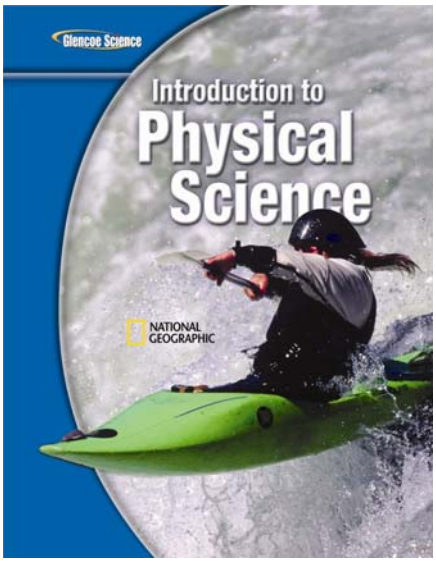
Glencoe

Science State Goals: 11-13
Middle/Junior High School

Illinois



Introduction to Physical Science

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STANDARDS	PAGE REFERENCES
STATE GOAL 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	
A. Know and apply the concepts, principles and processes of scientific inquiry.	
11.A.3a Formulate hypotheses that can be tested by collecting data.	**Student Edition:** *Design Your Own LAB* 60-61, 124-125, 150-151, 208-209, 300-301, 330-331, 424-425, 450-451, 480-481, 510-511, 540-541 *LAB* 31, 240-241 *Mini LAB* 14 *Science Skill Handbook* 673-674 **Teacher Wraparound Edition:** IL 17
11.A.3b Conduct scientific experiments that control all but one variable.	**Student Edition:** 18 *Design Your Own LAB* 60-61, 124-125, 208-209, 300-301, 424-425, 450-451, 480-481, 540-541 *LAB* 32-33, 231, 355, 411, 444, 603 *Science Skill Handbook* 674 **Teacher Wraparound Edition:** IM 18

Codes used for Teacher Wraparound Edition pages are the initial caps of headings on that page.

STANDARDS	PAGE REFERENCES
11.A.3c Collect and record data accurately using consistent measuring and recording techniques and media.	**Student Edition:** 42-49 *Design Your Own LAB* 60-61, 150-151, 450-451 *LAB* 355, 444, 500 *Launch Lab* 41 *National Geographic* 623 *Science and History* 542 *Science Skill Handbook* 674-677 *Technology Skill Handbook* 695 **Teacher Wraparound Edition:** A 43; IL 48; LD 57; TPK 42
11.A.3d Explain the existence of unexpected results in a data set.	**Student Edition:** 44-45 *Design Your Own LAB* 60-61, 124-125, 150-151, 424-425, 450-451, 480-481 *Integrate Astronomy* 51 *LAB* 31 *National Geographic* 46 **Teacher Wraparound Edition:** A 51; D 45
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.	**Student Edition:** 22-25, 44-49, 56-59, 642-647, 649-659 *Applying Math* 290, 413 *Integrate Career* 165 *LAB* 55 *Science and Society* 662 *Science Skill Handbook* 677-678 *Technology Skill Handbook* 694-695 *Use the Internet LAB* 660-661 **Teacher Wraparound Edition:** D 45; FF 22, 44; SJ 656

STANDARDS	PAGE REFERENCES
11.A.3f Interpret and represent results of analysis to produce findings.	**Student Edition:** 56-59 *Applying Science* 89, 390, 617 *Design Your Own LAB* 330-331, 424-425, 540-541 *LAB* 32-33, 270-271, 444 *Math Skill Handbook* 710-711 *Science Skill Handbook* 677-678 *Technology Skill Handbook* 695-696 **Teacher Wraparound Edition:** LD 57
11.A.3g Report and display the process and results of a scientific investigation.	**Student Edition:** 12-18, 42-49, 56-59 *Design Your Own LAB* 208-209, 424-425, 450-451 *Math Skill Handbook* 710-711 *Mini LAB* 23 *Science Skill Handbook* 670-678 *Technology Skill Handbook* 695-696 **Teacher Wraparound Edition:** D 58; IL 17, 48; TPK 12; VL 13
B. Know and apply the concepts, principles and processes of technological design.	
11.B.3a Identify an actual design problem and establish criteria for determining the success of a solution.	**Student Edition:** *Accidents in Science* 302, 574 *Design Your Own LAB* 124-125, 150-151, 300-301, 424-425, 450-451 *LAB* 31, 411, 620, 632-633 *National Geographic* 68-69, 370-371, 447, 657 *Science and Society* 272, 332, 662 **Teacher Wraparound Edition:** FYI 25, 45; MM 78

STANDARDS	PAGE REFERENCES
11.B.3b Sketch, propose and compare design solutions to the problem considering available materials, tools, cost effectiveness and safety.	**Student Edition:** *Accidents in Science* 302, 574 *Design Your Own LAB* 124-125, 150-151, 300-301, 424-425, 450-451 *LAB* 31, 411, 620, 632-633 *Science and Society* 272, 332, 662 **Teacher Wraparound Edition:** D 302; MM 25, 78
11.B.3c Select the most appropriate design and build a prototype or simulation.	**Student Edition:** *Accidents in Science* 302 *Design Your Own LAB* 124-125, 150-151, 300-301, 424-425, 450-451 *LAB* 31, 411, 620, 632-633 *National Geographic* 24, 657 *Science and Society* 272, 332, 662 **Teacher Wraparound Edition:** D 302; MM 25, 78
11.B.3d Test the prototype using available materials, instruments and technology and record the data.	**Student Edition:** *Accidents in Science* 302 *Design Your Own LAB* 124-125, 150-151, 300-301, 424-425, 450-451 *LAB* 31, 411, 620, 632-633 *National Geographic* 24, 657 *Science and History* 542 *Science and Society* 272, 332, 662 **Teacher Wraparound Edition:** A 302, 332, 662; MM 25, 78
11.B.3e Evaluate the test results based on established criteria, note sources of error and recommend improvements.	**Student Edition:** *Design Your Own LAB* 124-125, 150-151, 208-209, 300-301, 424-425, 450-451, 540-541 *LAB* 31, 411, 620, 632-633 *National Geographic* 24, 657 *Science and History* 542 *Science and Society* 272, 332, 662 **Teacher Wraparound Edition:** A 302, 332, 662; MM 25, 78

STANDARDS	PAGE REFERENCES
11.B.3f Using available technology, report the relative success of the design based on the test results and criteria.	**Student Edition:** *Design Your Own LAB* 124-125, 150-151, 300-301, 424-425, 450-451 *LAB* 31, 411, 620, 632-633 *National Geographic* 24, 657 *Science and History* 542 *Science and Society* 272, 332, 662 **Teacher Wraparound Edition:** A 302, 332, 662; MM 25, 78
STATE GOAL 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences. **A. Know and apply concepts that explain how living things function, adapt and change.**	
12.A.3a Explain how cells function as "building blocks" of organisms and describe the requirements for cells to live.	See Glencoe's *Life Science* © 2008 **Student Edition:** 14, 38, 45, 51 **Teacher Wraparound Edition:** TBI 36
12.A.3b Compare characteristics of organisms produced from a single parent with those of organisms produced by two parents.	See Glencoe's *Life Science* © 2008 **Student Edition:** 101-102, 104-105, 210, 224, 272-273 *MiniLab* 273 *Reading Check* 101 *Section Review* 102 (#2); 109 (#4); 275 (#2, #3) **Teacher Wraparound Edition:** IL 102; VL 17

STANDARDS	PAGE REFERENCES
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).	**Student Edition:** *Integrate Life Science* 284, 324, 361, 383, 530 Also see Glencoe's *Life Science* © 2005 **Student Edition:** 39-44, 241, 252-255, 332, 337, 340, 365-367, 370, 380, 399-401, 403, 412-413, 428-432, 436-438 *Lab* 343, 379 *Launch Lab* 427 *MiniLab* 288, 381, 403, 430 **Teacher Wraparound Edition:** UAA 39, 243
B. Know and apply concepts that describe how living things interact with each other and with their environment.	
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.	See Glencoe's *Life Science* © 2008 **Student Edition:** 686-687, 688, 690-693, 696-697, 712-717, 728-729 *Chapter Review* 734 (#9), 737 (#11) *Lab: Design Your Own* 702-703 *MiniLab* 689 Section Review 718 (#1-#3) **Teacher Wraparound Edition:** AS 703; DIF 691
12.B.3b Compare and assess features of organisms for their adaptive, competitive and survival potential (e.g., appendages, reproductive rates, camouflage, defensive structures).	**Student Edition:** *Integrate Life Science* 284, 383, 419, 442, 530 Also see *Glencoe's Life Science* © 2008 **Student Edition:** 158, 242-243, 331-333, 462-463, 468-470, 698 *Science Journal* 152 *Lab* 162 *Lab: Design Your Own* 350-351 *Launch Lab* 153 *MiniLab* 332, 410, 438 *Section Review* 161 (#5) **Teacher Wraparound Edition:** QD 242; VL 333

STANDARDS	PAGE REFERENCES
C. Know and apply concepts that describe properties of matter and energy and the interactions between them.	
12.C.3a Explain interactions of energy with matter including changes of state and conservation of mass and energy.	**Student Edition:** 107-114, 120, 144, 374-378, 380, 384-385, 387-395, 621-627 *Integrate Astronomy* 343 *LAB* 115, 632-633 *Launch Lab* 101 **Teacher Wraparound Edition:** A 120; D 111; DI 392; FF 381; IM 109, 144; LD 75; MM 390; UA 388
12.C.3b Model and describe the chemical and physical characteristics of matter (e.g., atoms, molecules, elements, compounds, mixtures).	**Student Edition:** 74-79, 80-85, 87-91, 102-106, 116-123 *Integrate History* 73 *LAB* 86, 92-93 *National Geographic* 110 **Teacher Wraparound Edition:** A 76; CC 90; D 89; FF 83; IL 77; MM 78; R 79
D. Know and apply concepts that describe force and motion and the principles that explain them.	
12.D.3a Explain and demonstrate how forces affect motion (e.g., action/reaction, equilibrium conditions, free-falling objects).	**Student Edition:** 310-312, 316-322, 323-324 *Design Your Own LAB* 330-331 *LAB* 329 *Launch Lab* 309 *Mini LAB* 327 *National Geographic* 325 *Science and Society* 332 **Teacher Wraparound Edition:** A 328; IM 318; LD 327; QD 312; R 322; SJ 319; VL 320
12.D.3b Explain the factors that affect the gravitational forces on objects (e.g., changes in mass, distance).	**Student Edition:** 317-318, 321, 348-351 **Teacher Wraparound Edition:** CC 317; D 320; QD 322; TPK 323

STANDARDS	PAGE REFERENCES
E. Know and apply concepts that describe the features and processes of the Earth and its resources.	
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).	See Glencoe's *Earth* Science © 2008 **Student Edition:** 272-275, 276-278, 280-289, 300-303, 330-335, 439-443, 465-469, 518-523 *Lab* 279 *National Geographic* 441 *Use the Internet Lab* 290-291
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).	See Glencoe's *Earth* Science © 2008 **Student Edition:** 188-194, 210-214, 215-220, 222-227, 238-248, 253-254, 492-502, 518-521 *Integrate Environment* 468 *National Geographic* 494-495 **Teacher Wraparound Edition:** CC 219; DI 521; MM 254; R 523
12.E.3c Evaluate the biodegradability of renewable and nonrenewable natural resources.	**Student Edition:** 388-395 *Use the Internet LAB* 396-397 **Teacher Wraparound Edition:** AIL 396; D 392
F. Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.	
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).	See Glencoe's *Earth* Science © 2008 **Student Edition:** 527-530, 637, 690-694, 703, 712 *Lab* 695 *MiniLAB* 641, 699 **Teacher Wraparound Edition:** A 699; DIS 530; QD 527; TFYI 529; V 693

STANDARDS	PAGE REFERENCES
12.F.3b Describe the organization and physical characteristics of the solar system (e.g., sun, planets, satellites, asteroids, comets).	See Glencoe's *Earth* Science © 2008 **Student Edition:** 660-665, 666-674, 676-679, 690-694, 696-701, 702-709, 710-713 *Launch Lab* 689 *MiniLAB* 704 *National Geographic* 672 *Science Online* 691 **Teacher Wraparound Edition:** ACT 708; CFU 713; DI 692; QD 698
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).	See Glencoe's *Earth* Science © 2008 **Student Edition:** 729-732, 734-739, 740-745 *MiniLAB* 742 *Science Online* 736 *Science Stats* 748 **Teacher Wraparound Edition:** CFU 739; DIS 739; IM 688F; R 739; TFYI 736; VL 737
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.	
13.A.3a Identify and reduce potential hazards in science activities (e.g., ventilation, handling chemicals).	**Student Edition:** 19-20, 529-531, 601-602 *Design Your Own LAB* 208-209, 540-541 *Integrate Health* 601 *Integrate Social Studies* 502 *LAB* 115, 261, 270-271, 444 *Science Skill Handbook* 679-681 **Teacher Wraparound Edition:** CU 602; FYI 601; UA 530; VL 19

STANDARDS	PAGE REFERENCES
13.A.3b Analyze historical and contemporary cases in which the work of science has been affected by both valid and biased scientific practices.	**Student Edition:** 26, 72-79, 250 *Integrate History* 73, 629 *Science and History* 94 *Science and Society* 272, 606 *Science Skill Handbook* 678 **Teacher Wraparound Edition:** A 84; CD 18; DI 413; FYI 74; IM 643; VL 25, 28
13.A.3c Explain what is similar and different about observational and experimental investigations.	**Student Edition:** 16-18, 22-26, 567-569 *Integrate Astronomy* 533 *Integrate Career* 13 *Integrate History* 317, 536 *LAB* 31, 207, 444 *Launch Lab* 5 **Teacher Wraparound Edition:** CC 317, 597; CD 18, 592; FYI 9; QD 23; UA 165
B. Know and apply concepts that describe the interaction between science, technology and society.	
13.B.3a Identify and explain ways that scientific knowledge and economics drive technological development.	**Student Edition:** 11, 359-361, 445-449, 526-527, 535-539, 563-566, 567-571, 621-622, 645-647, 649-659 *Accidents in Science* 574 *Science and Society* 662 **Teacher Wraparound Edition:** CD 448; FYI 658; SJ 656
13.B.3b Identify important contributions to science and technology that have been made by individuals and groups from various cultures.	**Student Edition:** 73-78, 194, 351-352, 359 *Accidents in Science* 574 *Integrate History* 317, 408 *National Geographic* 82, 158-159 *Science and History* 34, 94, 542 **Teacher Wraparound Edition:** CC 15, 47, 121, 291; CD 18, 326, 448; FF 44, 119, 175, 195; FYI 82, 118, 312, 446

STANDARDS	PAGE REFERENCES
13.B.3c Describe how occupations use scientific and technological knowledge and skills.	**Student Edition:** *Integrate Astronomy* 533 *Integrate Career* 13, 43, 78, 148, 165, 229, 264, 352, 448, 654 *Integrate Health* 470, 630-631 *Integrate Social Studies* 294 *National Geographic* 532 **Teacher Wraparound Edition:** CC 73; DI 78
13.B.3d Analyze the interaction of resource acquisition, technological development and ecosystem impact (e.g., diamond, coal or gold mining; deforestation).	**Student Edition:** 378, 384-385, 388-395, 627-628 *Integrate Earth Science* 252 *National Geographic* 278-279 *Science and History* 152, 210 *Science Stats* 398 *Use the Internet LAB* 396-397 **Teacher Wraparound Edition:** CC 253; D 392; SJ 627
13.B.3e Identify advantages and disadvantages of natural resource conservation and management programs.	**Student Edition:** 389, 391, 395 *Use the Internet LAB* 396-397 **Teacher Wraparound Edition:** AIL 396; D 392; R 395; SJ 388
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).	**Student Edition:** 389-392 *Integrate History* 205 *Integrate Life Science* 443 *Integrate Social Studies* 502 *National Geographic* 234 *Use the Internet LAB* 396-397 **Teacher Wraparound Edition:** DI 389; FYI 29; SJ 388