GLENCOE CORRELATION
SCIENCE LEVEL RED
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: *Design Your Own Experiment* 28-29, 50-51, 172-173, 234-235, 300-301, 482-483 *Problem-Solving Activity* 11 TWE: QD 8
11.A.3b Conduct scientific experiments that control all but one variable.	SE: *Design Your Own Experiment* 28-29, 50-51, 172-173, 234-235, 300-301, 482-483 *Problem-Solving Activity* 72
11.A.3c Collect and record data accurately using consistent measuring and recording techniques and media.	SE: 12, 705-706 *Design Your Own Experiment* 28-29, 268-269, 300-301, 482-483 *Model and Invent* 330-331 *Communicate Your Data* 301 TWE: CYD 269, 301
11.A.3d Explain the existence of unexpected results in a data set.	TWE: EA 29, 51, 173, 301, 429 CYD 66, 609
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: 708, 714-715, 720, 722 *Use the Internet* 578-579 *Activity* 609 *Math Skills Activity* 557, 558, 560, 566
11.A.3f Interpret and represent results of analysis to produce findings.	SE: *Design Your Own Experiment* 28-29, 172-173, 234-235, 300-301, 482-483
11.A.3g Report and display the process and results of a scientific investigation.	SE: *Communicate Your Data* 29, 51, 301 TWE: CYD 29, 51, 301
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: *Model and Invent* 202-203, 330-331, 362-363, 456-457
11.B.3b Sketch, propose and compare design solutions to the problem considering available materials, tools, cost effectiveness and safety.	SE: *Model and Invent* 202-203, 330-331, 362-363, 456-457
11.B.3c Select the most appropriate design and build a prototype or simulation.	SE: *Model and Invent* 202-203, 330-331, 362-363, 456-457
11.B.3d Test the prototype using available materials, instruments and technology and record the data.	SE: *Model and Invent* 202-203, 330-331, 362-363, 456-457
11.B.3e Evaluate the test results based on established criteria, note sources of error and recommend improvements.	SE: *Model and Invent* 202-203, 330-331, 362-363, 456-457
11.B.3f Using available technology, report the relative success of the design based on the test results and criteria.	SE: *Model and Invent* 456-457 *Communicate Your Data* 203, 331 TWE: CYD 203, 457

OBJECTIVES	PAGE REFERENCES
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: 38-43, 45-49 *Mini Lab* 42, 46 *Activity* 44 *Math Skills Activity* 47 TWE: QD 47
12.A.3b Compare characteristics of organisms produced from a single parent with those of organisms produced by two parents.	SE: 62, 88, 154, 155
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: 40-42, 45, 130-133 *Mini Lab* 46, 131 *Activity* 99
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: 216-221, 223-227, 228-233 *Activity* 222 *Mini Lab* 226, 232 *National Geographic* 229 *Problem-Solving Activity* 230 *Design Your Own Experiment* 234-235 TWE: QD 217
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: 187, 191, 194
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: 531-532, 544-546 *Problem-Solving Activity* 545 TWE: MM 532
12.C.3b Model and describe the chemical and physical characteristics of matter (e.g., atoms, molecules, elements, compounds, mixtures).	SE: 528-539, 540-546 *Mini Lab* 531, 544 *Activity* 547 *Problem-Solving Activity* 545 *Design Your Own Experiment* 548-549 TWE: QD 529 D 537
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: 562-569 *Mini Lab* 564 *Math Skills Activity* 566 *National Geographic* 568 TWE: A 563
12.D.3b Explain the factors that affect the gravitational forces on objects (e.g., changes in mass, distance).	SE: 564 *Mini Lab* 564

OBJECTIVES	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).	SE: 298, 322-324, 421-424, 473-475 *National Geographic* 323, 474 *Science Online* 424 TWE: R 325 A 474
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: 473-481 *National Geographic* 474 *Problem-Solving Activity* 479 TWE: MM 479 D 478
12.E.3c Evaluate the biodegradability of renewable and nonrenewable natural resources.	This objective can be met during teacher/class discussion.
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).	The movement of the earth and moon is discussed in: SE: 492-496 *Mini Lab* 495 The effect of gravitational force on tides is discussed in: SE: 353 *Science Online* 353
12.F.3b Describe the organization and physical characteristics of the solar system (e.g., sun, planets, satellites, asteroids, comets).	SE: 498-505 *Problem-Solving Activity* 503 TWE: A 500 QD 501 R 505
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: 507-509 TWE: TFYI 508
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: 13, 723 TWE: QD 529 SP 44, 99, 300, 547
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: 19-21 *National Geographic* 20
13.A.3c Explain what is similar and different about observational and experimental investigations.	Observational investigations are found in: SE: *Activity* 44, 66, 99, 171 Experimental investigations are found in: SE: *Design Your Own Experiment* 28-29, 50-51, 172-173, 234-235, 300-301, 482-483

OBJECTIVES	PAGE REFERENCES
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: 249-256 *Science and Society* 52-53, 332-333 *National Geographic* 250 *Mini Lab* 254
13.B.3b Identify important contributions to science and technology that have been made by individuals and groups from various cultures.	SE: *Career Connection* 517 TWE: CD 41, 632
13.B.3c Describe how occupations use scientific and technological knowledge and skills.	SE: *Career Connection* 237, 271, 303, 517, 613 TWE: CC 237, 271, 303, 517, 613
13.B.3d Analyze the interaction of resource acquisition, technological development and ecosystem impact (e.g., diamond, coal or gold mining; deforestation).	SE: 246-248, 257-261, 263-267 *Design Your Own Experiment* 268-269 *Activity* 262 TWE: R 261 C 267 A 264
13.B.3e Identify advantages and disadvantages of natural resource conservation and management programs.	SE: 265-266 TWE: TFYI 265
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: *Science and Society* 332-333 *Activity* 262 *Connections* 333 TWE: R 261 A 264 CO 333 II 333

Codes Used for TWE Pages

A	Activity
C	Challenge
CC	Career Connection
CD	Cultural Diversity
CO	Connections
CYD	Communicate Your Data
D	Discussion
EA	Error Analysis
II	Investigate the Issue
MM	Make a Model
QD	Quick Demo
R	Reteach
SP	Safety Precautions
TFYI	Teacher FYI