GLENCOE CORRELATION
SCIENCE LEVEL GREEN
ILLINOIS
Science State Goals: 11-13
Middle/Junior High School

OBJECTIVES	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.	SE: *Section Assessment* 23 #2, 5; 216 #6, 674 #6 *Use the Internet* 28-29 *Design Your Own Experiment* 56-57 TWE: AC 21 AS 23, 411
11.A.3b Conduct scientific experiments that control all but one variable.	SE: *Section Assessment* 117 #6, 366 #6, 373 #6 *Design Your Own Experiment* 260-261, 350-351
11.A.3c Collect and record data accurately using consistent measuring and recording techniques and media.	SE: *Use the Internet* 28-29 *MiniLAB* 40 *Activity* 51 *Design Your Own Experiment* 56-57 TWE: AC 39, 47 R 45
11.A.3d Explain the existence of unexpected results in a data set.	SE: *Design Your Own Experiment* 56-57 TWE: EA 379, 625, 687
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.	SE: *Section Assessment* 55 #6, 83 #7, 366 #7, 647 #7 *Math Skills Activity* 364 *National Geographic Society Visualizing* 646 TWE: QD 54 AS 55
11.A.3f Interpret and represent results of analysis to produce findings.	SE: *Section Assessment* 77 #6, 243 #6, 668 #7 *Problem-Solving Activity* 221, 402 *Design Your Own Experiment* 260-261, 350-351
11.A.3g Report and display the process and results of a scientific investigation.	SE: *Activity* 118-119, 399 *Use the Internet* 230-231, 410-411 *Model and Invent* 504-505 TWE: CY 411 AS 505
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.	SE: *Use the Internet* 28-29 *Model and Invent* 170-171, 196-197, 504-505 *Design Your Own Experiment* 654-655 TWE: AC 689

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11.B.3b Sketch, propose and compare design solutions to the problem considering available materials, tools, cost effectiveness and safety.	SE: *Model and Invent* 170-171, 196-197, 504-505 *Design Your Own Experiment* 654-655 TWE: AC 689
11.B.3c Select the most appropriate design and build a prototype or simulation.	SE: *Model and Invent* 170-171, 196-197, 504-505 *Design Your Own Experiment* 654-655 TWE: AS 618 AC 689
11.B.3d Test the prototype using available materials, instruments and technology and record the data.	SE: *Model and Invent* 170-171, 196-197, 504-505 *Design Your Own Experiment* 654-655 TWE: CH 455 AC 689
11.B.3e Evaluate the test results based on established criteria, note sources of error and recommend improvements.	SE: *Model and Invent* 170-171, 196-197, 504-505 TWE: CH 455 EA 655
11.B.3f Using available technology, report the relative success of the design based on the test results and criteria.	SE: *Model and Invent* 170-171, 196-197, 504-505 TWE: CH 455
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.	SE: 77, 104, 106-110, 113-117, 210-214, 361 *Explore Activity* 97 *Section Assessment* 110 #4 TWE: TC 96
12.A.3b Compare characteristics of organisms produced from a single parent with those of organisms produced by two parents.	SE: 215-216, 218-223, 240-243 *Section Assessment* 216 #2,6; 223 #1,5; 243 #1, 3-5 *MiniLAB* 241 TWE: SJ 215
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).	SE: 70-77, 106-110, 128-153, 154-158, 163-168 *Section Assessment* 77 #1-5 TWE: CH 77
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.	SE: 334-335, 336-343, 360-366, 375-377 *Section Assessment* 366 #1-5; 377 #3,5 *Activity* 367 TWE: E 342 AS 343 IS 365

OBJECTIVES	PAGE REFERENCES
12.B.3b Compare and assess features of organisms for their adaptive, competitive and survival potential (e.g., appendages, reproductive rates, camouflage, defensive structures).	SE: 186-190, 192-194, 340-343, 347 *National Geographic Society Visualizing* 191 *MiniLAB* 341 TWE: IM 190 QD 340 SJ 347 VL 363
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.	SE: 553, 556, 561, 568 #15 *National Geographic Society Visualizing* 533 *Section Assessment* 561 #4,5 TWE: E 556 TF 556
12.C.3b Model and describe the chemical and physical characteristics of matter (e.g., atoms, molecules, elements, compounds, mixtures).	SE: 520-521, 523-528 *Chemistry Integration* 528 *Activity* 529, 551 TWE: R 528 MA 547
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).	SE: 406-408, 420-422, 635-636 *MiniLAB* 421 *Science Online* 635 TWE MA 407
12.D.3b Explain the factors that affect the gravitational forces on objects (e.g., changes in mass, distance).	SE: 481, 492 *National Geographic Society Visualizing* 493 *Section Assessment* 494 #7 TWE: AC 493
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).	SE: 365, 396-398, 400-402, 404-409 *Explore Activity* 359 *Science Stats* 380-381 *Section Assessment* 398 #5,7 *Activity* 399 *National Geographic Society Visualizing* 403 TWE: CH 409
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).	SE: 361-366, 424, 430-434, 453-454 *Explore Activity* 359 *National Geographic Society Visualizing* 426 TWE: E 361, 426 AC 426, 438
12.E.3c Evaluate the biodegradability of renewable and nonrenewable natural resources.	SE: *Activity* 367

OBJECTIVES	PAGE REFERENCES
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).	SE: 465-468, 481, 492, 503 *Section Assessment* 485 #3 *Problem-Solving Activity* 499 TWE: TF 467, 481, 488 CH 468
12.F.3b Describe the organization and physical characteristics of the solar system (e.g., sun, planets, satellites, asteroids, comets).	SE: 496-503 *Chemistry Integration* 498 *Science Online* 500 *Science and Society* 506-507 TWE: MA 497 IS 497, 502 VL 498 E 499
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).	SE: *National Geographic Society Visualizing* 646 TWE: AC 646 E 646
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).	SE: *Safety Symbol Table* (cover page) *Activity* 169, 195, 435 *Design Your Own Experiment* 654-655 *Reference Handbook A* 735
13.A.3b Analyze historical and contemporary cases in which the work of science has been affected by both valid and biased scientific practices.	SE: 395, 520 *Science and History* 90-91, 172-173, 352-353, 444-445, 656-657 TWE: MA 497
13.A.3c Explain what is similar and different about observational and experimental investigations.	SE: 14-19, 21-23 *National Geographic Society Visualizing* 20 TWE: AC 20 R 23
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.	SE: 9, 24-27 *National Geographic Society Visualizing* 80-81 *Science and History* 90-91, 444-445, 656-657 TWE: D 25
13.B.3b Identify important contributions to science and technology that have been made by individuals and groups from various cultures.	SE: 26, 520 *Science and History* 90-91, 172-173, 656-657 TWE: CD 10, 490, 554 SJ 401
13.B.3c Describe how occupations use scientific and technological knowledge and skills.	SE: *Science and Language Arts* 31, 121, 147, 413, 473

OBJECTIVES	PAGE REFERENCES
13.B.3d Analyze the interaction of resource acquisition, technological development and ecosystem impact (e.g., diamond, coal or gold mining; deforestation).	Resource acquisition and technological development are on pages: SE: 454-455 TWE: TF 454
13.B.3e Identify advantages and disadvantages of natural resource conservation and management programs.	SE: *Environmental Science Integration* 15, 76, 316
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).	SE: *Environmental Science Integration* 15, 76, 316 TWE: VL 316 TF 316

Codes Used for TWE Pages

AC	Activity
AS	Assessment
CD	Cultural Diversity
CH	Challenge
CY	Communicating Your Data
D	Discussion
E	Extension
EA	Error Analysis
IM	Identifying Misconceptions
IS	Inclusion Strategies
MA	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TC	Theme Connection
TF	Teacher FYI
VL	Visual Learning