



OHIO
Academic Content Standards – Science Grade 7
Science Level Red © 2005

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: 394 TWE: TFYI 394 VL 394
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: 343, 660-661 <i>Integrate Health</i> 660 TWE: TFYI 343, 660
3. Describe the water cycle and explain the transfer of energy between the atmosphere and hydrosphere.	SE: <i>National Geographic</i> 346, 347 <i>MiniLab</i> 347 TWE: A 346 CU 347 DI 346
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: <i>Applying Science</i> 392, 658-659 TWE: D 392
5. Make simple weather predictions based on the changing cloud types associated with frontal systems.	SE: 351-352 TWE: D 351 DIC 351
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: 354-355 TWE: R 355 TFYI 354
7. Read a weather map to interpret local, regional and national weather.	SE: <i>Lab</i> 363, 364-365 TWE: AS 363
8. Describe how temperature and precipitation determine climatic zones (biomes) (e.g., desert, grasslands, forests, tundra and alpine).	SE: 353, 383 <i>Integrate Social Studies</i> 353 TWE: CD 353
9. Describe the connection between the water cycle and weather-related phenomenon (e.g., tornadoes, floods, droughts and hurricanes).	SE: 360-361 TWE: MM 360

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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: 483-485 <i>National Geographic</i> 486 TWE: AS 487 R 487
<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: <i>Lab</i> 626, 628, 630-631 TWE: D 630 TFYI 630
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: 620-622 TWE: AS 625 CU 625 DI 621 SJ 621 VL 621
4. Investigate how overpopulation impacts an ecosystem.	SE: 629 <i>Lab</i> 636-637 TWE: AIL 636
5. Explain that some environmental changes occur slowly while others occur rapidly (e.g., forest and pond succession, fires and decomposition).	SE: 625, 634-635 TWE: QD 634
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: 343, 656-662 TWE: CD 508 IM 657 SJ 656 TFYI 343
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: 624 Figure #6 624 <i>Integrate Physics</i> 634 TWE: TFYI 633 TPK 633
<i>Evolutionary Theory</i>	
8. Investigate the great diversity among organisms.	SE: 498-522 TWE: CB 514, 522 DI 503 TFYI 499, 511
Physical Sciences	
<i>Nature of Matter</i>	
1. Investigate how matter can change forms but the total amount of matter remains constant.	SE: 70-75 TWE: CC 74 QD 71 TPK 70

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<i>Nature of Energy</i>	
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: 166-168 TWE: CD 166 QD 168
3. Identify different forms of energy (e.g., electrical, mechanical, chemical, thermal, nuclear, radiant and acoustic).	SE: 168-169 TWE: AS 169 CU 169 DI 168 R 169 TFYI 166
4. Explain how energy can change forms but the total amount of energy remains constant.	SE: 162-163 TWE: DI 168 QD 168
5. Trace energy transformation in a simple closed system (e.g., a flashlight).	SE: 204-205 TWE: CC 205 IM 204
Science and Technology	
<i>Understanding Technology</i>	
1. Explain how needs, attitudes and values influence the direction of technological development in various cultures.	SE: <i>Integrate Physics</i> 230, 421 TWE: CU 422 D 417 SJ 421
2. Describe how decisions to develop and use technologies often put environmental and economic concerns in direct competition with each other.	SE: 646-649 <i>Integrate Health</i> 660 TWE: CC 652
3. Recognize that science can only answer some questions and technology can only solve some human problems.	SE: 243, 362, 429 TWE: D 417
<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: 650-651 <i>MiniLab</i> 651 TWE: CD 651 D 651
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: 18 TWE: IM 18 QD 18
2. Identify simple independent and dependent variables.	SE: 18 <i>Science Online</i> 18 TWE: IM 18
3. Formulate and identify questions to guide scientific investigations that connect to science concepts and can be answered through scientific investigations.	SE: 12-16 <i>MiniLab</i> 14 TWE: DI 16 TFYI 16 VL 13

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4. Choose the appropriate tools and instruments and use relevant safety procedures to complete scientific investigations.	SE: 19-20 TWE: CC 19 D 19 R 20
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: Lab 31, 32-33 TWE: CU 30 QD 29
6. Identify faulty reasoning and statements that go beyond the evidence or misinterpret the evidence.	SE: 29-30 TWE: AS 30 D 28 TFYI 29
7. Use graphs, tables and charts to study physical phenomena and infer mathematical relationships between variables (e.g., speed and density).	SE: 57-59 Lab 60-61 TWE: DI 58 VL 58
Scientific Ways of Knowing	
<i>Ethical Practices</i>	
1. Show that the reproducibility of results is essential to reduce bias in scientific investigations.	SE: 29-30 TWE: D 29
2. Describe how repetition of an experiment may reduce bias.	SE: Lab 32-33 TWE: D 29
<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: Lab 32-33, 152-153, 363 TWE: CU 30 UA 22

Codes Used for TWE Pages

A	Activity
AIL	Alternative Inquiry Lab
AS	Assesment
CB	Content Background
CC	Curriculum Connection
CD	Cultural Diversity
CU	Check for Understanding
D	Discussion
DI	Differentiated Instruction
DIC	Differentiated Instruction Challenge
IM	Identifying Misconceptions
MM	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TFYI	Teacher FYI
TPK	Tie to Prior Knowledge
UA	Use an Analogy
VL	Visual Learning