



Life Science

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STANDARDS	PAGE REFERENCES
<p>STATE GOAL 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.</p>	
<p>A. Know and apply the concepts, principles and processes of scientific inquiry.</p>	
<p>11.A.3a Formulate hypotheses that can be tested by collecting data.</p>	<p>Student Edition: 8 <i>Lab: Design Your Own</i> 28-29, 56-57, 174-175, 200-201, 418-419, 558-559, 672-673, 702-703 <i>Science Skills Handbook</i> 805 Teacher Wraparound Edition: AIL 292, 530; QD 8</p>
<p>11.A.3b Conduct scientific experiments that control all but one variable.</p>	<p>Student Edition: 9 <i>Lab</i> 318-319, 787 <i>Lab: Design Your Own</i> 28-29, 292-293 <i>Science Skills Handbook</i> 806 Teacher Wraparound Edition: AIL 200, 292, 530, 730; AS 293</p>

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<p>11.A.3c Collect and record data accurately using consistent measuring and recording techniques and media.</p>	<p>Student Edition: 12 <i>Lab</i> 501, 603, 642-643, 787 <i>Lab: Design Your Own</i> 28-29, 174-175, 418-419 <i>Lab: Use the Internet</i> 446-447 <i>MiniLab</i> 9, 247 <i>Science Skill Handbook</i> 806-809</p>
<p>11.A.3d Explain the existence of unexpected results in a data set.</p>	<p>Student Edition: <i>Lab</i> 86-87, 310, 530-531 <i>Lab: Design Your Own</i> 28-29, 144-145, 174-175, 292-293, 418-419 Teacher Wraparound Edition: EA 29, 87, 145, 175, 293, 419, 531</p>
<p>11.A.3e Use data manipulation tools and quantitative (e.g., mean, mode, simple equations) and representational methods (e.g., simulations, image processing) to analyze measurements.</p>	<p>Student Edition: <i>Applying Math</i> 347, 487, 623 <i>Lab</i> 133, 310, 501, 603, 642-643 <i>Lab: Design Your Own</i> 174-175 <i>Lab: Use the Internet</i> 446-447 <i>Math Skill Handbook</i> 838 <i>MiniLab</i> 9 Teacher Wraparound Edition: DIF 130</p>
<p>11.A.3f Interpret and represent results of analysis to produce findings.</p>	<p>Student Edition: <i>Lab</i> 310, 318-319, 530-531, 787 <i>Lab: Design Your Own</i> 28-29, 200-201, 292-293, 418-419, 642-643, 702-703, 730-731 <i>Lab: Use the Internet</i> 446-447 <i>MiniLab</i> 136</p>
<p>11.A.3g Report and display the process and results of a scientific investigation.</p>	<p>Student Edition: <i>Lab</i> 318-319, 642-643 <i>Lab: Design Your Own</i> 174-175, 292-293, 418-419, 702-703 <i>Lab: Use the Internet</i> 446-447 Teacher Wraparound Edition: AS 319, 447; CYD 703</p>

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B. Know and apply the concepts, principles and processes of technological design.	
<p>11.B.3a Identify an actual design problem and establish criteria for determining the success of a solution.</p>	<p>Student Edition: <i>Lab: Model and Invent</i> 472-473, 792-793 <i>Oops! Accidents in Science</i> 504 Teacher Wraparound Edition: AC 777; AYD 473; IN 504</p>
<p>11.B.3b Sketch, propose and compare design solutions to the problem considering available materials, tools, cost effectiveness and safety.</p>	<p>Student Edition: <i>Lab: Model and Invent</i> 472-473, 792-793 <i>Oops! Accidents in Science</i> 504 Teacher Wraparound Edition: AC 777; AYD 473; IN 504</p>
<p>11.B.3c Select the most appropriate design and build a prototype or simulation.</p>	<p>Student Edition: <i>Lab: Model and Invent</i> 472-473, 792-793 <i>Oops! Accidents in Science</i> 504 Teacher Wraparound Edition: AC 777; AYD 473; IN 504</p>
<p>11.B.3d Test the prototype using available materials, instruments and technology and record the data.</p>	<p>Student Edition: <i>Lab: Model and Invent</i> 792-793 <i>Oops! Accidents in Science</i> 504 Teacher Wraparound Edition: AC 777; IN 504</p>
<p>11.B.3e Evaluate the test results based on established criteria, note sources of error and recommend improvements.</p>	<p>Student Edition: <i>Lab: Model and Invent</i> 792-793 <i>Oops! Accidents in Science</i> 504 Teacher Wraparound Edition: AC 777; IN 504</p>
<p>11.B.3f Using available technology, report the relative success of the design based on the test results and criteria.</p>	<p>Student Edition: <i>Lab: Model and Invent</i> 792-793 <i>Oops! Accidents in Science</i> 504 Teacher Wraparound Edition: AC 777; IN 504</p>
<p>STATE GOAL 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.</p>	
<p>A. Know and apply concepts that explain how living things function, adapt and change.</p>	
<p>12.A.3a Explain how cells function as “building blocks” of organisms and describe the requirements for cells to live.</p>	<p>Student Edition: 14, 38, 45, 51 Teacher Wraparound Edition: TBI 36</p>

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<p>12.A.3b Compare characteristics of organisms produced from a single parent with those of organisms produced by two parents.</p>	<p>Student Edition: 101-102, 104-105, 210, 224, 272-273 <i>MiniLab</i> 273 <i>Reading Check</i> 101 <i>Section Review</i> 102 (#2); 109 (#4); 275 (#2, #3) Teacher Wraparound Edition: IL 102; VL 17</p>
<p>12.A.3c Compare and contrast how different forms and structures reflect different functions (e.g., similarities and differences among animals that fly, walk or swim; structures of plant cells and animal cells).</p>	<p>Student Edition: 39-44, 241, 252-255, 332, 337, 340, 365-367, 370, 380, 399-401, 403, 412-413, 428-432, 436-438 <i>Lab</i> 343, 379 <i>Launch Lab</i> 427 <i>MiniLab</i> 288, 381, 403, 430 Teacher Wraparound Edition: UAA 39, 243</p>
<p>B. Know and apply concepts that describe how living things interact with each other and with their environment.</p>	
<p>12.B.3a Identify and classify biotic and abiotic factors in an environment that affect population density, habitat and placement of organisms in an energy pyramid.</p>	<p>Student Edition: 686-687, 688, 690-693, 696-697, 712-717, 728-729 <i>Chapter Review</i> 734 (#9), 737 (#11) <i>Lab: Design Your Own</i> 702-703 <i>MiniLab</i> 689 <i>Section Review</i> 718 (#1-#3) Teacher Wraparound Edition: AS 703; DIF 691</p>
<p>12.B.3b Compare and assess features of organisms for their adaptive, competitive and survival potential (e.g., appendages, reproductive rates, camouflage, defensive structures).</p>	<p>Student Edition: 158, 242-243, 331-333, 462-463, 468-470, 698 <i>Science Journal</i> 152 <i>Lab</i> 162 <i>Lab: Design Your Own</i> 350-351 <i>Launch Lab</i> 153 <i>MiniLab</i> 332, 410, 438 <i>Section Review</i> 161 (#5) Teacher Wraparound Edition: QD 242; VL 333</p>

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C. Know and apply concepts that describe properties of matter and energy and the interactions between them.	
<p>12.C.3a Explain interactions of energy with matter including changes of state and conservation of mass and energy.</p>	<p>Student Edition: 720-721, 726, 727</p> <p>Teacher Wraparound Edition: DIF 727; TFYI 728</p>
<p>12.C.3b Model and describe the chemical and physical characteristics of matter (e.g., atoms, molecules, elements, compounds, mixtures).</p>	<p>Student Edition: 66-73</p> <p><i>Section Review</i> 73 (#1, #2) <i>Standardized Test Practice</i> 93 (#11)</p> <p>Teacher Wraparound Edition: DIF 67, 69; MAM 72; QD 69</p>
D. Know and apply concepts that describe force and motion and the principles that explain them.	
<p>12.D.3a Explain and demonstrate how forces affect motion (e.g., action/reaction, equilibrium conditions, free-falling objects).</p>	<p>See Glencoe's <i>Introduction to Physical Science</i> © 2008</p> <p>Student Edition: 310-312, 316-322, 323-324</p> <p><i>Design Your Own LAB</i> 330-331 <i>LAB</i> 329 <i>Launch Lab</i> 309 <i>Mini LAB</i> 327 <i>National Geographic</i> 325 <i>Science and Society</i> 332</p>
<p>12.D.3b Explain the factors that affect the gravitational forces on objects (e.g., changes in mass, distance).</p>	<p>See Glencoe's <i>Introduction to Physical Science</i> © 2008</p> <p>Student Edition: 317-318, 321, 348-351</p>
E. Know and apply concepts that describe the features and processes of the Earth and its resources.	
<p>12.E.3a Analyze and explain large-scale dynamic forces, events and processes that affect the Earth's land, water and atmospheric systems (e.g., jetstream, hurricanes, plate tectonics).</p>	<p>Student Edition: 717-718</p> <p>Also see Glencoe's <i>Earth Science</i> © 2008</p> <p>Student Edition: 272-275, 276-278, 280-289, 300-303, 330-335, 439-443, 465-469, 518-523</p> <p><i>Lab</i> 279 <i>National Geographic</i> 441 <i>Use the Internet Lab</i> 290-291</p>

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<p>12.E.3b Describe interactions between solid earth, oceans, atmosphere and organisms that have resulted in ongoing changes of Earth (e.g., erosion, El Nino).</p>	<p>Student Edition: 21, 163-164, 717, 740-741, 780-781 <i>Integrate Earth Science</i> 21 <i>Lab</i> 787</p> <p>Teacher Wraparound Edition: DIF 781</p>
<p>12.E.3c Evaluate the biodegradability of renewable and nonrenewable natural resources.</p>	<p>Student Edition: 770-771, 789-791 <i>Lab: Design Your Own</i> 200-201</p> <p>Teacher Wraparound Edition: AIL 200; QD 785; TFYI 790</p>
<p>F. Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.</p>	
<p>12.F.3a Simulate, analyze and explain the effects of gravitational force in the solar system (e.g., orbital shape and speed, tides, spherical shape of the planets and moons).</p>	<p>See Glencoe's <i>Earth Science</i> © 2008</p> <p>Student Edition: 527-530, 637, 690-694, 703, 712 <i>Lab</i> 695 <i>MiniLAB</i> 641, 699</p>
<p>12.F.3b Describe the organization and physical characteristics of the solar system (e.g., sun, planets, satellites, asteroids, comets).</p>	<p>See Glencoe's <i>Earth Science</i> © 2008</p> <p>Student Edition: 660-665, 666-674, 676-679, 690-694, 696-701, 702-709, 710-713 <i>Launch Lab</i> 689 <i>MiniLAB</i> 704 <i>National Geographic</i> 672 <i>Science Online</i> 691</p>
<p>12.F.3c Compare and contrast the sun as a star with other objects in the Milky Way Galaxy (e.g., nebulae, dust clouds, stars, black holes).</p>	<p>See Glencoe's <i>Earth Science</i> © 2008</p> <p>Student Edition: 729-732, 734-739, 740-745 <i>MiniLAB</i> 742 <i>Science Online</i> 736 <i>Science Stats</i> 748</p>

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STATE GOAL 13: Understand the relationships among science, technology and society in historical and contemporary contexts.	
A. Know and apply the accepted practices of science.	
<p>13.A.3a Identify and reduce potential hazards in science activities (e.g., ventilation, handling chemicals).</p>	<p>Student Edition: 13 <i>Lab</i> 86-87, 310, 522, 665 <i>Lab: Design Your Own</i> 28-29 <i>MiniLab</i> 194 <i>Science Skill Handbook</i> 811-813 Teacher Wraparound Edition: 19T-20T, SP 28, 86, 522, 665</p>
<p>13.A.3b Analyze historical and contemporary cases in which the work of science has been affected by both valid and biased scientific practices.</p>	<p>Student Edition: 7-11, 19, 21, 154-157, 657-658 <i>Integrate Social Studies</i> 658 <i>National Geographic</i> 20 <i>Section Review</i> 21 (#2); 161 (#1) Teacher Wraparound Edition: AC 11; IM 155; TFYI 9, 21</p>
<p>13.A.3c Explain what is similar and different about observational and experimental investigations.</p>	<p>The teacher can discuss with students that some investigations are observational whereas others utilize the scientific method. Student Edition: 7-10 <i>Lab</i> 384-385, 530-531, 642-643, 701, 719 <i>Lab: Design Your Own</i> 28-29, 200-201, 418-419, 558-559 Teacher Wraparound Edition: AC 11; TFYI 10</p>
B. Know and apply concepts that describe the interaction between science, technology and society.	
<p>13.B.3a Identify and explain ways that scientific knowledge and economics drive technological development.</p>	<p>Student Edition: 47, 50, 141-143, 773-776, 789-791 <i>National Geographic</i> 48-49, 777 <i>Oops! Accidents in Science</i> 264 <i>Time: Science and Society</i> 232, 294 Teacher Wraparound Edition: CDIV 142; TFYI 142</p>

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<p>13.B.3b Identify important contributions to science and technology that have been made by individuals and groups from various cultures.</p>	<p>Student Edition: 19, 21, 22-23, 47, 127, 658 <i>Oops! Accidents in Science</i> 118 <i>Time: Science and History</i> 58, 560, 586</p> <p>Teacher Wraparound Edition: CC 9; CDIV 10, 12, 77, 98</p>
<p>13.B.3c Describe how occupations use scientific and technological knowledge and skills.</p>	<p>Student Edition: <i>Integrate Career</i> 83, 97, 137, 228, 303, 634, 717</p> <p>Teacher Wraparound Edition: IC 83, 97, 137, 228, 303, 634, 717</p>
<p>13.B.3d Analyze the interaction of resource acquisition, technological development and ecosystem impact (e.g., diamond, coal or gold mining; deforestation).</p>	<p>Student Edition: 749, 772 <i>Launch Lab</i> 769 <i>MiniLab</i> 772</p> <p>Teacher Wraparound Edition: AS 769, 772; DI 773, 779</p>
<p>13.B.3e Identify advantages and disadvantages of natural resource conservation and management programs.</p>	<p>Student Edition: 772, 788-791 <i>Science Online</i> 790</p> <p>Teacher Wraparound Edition: CB 30; RR 30; RT 791</p>
<p>13.B.3f Apply classroom-developed criteria to determine the effects of policies on local science and technology issues (e.g., energy consumption, landfills, water quality).</p>	<p>Student Edition: <i>Applying Science</i> 790 <i>Integrate Social Studies</i> 773</p> <p>Teacher Wraparound Edition: AS 791; DI 773, 782; DIF 789, 790; ISS 773; SJ 774</p>