>Teacher Wraparound Edition:</b>  AIL 124, 604; As 500; IL 526</p>
<p>A.8.8. Use the themes of evolution, equilibrium, and energy to predict future events or changes in the natural world</p>	<p><b>Student Edition:</b>  <i>Alternative Sources of Energy 391</i>  <i>Thermal Pollution 443</i>  <i>Time Science and Society 452</i></p> <p><b>Teacher Wraparound Edition:</b>  IL 468; SJ 388</p>

STANDARDS	PAGE REFERENCES
<b>Standard B: Nature of Science</b>	
<p>B.8.1 Describe how scientific knowledge and concepts have changed over time in the earth and space, life and environmental, and physical sciences</p>	<p><b>Student Edition:</b>            388-391, 413, 526-527, 530-531, 539, 598-599, 617, 629-631, 645-646  <i>Figure 7</i> 618  <i>Integrate History</i> 73, 536, 569  <i>National Geographic</i> 82, 459  <i>Research</i> 94  <i>Science Online</i> 446  <i>Time Science and History</i> 34, 542  <i>Time Science and Society</i> 606  <b>Teacher Wraparound Edition:</b>            CB 34; CC 73, 312; D 606; HS 34, 94, 542; IH 536; NG 82; TFYI 312</p>
<p>B.8.2 Identify and describe major changes that have occurred over in conceptual models and explanations in the earth and space, life and environmental, and physical sciences and identify the people, cultures, and conditions that led to these developments</p>	<p><b>Student Edition:</b>            74-79, 121-122, 312, 316, 323, 351, 357, 359, 629-630  <i>Figure 2</i> 73  <i>Integrate Chemistry</i> 646  <i>Integrate History</i> 317, 408  <i>National Geographic</i> 532  <i>Science Online</i> 446  <i>Time Science and History</i> 34, 94, 542, 594  <b>Teacher Wraparound Edition:</b>            CB 94, 542; CC 353, 384; CD 419, 536, 563, 592, 629; D 94; FF 195; IH 317; SCB 612E; SJ 446, 569; TFYI 446, 563</p>
<p>B.8.3 Explain how the general rules of science apply to the development and use of evidence in science investigations, model-making, and applications</p>	<p><b>Student Edition:</b>            6-7, 12-17, 21, 670  <i>Figure 8</i> 12  <i>Lab</i> 31  <b>Teacher Wraparound Edition:</b>            D 15; VL 13</p>
<p>B.8.4 Describe types of reasoning and evidence used outside of science to draw conclusions about the natural world</p>	<p><b>Student Edition:</b>            6, 16  <b>Teacher Wraparound Edition:</b>            D 18; DI 16; TFYI 16; TPK 12</p>

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B.8.5 Explain ways in which science knowledge is shared, checked, and extended, and show how these processes change over time	<b>Student Edition:</b> 12, 16-17, 27-30, 677-678 <i>Figure 2 7</i> <b>Teacher Wraparound Edition:</b> D 58; VL 7
B.8.6 Explain the ways in which scientific knowledge is useful and also limited when applied to social issues	<b>Student Edition:</b> 6 <i>Time Science and History 34</i> <b>Teacher Wraparound Edition:</b> D 34, 272; TPK 6
<b>Standard C: Science Inquiry</b>	
C.8.1 Identify* questions they can investigate* using resources and equipment they have available	<b>Student Edition:</b> <i>Design Your Own Lab</i> 60-61, 124-125, 150-151, 300-301, 330-331, 424-425, 480-481 <i>Lab</i> 31, 55, 92-93, 115, 149, 179, 207, 240-241, 261, 270-271, 329, 355, 362-363, 444, 472, 534, 572-573, 620, 632-633 <i>Launch Lab</i> 5, 71, 101, 133, 217, 405, 433, 613, 641 <b>Teacher Wraparound Edition:</b> AIL 150, 330, 424, 660; As 5, 583
C.8.2 Identify* data and locate sources of information including their own records to answer the questions being investigated	<b>Student Edition:</b> <i>Communicating Your Data</i> 31, 125, 240-241, 329, 355, 386, 411, 425, 541, 648, 661 <i>Design Your Own Lab</i> 60-61, 124-125, 150-151, 208-209, 300-301, 330-331, 480-481 <i>Lab</i> 32-33, 86, 92-93, 179, 207, 270-271, 362-363, 396-397, 411, 472, 572-573, 604-605, 660-661 <b>Teacher Wraparound Edition:</b> AIL 424, 480, 604, 632; As 125, 151, 209, 271, 363, 444; CYD 86, 125, 241, 301, 331, 397, 425, 648, 661
C.8.3 Design and safely conduct investigations* that provide reliable quantitative or qualitative data, as appropriate, to answer their questions	<b>Student Edition:</b> <i>Design Your Own Lab</i> 60-61, 124-125, 150-151, 208-209, 300-301, 424-425, 480-481, 510-511, 540-541 <i>Lab</i> 362-363, 396-397, 660-661 <b>Teacher Wraparound Edition:</b> AIL 208, 540, 572, 604; As 5, 231, 329, 363, 603, 648

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<p>C.8.4 Use inferences* to help decide possible results of their investigations, use observations to check their inferences</p>	<p><b>Student Edition:</b>  <i>Design Your Own Lab</i> 60-61, 150-151, 424-425, 480-481, 540-541  <i>Lab</i> 270-271, 362-363, 411, 444, 534, 561, 603, 604-605, 620, 648  <i>Mini Lab</i> 23</p> <p><b>Teacher Wraparound Edition:</b>            AIL 396, 660; As 151, 511, 583</p>
<p>C.8.5 Use accepted scientific knowledge, models*, and theories* to explain* their results and to raise further questions about their investigations*</p>	<p><b>Student Edition:</b>  <i>Communicating Your Data</i> 355  <i>Design Your Own Lab</i> 124-125, 150-151, 208-209, 424-425, 540-541  <i>Lab</i> 86, 115, 179, 180-181, 207, 240-241, 261, 270-271, 329, 355, 362-363, 386, 472, 500, 572-573, 648, 660-661</p> <p><b>Teacher Wraparound Edition:</b>            AIL 150, 632; As 115, 444, 472; CYD 331</p>
<p>C.8.6 State what they have learned from investigations*, relating their inferences* to scientific knowledge and to data they have collected</p>	<p><b>Student Edition:</b>  <i>Communicating Your Data</i> 115, 151, 241, 271  <i>Design Your Own Lab</i> 150-151, 208-209, 480-481  <i>Lab</i> 231, 261, 270-271, 329, 362-363, 411, 424-425, 444, 534, 561, 603, 604-605, 620, 648</p> <p><b>Teacher Wraparound Edition:</b>            CYD 115</p>
<p>C.8.7 Explain* their data and conclusions in ways that allow an audience to understand the questions they selected for investigation* and the answers they have developed</p>	<p><b>Student Edition:</b>  <i>Communicating Your Data</i> 115, 125, 181, 207, 209, 299, 301, 331, 355, 425, 481, 500, 561  <i>Lab</i> 270-271, 329</p> <p><b>Teacher Wraparound Edition:</b>            As 151, 241, 301, 397; CYD 115, 149, 207, 301, 331, 363, 425, 500, 603, 648</p>
<p>C.8.8 Use computer software and other technologies to organize, process, and present their data</p>	<p><b>Student Edition:</b>  <i>Communicating Your Data</i> 397, 661  <i>Computer Skills</i> 693-695  <i>Lab</i> 396-397  <i>Presentation Skills</i> 696</p> <p><b>Teacher Wraparound Edition:</b>            CYD 31, 33, 125, 151, 209, 231, 271, 386, 411, 444, 451, 472, 481, 561, 603, 620, 661</p>

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C.8.9 Evaluate*, explain*, and defend the validity of questions, hypotheses, and conclusions to their investigations*	<p><b>Student Edition:</b>  28-29  <i>Black Light</i> 690  <i>Communicating Your Data</i> 151  <i>Design Your Own Lab</i> 124-125, 150-151, 300-301, 330-331, 450-451  <i>Estimate Temperature</i> 689  <i>Friction in Traffic</i> 687  <i>Lab</i> 32-33, 60-61, 92-93</p> <p><b>Teacher Wraparound Edition:</b>  As 397, 541</p>
C.8.10 Discuss the importance of their results and implications of their work with peers, teachers, and other adults	<p><b>Student Edition:</b>  <i>Communicating Your Data</i> 451, 511</p> <p><b>Teacher Wraparound Edition:</b>  AIL 300, 396; As 125</p>
C.8.11 Raise further questions which still need to be answered	<p><b>Student Edition:</b>  <i>Communicating Your Data</i> 271  <i>Conclude and Apply</i> 633</p> <p><b>Teacher Wraparound Edition:</b>  AIL 32, 92, 124, 150, 208, 241, 270, 572, 604, 632; As 93, 209</p>
<b>Standard D: Physical Science</b>	
<b>PROPERTIES AND CHANGES OF PROPERTIES IN MATTER</b>	
D.8.1 Observe, describe, and measure physical and chemical properties of elements and other substances to identify* and group* them according to properties such as density, melting points, boiling points, conductivity, magnetic attraction, solubility, and reactions to common physical and chemical tests	<p><b>Student Edition:</b>  134-142  <i>Chapter 5 Review</i> 154-155  <i>Chapter 5 Study Guide</i> 153  <i>Design Your Own Lab</i> 150-151  <i>Launch Lab</i> 133  <i>Mini Lab</i> 136  <i>Section 2 Review</i> 142</p> <p><b>Teacher Wraparound Edition:</b>  A 140; As 136, 142, 145, 151; BI 132; D 137; DI 135; QD 135; R 142; SCB 132E; TPK 134</p>

STANDARDS	PAGE REFERENCES
<p>D.8.2 Use the major ideas of atomic theory and molecular theory to describe physical and chemical interactions among substances, including solids, liquids, and gases</p>	<p><b>Student Edition:</b>            203-205, 439-441  <i>Figure 4</i> 194  <i>Figure 5</i> 195  <i>Figure 16</i> 203  <i>Figure 17</i> 204  <i>Figure 19</i> 205  <i>National Geographic</i> 110  <b>Teacher Wraparound Edition:</b>            A 110; IL 439; IM 216F; NG 110; SCB 216E;            TFYI 342</p>
<p>D.8.3 Understand how chemical interactions and behaviors lead to new substances with different properties</p>	<p><b>Student Edition:</b>            146, 190  <i>Figure 15</i> 146  <i>Integrate Life Science</i> 193  <i>Launch Lab</i> 189  <i>Oops! Accidents in Science</i> 126  <b>Teacher Wraparound Edition:</b>            A 126; As 189; ILS 193; TPK 143</p>
<p>D.8.4 While conducting investigations, use the science themes to develop explanations of physical and chemical interactions and energy exchanges</p>	<p><b>Student Edition:</b>  <i>Design Your Own Lab</i> 208-209  <i>Lab</i> 92-93, 115, 149, 207, 386, 396-397  <i>Launch Lab</i> 189, 461  <i>Mini Lab</i> 145, 381  <b>Teacher Wraparound Edition:</b>            AIL 92, 208, 396; As 145, 189, 381, 386, 397;            LD 380</p>
<b>MOTIONS AND FORCES</b>	
<p>D.8.5 While conducting investigations, explain the motion of objects by describing the forces acting on them</p>	<p><b>Student Edition:</b>  <i>Design Your Own Lab</i> 330-331  <i>Friction in Traffic</i> 687  <i>Lab</i> 329  <i>Mini Lab</i> 314, 327  <b>Teacher Wraparound Edition:</b>            A 313, 325; As 314; DI 314; FT 687; IL 324;            QD 312, 326</p>

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<p>D.8.6 While conducting investigations, explain the motion of objects using concepts of speed, velocity, acceleration, friction, momentum, and changes over time, among others, and apply these concepts and explanations to real-life situations outside the classroom</p>	<p><b>Student Edition:</b>  <i>Design Your Own Lab</i> 300-301  <i>Friction in Traffic</i> 687  <i>Lab</i> 299, 329  <i>Launch Lab</i> 281  <i>Measuring Momentum</i> 686  <i>Mini Lab</i> 285, 291</p> <p><b>Teacher Wraparound Edition:</b>  A 313, 319; As 281, 285, 291, 299, 314; DI 314;  FT 687; IL 286; LD 296; QD 296, 312</p>
<p>D.8.7 While conducting investigations of common physical and chemical interactions occurring in the laboratory and the outside world, use commonly accepted definitions of energy and the idea of energy conservation</p>	<p><b>Student Edition:</b>  <i>Design Your Own Lab</i> 208-209</p> <p><b>Teacher Wraparound Edition:</b>  IL 203</p>
<b>TRANSFER OF ENERGY</b>	
<p>D.8.8 Describe and investigate the properties of light, heat, gravity, radio waves, magnetic fields, electrical fields, and sound waves as they interact with material objects in common situations</p>	<p><b>Student Edition:</b>  317-318, 320-321, 377, 438-440, 473-477, 495,  521-522, 526-527, 587</p> <p><i>Figure 3</i> 615  <i>Figure 10</i> 498, 527  <i>Integrate Astronomy</i> 496  <i>Mini Lab</i> 551, 618</p> <p><b>Teacher Wraparound Edition:</b>  As 551, 618; D 320, 495, 617; LD 492; QD 491,  617; SJ 526; VL 318, 615</p>
<p>D.8.9 Explain the behaviors of various forms of energy by using the models of energy transmission, both in the laboratory and in real-life situations in the outside world</p>	<p><b>Student Edition:</b>  376-378, 379, 381, 383</p> <p><i>Figure 12</i> 383  <i>Figure 14</i> 384  <i>Lab</i> 386  <i>National Geographic</i> 382</p> <p><b>Teacher Wraparound Edition:</b>  A 376; As 386; D 377, 382; DI 377; NG 382;  SCB 372E; SJ 377; TPK 379</p>

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D.8.10 Explain how models of the atomic structure of matter have changed over time, including historical models and modern atomic theory	<p><b>Student Edition:</b> 73-79 <i>Integrate History</i> 73 <i>Mini Lab</i> 74 <i>Section 1 Review</i> 79 #6, #8</p> <p><b>Teacher Wraparound Edition:</b> A 76; DI 78; MM 78; VL 77</p>
<b>Standard G: Science Applications</b>	
G.8.1 Identify* and investigate* the skills people need for a career in science or technology and identify the academic courses that a person pursuing such a career would need	<p><b>Student Edition:</b> 11 <i>Integrate Career</i> 13, 43, 78, 148, 229, 264, 352, 448, 654</p> <p><b>Teacher Wraparound Edition:</b> A 10; IC 43, 229, 264, 448; R 78, 352, 654</p>
G.8.2 Explain* how current scientific and technological discoveries have an influence on the work people do and how some of these discoveries also lead to new careers	<p><b>Student Edition:</b> <i>Oops! Accidents in Science</i> 126, 574 <i>Research</i> 34 <i>Time Science and History</i> 542 <i>Time Science and Society</i> 272, 332, 426, 662</p> <p><b>Teacher Wraparound Edition:</b> AE 126; CB 662; D 332, 574; I 272; R 574</p>
G.8.3 Illustrate* the impact that science and technology have had, both good and bad, on careers, systems, society, environment, and quality of life	<p><b>Student Edition:</b> <i>Interview</i> 662 <i>Time Science and History</i> 34, 210, 542 <i>Time Science and Society</i> 272, 332, 426, 452</p> <p><b>Teacher Wraparound Edition:</b> CB 34, 272, 332, 426; D 34, 210, 452, 542, 662; DR 452; HS 34, 210; R 426, 542</p>
G.8.4 Propose a design (or re-design) of an applied science model or a machine that will have an impact in the community or elsewhere in the world and show* how the design (or re-design) might work, including potential side-effects	<p><b>Student Edition:</b> <i>Communicating Your Data</i> 301 <i>Design Your Own Lab</i> 124-125, 300-301</p> <p><b>Teacher Wraparound Edition:</b> A 332; AIL 124, 424; As 125; CYD 301</p>

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<p>G.8.5 Investigate* a specific local problem to which there has been a scientific or technological solution, including proposals for alternative courses of action, the choices that were made, reasons for the choices, any new problems created, and subsequent community satisfaction</p>	<p><b>Student Edition:</b>  <i>Lab</i> 396-397  <i>National Geographic</i> 234  <i>Time Science and Society</i> 452  <b>Teacher Wraparound Edition:</b>  A 234, 452; AIL 396; As 397; CB 452; CYD 397; D 452; DI 234; DR 452; NG 234</p>
<p>G.8.6 Use current texts, encyclopedias, source books, computers, experts, the popular press, or other relevant sources to identify* examples of how scientific discoveries have resulted in new technology</p>	<p><b>Student Edition:</b>  <i>Integrate Life Science</i> 311  <i>Research</i> 426  <i>Unit Projects</i> 371  <i>Web Quest</i> 459, 580  <b>Teacher Wraparound Edition:</b>  IC 593; IH 470; ILS 311; R 426; SJ 656; UP 371; WQ 458, 580</p>
<p>G.8.7 Show* evidence* of how science and technology are interdependent, using some examples drawn from personally conducted investigations*</p>	<p><b>Student Edition:</b>  448-449  <i>Integrate Chemistry</i> 646  <i>Integrate Health</i> 470, 630  <i>Integrate Life Science</i> 311  <i>Lab</i> 396-397  <i>Time Science and Society</i> 426  <i>Unit Projects</i> 159, 371  <i>Web Quest</i> 581  <b>Teacher Wraparound Edition:</b>  As 397; CB 426; CD 448; IH 470; ILS 311; QD 646; SJ 446, 656; UP 159, 371; WQ 580</p>
<p><b>Standard H: Science in Personal and Social Perspectives</b></p>	
<p>H.8.1 Evaluate the scientific evidence used in various media (for example, television, radio, Internet, popular press, and scientific journals) to address a social issue, using criteria of accuracy, logic, bias, relevance of data, and credibility of sources</p>	<p><b>Student Edition:</b>  27-30  <i>Figure 28</i> 30  <i>Section 4 Review</i> 30 #4-5  <b>Teacher Wraparound Edition:</b>  A 28; As 30; CU 30; D 28; QD 29; TPK 27; VL 28</p>
<p>H.8.2 Present a scientific solution to a problem involving the earth and space, life and environmental, or physical sciences and participate in a consensus-building discussion to arrive at a group decision</p>	<p><b>Student Edition:</b>  <i>Lab</i> 396-397  <i>Unit Projects</i> 371  <i>Web Quest</i> 371  <b>Teacher Wraparound Edition:</b>  AIL 396; UP 371; WQ 370</p>

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<p>H.8.3 Understand the consequences of decisions affecting personal health and safety</p>	<p><b>Student Edition:</b>  269  <i>Figure 24</i> 269  <i>Integrate Health</i> 601</p> <p><b>Teacher Wraparound Edition:</b>  AIL 300; M 332</p>