



OHIO
Academic Content Standards – Science Grade 7
Science Level Green © 2008

OBJECTIVES	PAGE REFERENCES
Earth and Space Sciences	
<i>Earth Systems</i>	
1. Explain the biogeochemical cycles which move materials between the lithosphere (land), hydrosphere (water) and atmosphere (air).	SE: 61, 88-109, 166, 548-549 <i>MiniLab</i> 548 <i>Section Review</i> 549 #3, #6 <i>Chapter Review</i> 554 #14, #27 TWE: TFYI 91, 570, 571 ILS 584 The term <i>lithosphere</i> is developed in Glencoe's <i>Earth Science</i> © 2005.
2. Explain that Earth's capacity to absorb and recycle materials naturally (e.g., smoke, smog and sewage) can change the environmental quality depending on the length of time involved (e.g. global warming).	SE: 91, 96-97, 132, 166, 163-164, 544, 547, 568 <i>Section Review</i> 166 #3, #4-#7 <i>Chapter Review</i> 173 #19, #22, #23, #25, #29 <i>LAB</i> 167 <i>TIME</i> 170 <i>Science Online</i> 570 TWE: TFYI 91, 570, 571 ILS 584 AS 166, 167
3. Describe the water cycle and explain the transfer of energy between the atmosphere and hydrosphere.	SE: 100-101, 548 TWE: SJ 101 AS 167 IM 548 TFYI 548
4. Analyze data on the availability of fresh water that is essential for life and for most industrial and agricultural processes. Describe how rivers, lakes and groundwater can be depleted or polluted becoming less hospitable to life and even becoming unavailable or unsuitable for life.	SE: 533, 544, 573-574 TWE: TFYI 548 QD 573 IQL 574 VL 574
5. Make simple weather predictions based on the changing cloud types associated with frontal systems.	SE: 122-125, 126-128 <i>Section Review</i> 125 #3, #5, #6 <i>Chapter Review</i> 143 #26, #27, #33, #34 TWE: TFYI 124 CC 128 VL 128
6. Determine how weather observations and measurements are combined to produce weather maps and that data for a specific location at one point in time can be displayed in a station model.	SE: 134-136, 138-139 <i>LAB</i> 137 <i>Chapter Review</i> 143 #32 TWE: TPK 134 AS 136, 137

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7. Read a weather map to interpret local, regional and national weather.	SE: 136 <i>LAB 137</i> <i>LAB Model and Invent 138-139</i> TWE: CC 128 AS 136, 137
8. Describe how temperature and precipitation determine climatic zones (biomes) (e.g., desert, grasslands, forests, tundra and alpine).	SE: 148-151, 533, 536-537 <i>Science Online 536</i> <i>Section Review 151 #4-#6; 537 #7</i> <i>Chapter Review 173 #16, #19, #20, #24</i> TWE: IM 535 Specific temperature and precipitation data for individual biomes are described in Glencoe's <i>Life Science</i> © 2005 on pages 744-751.
9. Describe the connection between the water cycle and weather-related phenomenon (e.g., tornadoes, floods, droughts and hurricanes).	SE: 120-125, 129-133, 149-151 <i>National Geographic 131</i> <i>MiniLab 135</i> <i>Visualizing Main Ideas 141</i> <i>Chapter Review 143 #25, #28, #29, #30</i> TWE: QD 130 SJ 130 CC 149
Life Sciences	
<i>Characteristics and Structure of Life</i>	
1. Investigate the great variety of body plans and internal structures found in multicellular organisms.	SE: 218-220, 221-231, 366-380, 400-404, 412-416, 419-421, 434-457, 502-520 TWE: SCB 212E, 364E–F, 398E–F, 432E, 466E, 498 E–F Details of structures of individual phyla of the animal kingdom are described in Glencoe's <i>Life Science</i> © 2005 beginning on page 336.
<i>Diversity and Interdependence of Life</i>	
2. Investigate how organisms or populations may interact with one another through symbiotic relationships and how some species have become so adapted to each other that neither could survive without the other (e.g., predator-prey, parasitism, mutualism and commensalism).	SE: 534-537, 539-543 <i>MiniLab 542</i> <i>Chapter Review 543 #4, #5</i> <i>Extra Try at Home Labs 768 #18</i> TWE: SCB 530 E–F DI 542 SJ 542 UA 543
3. Explain how the number of organisms an ecosystem can support depends on adequate biotic (living) resources (e.g., plants, animals) and abiotic (non-living) resources (e.g., light, water and soil).	SE: 539-543 <i>Science Online 540</i> <i>Section Review 543 #1, #2, #7</i> TWE: TPK 539 MM 540 TFYI 540 DI 541 CC 541 ACT 541 QD 541

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4. Investigate how overpopulation impacts an ecosystem.	SE: 540-542 <i>Science Online</i> 540 TWE: QD 541 ACT (Limiting Factors) 541
5. Explain that some environmental changes occur slowly while others occur rapidly (e.g., forest and pond succession, fires and decomposition).	SE: 91, 157-159, 160-162, 163-165, 166, 534, 544 <i>TIME</i> 170 <i>Chapter Review</i> 173 #23, #27, #29; 555 #20 TWE: TFYI 91 IM 160, 535 AR 161
6. Summarize the ways that natural occurrences and human activity affect the transfer of energy in Earth's ecosystems (e.g., fire, hurricanes, roads and oil spills).	SE: 161-162, 574, 592 <i>Chapter Review</i> 173 #19, #20, #22 TWE: CC 162 TFYI 162 ACT 534 IQL 574
7. Explain that photosynthetic cells convert solar energy into chemical energy that is used to carry on life functions or is transferred to consumers and used to carry on their life functions.	SE: 166, 262-265, 501, 512, 544-545, 730 <i>Section Review</i> 265 #1, #2 <i>LAB</i> 266-267 TWE: SJ 262 UA 262 IM 263
Evolutionary Theory	
8. Investigate the great diversity among organisms.	SE: 338-341, 347-349, 350-353, 796-799 <i>Section Review</i> #2-#4, #6, #7 <i>LAB Design Your Own</i> 354-355 <i>Extra Try at Home Lab</i> 763 #1, 765 #11, 768 #17 TWE: IQL 340 AIL 354 For additional examples of organisms, see Glencoe's <i>Life Science</i> © 2005.
Physical Sciences	
Nature of Matter	
1. Investigate how matter can change forms but the total amount of matter remains constant.	SE: 609 <i>Section Review</i> 609 #3, #4 <i>Chapter Review</i> 615 #20 TWE: SCB 592F USW 609
Nature of Energy	
2. Describe how an object can have potential energy due to its position or chemical composition and can have kinetic energy due to its motion.	SE: 717-718 <i>Section Review</i> 727 #1 <i>Chapter Review</i> 743 #20 TWE: IQL 717 VL 718 USW 718

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3. Identify different forms of energy (e.g., electrical, mechanical, chemical, thermal, nuclear, radiant and acoustic).	SE: 99-102, 718-720 <i>LAB Design Your Own</i> 108-109 <i>Section Review 727 #4</i> TWE: VL 718 SJ 719 DI 719 DISC 719 IM 725
4. Explain how energy can change forms but the total amount of energy remains constant.	SE: 721-727 <i>MiniLab</i> 723 <i>Science Online</i> 722 <i>Section Review 727 #22, #24</i> TWE: LD 722 VL 723 QD 723
5. Trace energy transformation in a simple closed system (e.g., a flashlight).	SE: 99-102, 726, 727 <i>MiniLab</i> 101 <i>Extra Try at Home Labs</i> 771 #24 TWE: AS 727
Science and Technology	
<i>Understanding Technology</i>	
1. Explain how needs, attitudes and values influence the direction of technological development in various cultures.	SE: 46-47, 176 <i>Science Online</i> 7 <i>TIME</i> 140 <i>Extra Try at Home Labs</i> #19 TWE: CD 42, 96, 188, 322, 734 SJ 7, 292 TFYI 10, 39 AIL 296
2. Describe how decisions to develop and use technologies often put environmental and economic concerns in direct competition with each other.	SE: 6-10, 96-97 <i>Section Review</i> 11 #3, #5 <i>TIME</i> 80 <i>Chapter Preview</i> 116 TWE: DISC 91, 96 AS 97 AP 116 CD 322, 732 SJ 250, 281
3. Recognize that science can only answer some questions and technology can only solve some human problems.	SE: <i>Science Skill Handbook</i> (Draw Conclusions) 756 Science in and of itself is ever changing. Scientists remain open to new ideas and the possibility of change as new technologies make new observations possible.

OBJECTIVES	PAGE REFERENCES
<i>Abilities To Do Technological Design</i>	
4. Design and build a product or create a solution to a problem given two constraints (e.g., limits of cost and time for design and production or supply of materials and environmental effects).	SE: LAB 19, 98 LAB Model and Invent 138-139; 582-583 LAB Design Your Own 610-611 Extra Try at Home Labs 760 #1 TWE: SCB 4E TFYI 13 DI 18 ACT 60 IQL 69 AS 583
Scientific Inquiry	
<i>Doing Scientific Inquiry</i>	
1. Explain that variables and controls can affect the results of an investigation and that ideally one variable should be tested at a time; however it is not always possible to control all variables.	SE: 16-17, 752 LAB Design Your Own 706-707 LAB Model and Invent 582-583 TWE: AS 583
2. Identify simple independent and dependent variables.	SE: 16-17, 752 LAB Design Your Own 390-391, 610-611, 706-707 TWE: AS 707
3. Formulate and identify questions to guide scientific investigations that connect to science concepts and can be answered through scientific investigations.	SE: 13-18 Section Review 18 #6 LAB 108-109, 324-325 TWE: SCB 4E AIL 550
4. Choose the appropriate tools and instruments and use relevant safety procedures to complete scientific investigations.	SE: See the <i>Safety Symbols</i> on the page facing the title page. See the <i>Safety Symbols</i> in the <i>MiniLabs</i> , <i>LABs</i> , <i>Design Your Own Labs</i> , and <i>Models and Invent Labs</i> that require precautions. <i>Science Skill Handbook</i> 758-759 TWE: 19T, 20T SJ 78
5. Analyze alternative scientific explanations and predictions and recognize that there may be more than one good way to interpret a given set of data.	SE: 340-341 Section Review 341 #3 MiniLab 14 LAB Design Your Own 138-139, 424-425 TWE: AIL 424, 611
6. Identify faulty reasoning and statements that go beyond the evidence or misinterpret the evidence.	SE: 14, 335 LAB Design Your Own (Analyze Your Data) 611 #4 MiniLab 14 Section Review 18 #6

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7. Use graphs, tables and charts to study physical phenomena and infer mathematical relationships between variables (e.g., speed and density).	SE: 95, 109, 121, 229, 311, 355, 446, 469, 551, 671, 686, 751, 789-790 <i>MiniLab</i> 687 <i>Math Skill Handbook</i> 776-790 TWE: DI 688 CD 707 ACT 671, 687
Scientific Ways of Knowing	
<i>Ethical Practices</i>	
1. Show that the reproducibility of results is essential to reduce bias in scientific investigations.	SE: 18, 756 <i>Section Review</i> 18 #3
2. Describe how repetition of an experiment may reduce bias.	SE: 18, 756 <i>Section Review</i> 18 #3
<i>Science and Society</i>	
3. Describe how the work of science requires a variety of human abilities and qualities that are helpful in daily life (e.g., reasoning, creativity, skepticism and openness).	SE: 6-7 <i>Science and Language Arts</i> 22 <i>National Geographic</i> 15 <i>TIME</i> 238 <i>LAB (Communicating Your Data)</i> 425 <i>LAB Design Your Own (Communicating Your Data)</i> 551 TWE: QD 9 AS 583

Codes Used for TWE Pages

ACT	Activity
AIL	Alternative Inquiry Lab
AP	About the Photo
AR	Active Reading
AS	Assessment
CC	Curriculum Connection
CD	Cultural Diversity
DI	Differentiated Instruction
DISC	Discussion
ILS	Integrate Life Science
IM	Identifying Misconceptions
IQL	Inquiry Lab
LD	Lab Demonstration
MM	Make a Model
QD	Quick Demo
SCB	Science Content Background
SJ	Science Journal
TFYI	Teacher FYI
TPK	Tie to Prior Knowledge
UA	Use and Analogy
USW	Use Science Words
VL	Visual Learning