



IDAHO
Science Standards Grades 6-8
Life's Structure and Function A
From Bacteria to Plants B
Animal Diversity C
Human Body Systems D
Ecology E
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STANDARDS	PAGE REFERENCES
617. SCIENCE STANDARDS - GRADE 6, SECTIONS 618 THROUGH 628.	
618. UNIFYING CONCEPTS OF SCIENCE.	
01. Understand systems, order, and organization.	
a. Know that a system is an organized group of related objects that form a whole.	(A) 16, 24-25, 41-47, 53 UA 43 (D) 8, 49-53, 64-69, 101-104 (E) 8-11 TFYI 9
b. Describe the function of each human body system.	(D) 8, 14-15, 21-22, 47, 64, 74, 80, 92-93, 101, 118-119, 146, 151, 176 DIS 22 TTPK 47
02. Understand concepts and processes of evidence, models, and explanation.	
a. Know that observations and data are evidence on which to base scientific explanations and predictions.	(A) 4, 10-11 <i>MiniLab</i> 11 (B) 2-5 (C) 4-5
b. Know the difference between observations and inferences.	(A) 10, 11 LD 10
c. Use models to explain or demonstrate a concept.	(A) <i>MiniLab</i> 42, 113 (B) <i>MiniLab</i> 9, 110 (C) <i>MiniLab</i> 10, 108 (D) <i>MiniLab</i> 52, 103 <i>Lab: Model and Invent</i> 108-109 (E) <i>Lab</i> 111 <i>Lab: Model and Invent</i> 116-117 <i>MiniLab</i> 135
d. Develop skills to create scientific explanations based on scientific knowledge, logic, and analysis.	(A) <i>Lab: Design Your Own</i> 30-31, 146-147 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 <i>Lab</i> 140-141 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 136-137, 196-197 (E) <i>Lab: Design Your Own</i> 26-27

STANDARDS	PAGE REFERENCES
03. Understand constancy, change, and measurement.	
a. Recognize that some concepts in science do not change with time.	(A) 12 (E) TFYI 52
b. Analyze changes that occur in and among systems.	(A) 76-80, 157-163 <i>Applying Science</i> 159 (D) 22, 150, 176-179 <i>Applying Math</i> 147 (E) 64-67 <i>Lab</i> 111 AS 67
c. Measure using standard and metric systems with an emphasis on the metric system.	(A) 14 <i>MiniLab</i> 11 <i>Lab: Design Your Own</i> 176-177 <i>Math Skill Handbook</i> 215-217 QD 14 (D) <i>Lab</i> 25, 54-55, 166-167 <i>MiniLab</i> 96 (E) <i>Lab</i> 54-55
04. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.	
a. Understand the relationships of past, present, and future.	(A) 156-163, 172-175 <i>National Geographic</i> 22, 168 AC 168 UA 169 (B) 63-64 VL 63 (C) <i>National Geographic</i> 94
05. Understand concepts of form and function.	
a. Understand that the shape or form of an object or system is frequently related to its use or function.	(A) 41-45, 113-115, 160 UA 41 (B) 75-77, 124-125 QD 125 (C) <i>MiniLab</i> 108, 116 (D) <i>Lab: Use the Internet</i> 26-27 <i>Lab</i> 107 (E) <i>MiniLab</i> 72 LD 72
619. CONCEPTS OF SCIENTIFIC INQUIRY.	
01. Understand scientific inquiry and develop critical thinking skills.	
a. Develop questions that can be answered by conducting scientific experiments.	(A) <i>Lab: Design Your Own</i> 30-31, 146-147, 176-177 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 196-197 (E) <i>Lab: Design Your Own</i> 26-27

STANDARDS	PAGE REFERENCES
b. Conduct scientific investigations using controls and variables when appropriate.	(A) <i>Lab: Design Your Own</i> 30-31, 176-177 <i>Lab</i> 88-89 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab</i> 54-55 <i>Lab: Design Your Own</i> 82-83, 196-197 (E) <i>Lab: Design Your Own</i> 26-27
c. Select and use appropriate tools and techniques to gather and display data.	(A) <i>Lab: Design Your Own</i> 30-31, 58-59, 176-177 <i>Lab: Use the Internet</i> 118-119 (B) <i>Lab: Model and Invent</i> 52-53 <i>Lab: Use the Internet</i> 84-85 <i>Lab: Design Your Own</i> 114-115 (C) <i>Lab: Design Your Own</i> 96-97 <i>Lab: Use the Internet</i> 124-125 (D) <i>Lab</i> 25, 54-55 (E) <i>Lab: Design Your Own</i> 26-27
d. Analyze data in order to develop descriptions, explanations, predictions, and models using evidence.	(A) <i>MiniLab</i> 11 <i>Applying Science</i> 13 <i>Lab: Design Your Own</i> 30-31 <i>Lab</i> 135 (B) <i>Lab</i> 132, 140-141 <i>Lab: Design Your Own</i> 114-115 (C) <i>Lab: Design Your Own</i> 96-97 <i>Applying Science</i> 117 (D) <i>Lab</i> 54-55 <i>Lab: Use the Internet</i> 26-27 (E) <i>Lab</i> 54-55 <i>Lab: Design Your Own</i> 26-27
e. Develop a hypothesis based on observations.	(A) 10 <i>Lab: Design Your Own</i> 30-31 DIS 11 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) 4-5 <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 136-137 (E) <i>Lab: Design Your Own</i> 26-27
f. Compare alternative explanations and predictions.	(A) <i>Lab: Design Your Own</i> 30-31 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 136-137 (E) <i>Lab: Design Your Own</i> 26-27
g. Communicate scientific procedures and explanations.	(A) <i>Lab: Design Your Own</i> 30-31 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 136-137 (E) <i>Lab: Design Your Own</i> 26-27

STANDARDS	PAGE REFERENCES
620. CONCEPTS OF PHYSICAL SCIENCE.	
01. Understand the structure and function of matter and molecules and their interactions.	
a. Explore and describe the differences among elements, compounds, and mixtures.	(A) 69-73 QD 71
b. Explore and calculate properties of matter.	(A) 68-69 DIF 69
c. Compare differences among solids, liquids, and gases using the concept of density: explore the effect of temperature on density.	(A) 75
d. Understand the nature of physical change and how it relates to physical properties.	(A) 75
02. Understand chemical reactions.	
a. Observe and know that substances react with each other to form new substances with different properties.	(A) 70-71, 83, 84, 85
03. Understand concepts of motion and forces.	
a. Observe the effects of different forces (gravity and friction) on the movement, speed, and direction of an object.	(A) <i>MiniLab</i> 77 (B) <i>MiniLab</i> 75 (C) <i>Applying Math</i> 52
b. Investigate different forms of energy.	(A) 17, 84, 85 (E) 20, 51, 96-100 <i>National Geographic</i> 101 <i>Lab: Model and Invent</i> 116-117
621. CELLULAR AND MOLECULAR CONCEPTS.	
01. Understand the cell is the basis of form and function for all living things and how living things carry out their life functions.	
a. Explore the different structural levels of which an organism is comprised: cells, tissues, organs, organ systems, and organisms.	(A) 16, 41-47 (C) 8 (D) 94-95, 101-104, 119
b. Recognize the structural differences between plant and animal cells.	(A) 41, 43, 44 <i>Lab</i> 48 QD 41 VL 43
c. Explore the concept that traits are passed from parents to offspring.	(A) 106, 128-134, 136-137 <i>Applying Math</i> 133 <i>Lab</i> 135 VL 129 IL 129
622. INTERDEPENDENCE OR ORGANISMS AND BIOLOGICAL CHANGE.	
No standards of Interdependence of Organisms and Biological Change apply at this grade level.	
623. MATTER, ENERGY, AND ORGANIZATION IN LIVING SYSTEMS.	
01. Understand the relationship between matter, energy, and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment.	
a. Know that the energy for life is primarily derived from the sun through photosynthesis.	(A) 17, 44, 84 (B) 127-129 <i>MiniLab</i> 127 (E) 20, 50

STANDARDS	PAGE REFERENCES
624. EARTH AND SPACE SYSTEMS.	
01. Understand scientific theories of origin and subsequent changes in the universe and earth systems.	
a. Investigate the interactions between the solid earth, oceans, atmosphere, and organisms.	(A) 23, 166-167 <i>Integrate Science</i> 23 (B) 16 <i>National Geographic</i> 17, 49 (E) 36-42, 44-47, 49, 102-105, 109-110 <i>National Geographic</i> 48 <i>Lab</i> 111
b. Know the water cycle and its relationship to weather and climate.	(E) 42, 44-45
c. Identify cumulus, cirrus, and stratus clouds and their relationship to weather changes.	See Glencoe's <i>The Air Around You</i> (I) © 2005.
d. Know that fossils are evidence of past life forms.	(A) 165-167, 169 <i>Integrate Earth Science</i> 169 TFYI 166
02. Understand geo-chemical cycles and energy in the earth system.	
a. Know the rock cycle and identify the three classifications of rocks.	(A) 166 AC 166
b. Know the layers and composition of the earth.	See Glencoe's <i>Earth Materials and Processes</i> (F) © 2005.
625. TECHNOLOGY.	
01. Understand the relationship between science and technology and develop the abilities of technological design and application.	
a. Know that science and technology are human endeavors interrelated to each other, to society, and to the work place.	(A) 143-145 <i>The Nature of Science</i> 2-5 TFYI 144 (B) <i>Time: Science and Society</i> 116 <i>Integrate: Career</i> 50 (D) <i>The Nature of Science</i> 2-5 CB 3
b. Compare scientific inquiry and technological design in terms of activities, results, and influences on individuals and society: know that science enables technology and vice versa.	(A) 8-13 <i>The Nature of Science</i> 2-5 <i>National Geographic</i> 50-51 DIF 13 SJ 50 (B) <i>Time: Science and Society</i> 116 (D) <i>The Nature of Science</i> 2-5 CB 3
c. Create a tool to perform a specific function.	(B) <i>Lab: Model and Invent</i> 52-53 (C) <i>Lab: Model and Invent</i> 150-151 (D) <i>Oops! Accidents in Science</i> 28 IN 28 (E) <i>Lab: Model and Invent</i> 116-117

STANDARDS	PAGE REFERENCES
d. Use available and appropriate technology.	(A) <i>Lab: Design Your Own</i> 58-59 <i>Lab: Use the Internet</i> 118-119 <i>Science Online</i> 10, 17, 25 <i>Technology Skill Handbook</i> 201-204 (B) <i>Lab: Use the Internet</i> 84-85 (C) <i>Lab: Use the Internet</i> 124-125 (D) <i>Lab: Use the Internet</i> 26-27 (E) <i>Lab: Use the Internet</i> 84-85
e. Explore the elements of technological design, which include the following: - Identify a problem; - Propose a solution; - Implement a proposed solution; - Evaluate the solution and its consequences; - Communicate the problem, process, and solution.	(C) <i>Lab: Model and Invent</i> 150-151 (D) <i>Oops! Accidents in Science</i> 28 IN 28 (E) <i>Lab: Model and Invent</i> 116-117
626. PERSONAL AND SOCIAL PERSPECTIVES.	
01. Understand common environmental quality issues, both natural and human induced.	
a. Identify issues for environmental studies.	(B) <i>Lab: Design Your Own</i> 22-23 <i>National Geographic</i> 49 (E) 102-110, 130-136 <i>Lab</i> 76, 111, 144-145 <i>Lab: Use the Internet</i> 84-85 <i>Time: Science and Society</i> 86, 146 <i>National Geographic</i> 132
02. Understand the causes and effects of population change.	
a. Understand the effect of technological development and human population growth on the United States and/or the world.	(A) 143-145 <i>The Nature of Science</i> 2-5 (B) <i>Time: Science and Society</i> 116 (E) 13, 102-110, 133-136 <i>National Geographic</i> 18 <i>Time: Science and History</i> 28 <i>Lab</i> 111 TFYI 135
03. Understand the importance of natural resources and the need to manage and conserve them.	
a. Understand the differences between renewable and nonrenewable resources.	(E) 94-100 TTPK 94 UA 95 IM 95 AR 95
b. Understand the conservation of natural resources.	(E) 96, 138-143 <i>Time: Science and Society</i> 146 IL 141

STANDARDS	PAGE REFERENCES
04. Understand different uses of technology in science and how they affect our standard of living.	
a. Identify examples of technologies used in these scientific fields: - Food production; - Environmental cleanup; - Advances in medicine; - Communications; - The space program; - Weather forecasting.	(A) 144-145 <i>Integrate Environment</i> 144 CDIV 144 (B) 16-17 <i>Integrate Social Studies</i> 18 <i>Time: Science and Society</i> 116 CDIV 16 (D) 24, 106, 179, 194 (E) 114-115
627. HISTORY OF SCIENCE.	
01. Understand the significance of major scientific milestones.	
a. Understand major contributions of various scientists and researchers.	(A) 21, 23, 24-25, 53, 129, 157-159 <i>National Geographic</i> 22, 131 CDIV 12 (D) 181-182 <i>The Nature of Science</i> 2-3 <i>Time: Science and History</i> 84 <i>Integrate Social Studies</i> 182 <i>National Geographic</i> 183
628. INTERDISCIPLINARY CONCEPTS.	
01. Understand that interpersonal relationships are important in scientific endeavors.	
a. Work in teams to solve problems.	(A) <i>Lab: Design Your Own</i> 30-31 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab</i> 25, 127 <i>Lab: Design Your Own</i> 136-137
02. Understand technical communication.	
a. Read, understand, and follow technical instructions.	(A) <i>Lab: Design Your Own</i> 58-59 <i>Lab</i> 113 <i>Technology Skill Handbook</i> 201-204 (B) <i>Lab</i> 132 (D) <i>Lab</i> 46, 54-55 (E) <i>MiniLab</i> 38 <i>Lab</i> 43, 111
b. Write a lab report.	All of the following are appropriate for lab reports. (A) <i>Lab: Design Your Own</i> 30-31, 176-177 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 <i>Lab</i> 140-141 (C) <i>Lab</i> 62-63 <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 196-197 (E) <i>Lab</i> 54-55, 144-145 <i>Lab: Design Your Own</i> 26-27

STANDARDS	PAGE REFERENCES
632. SCIENCE STANDARDS - MIDDLE GRADES (GRADES 7-8), SECTIONS 633 THROUGH 643. Based on the necessary math knowledge and skills, student maturation level, and the need for secondary level Physical Science exposure, it is recommended that Earth Science be scheduled at the middle school level. The standards reflect this recommendation.	
633. UNIFYING CONCEPTS OF SCIENCE.	
01. Understand systems, order, and organization.	
a. Define and order small systems of a whole for the purpose of investigation.	(A) <i>MiniLab</i> 42 <i>Lab</i> 48 (B) <i>MiniLab</i> 127 <i>Lab</i> 132 (D) <i>MiniLab</i> 22, 52 <i>Lab</i> 73, 107 <i>Lab: Design Your Own</i> 82-83, 136-137, 196-197 (E) <i>Lab</i> 54-55 <i>Lab: Design Your Own</i> 26-27
b. Know the different structural levels of which an organism is comprised: cells, tissues, organs, organ systems, and organisms.	(A) 16, 41-47 (C) 8 (D) 94-95, 101-104, 119
c. Know that there is order and predictability in the universe.	(A) 16, 24-25, 112-114, 157-163 (E) 51 TFYI 52
d. Know that patterns and similarities allow us to organize information about our universe.	(A) 16, 24-25, 157-163 <i>Lab</i> 29, 48 (B) <i>Lab: Model and Invent</i> 52-53 <i>Lab</i> 83 (D) <i>Lab: Use the Internet</i> 26-27
02. Understand concepts and processes of evidence, models, and explanation.	
a. Use observations and data as evidence on which to base scientific explanations and predictions.	(A) 4, 10-11 <i>MiniLab</i> 11 (B) 2-5 <i>Lab: Design Your Own</i> 114-115 (C) 4-5 <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab</i> 54-55 <i>Lab: Design Your Own</i> 196-197 (E) <i>Lab: Design Your Own</i> 26-27 <i>Lab</i> 54-55
b. Use observations to make defensible inferences.	(A) <i>MiniLab</i> 173 (B) <i>Lab: Design Your Own</i> 114-115 <i>MiniLab</i> 127 <i>Lab</i> 132 (C) <i>MiniLab</i> 116 <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab</i> 54-55, 196-197 (E) <i>Lab</i> 54-55 <i>Lab: Design Your Own</i> 26-27

STANDARDS	PAGE REFERENCES
c. Develop and/or use models to explain or demonstrate a concept.	(A) <i>MiniLab</i> 42, 113 (B) <i>MiniLab</i> 9, 110 (C) <i>MiniLab</i> 10, 108 (D) <i>MiniLab</i> 52, 103 <i>Lab: Model and Invent</i> 108-109 (E) <i>Lab</i> 111 <i>Lab: Model and Invent</i> 116-117 <i>MiniLab</i> 135
d. Develop scientific explanations based on scientific knowledge, logic, and analysis.	(A) <i>MiniLab</i> 11 <i>Applying Science</i> 13 <i>Lab: Design Your Own</i> 30-31 <i>Lab</i> 135 (B) <i>Lab</i> 132, 140-141 <i>Lab: Design Your Own</i> 114-115 (C) <i>Lab: Design Your Own</i> 96-97 <i>Applying Science</i> 117 (D) <i>Lab</i> 54-55 <i>Lab: Use the Internet</i> 26-27 (E) <i>Lab</i> 54-55 <i>Lab: Design Your Own</i> 26-27
03. Understand constancy, change, and measurement.	
a. Identify concepts in science that do not change with time.	(A) 12 (E) TFYI 52
b. Analyze changes that occur in and among systems.	(A) 76-80, 157-163 <i>Applying Science</i> 159 (D) 22, 150, 176-179 <i>Applying Math</i> 147 (E) 64-67 <i>Lab</i> 111 AS 67
c. Measure precisely in metric units using appropriate tools.	(A) 14 <i>MiniLab</i> 11 <i>Lab: Design Your Own</i> 176-177 <i>Math Skill Handbook</i> 215-217 QD 14 (D) <i>Lab</i> 25, 54-55, 166-167 <i>MiniLab</i> 96 (E) <i>Lab</i> 54-55
04. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.	
a. Understand the relationships of past, present, and future.	(A) 156-163, 172-175 <i>National Geographic</i> 22, 168 AC 168 UA 169 (B) 63-64 VL 63 (C) <i>National Geographic</i> 94
b. Understand that evolution refers to the biological, geological, or astronomical change over time.	(A) 23, 156-163, 172-175 <i>National Geographic</i> 22, 168 UA 169

STANDARDS	PAGE REFERENCES
c. Understand that equilibrium is a physical state of balance in which changes and forces occur in opposite and offsetting directions.	(A) 77, 78 <i>MiniLab 77</i> LD 78
634. CONCEPTS OF SCIENTIFIC INQUIRY.	
01. Understand scientific inquiry and develop critical thinking skills.	
a. Develop complex questions that can be answered by conducting long-term studies.	(B) <i>Lab: Design Your Own</i> 22-23, 114-115 <i>Lab</i> 140-141 (C) <i>Lab</i> 62-63 <i>Lab: Use the Internet</i> 124-125 (D) <i>Lab</i> 189 (E) <i>Lab: Design Your Own</i> 23-27 <i>Lab</i> 54-55
b. Design and conduct scientific investigations using controls and variables when appropriate.	(A) <i>Lab: Design Your Own</i> 30-31, 176-177 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 196-197 (E) <i>Lab: Design Your Own</i> 26-27
c. Select and use appropriate tools and techniques to gather and display data.	(A) <i>Lab: Design Your Own</i> 30-31, 58-59, 176-177 <i>Lab: Use the Internet</i> 118-119 (B) <i>Lab: Model and Invent</i> 52-53 <i>Lab: Use the Internet</i> 84-85 <i>Lab: Design Your Own</i> 114-115 (C) <i>Lab: Design Your Own</i> 96-97 <i>Lab: Use the Internet</i> 124-125 (D) <i>Lab</i> 25, 54-55 (E) <i>Lab: Design Your Own</i> 26-27
d. Analyze data in order to form conclusions.	(A) <i>MiniLab</i> 11 <i>Applying Science</i> 13 <i>Lab: Design Your Own</i> 30-31 <i>Lab</i> 135 (B) <i>Lab</i> 132, 140-141 <i>Lab: Design Your Own</i> 114-115 (C) <i>Lab: Design Your Own</i> 96-97 <i>Applying Science</i> 117 (D) <i>Lab</i> 54-55 <i>Lab: Use the Internet</i> 26-27 (E) <i>Lab</i> 54-55 <i>Lab: Design Your Own</i> 26-27
e. Think critically and logically to accept or reject a hypothesis.	(A) 10 <i>Lab: Design Your Own</i> 30-31 DIS 11 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) 4-5 <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 136-137 (E) <i>Lab: Design Your Own</i> 26-27

STANDARDS	PAGE REFERENCES
f. Analyze alternative explanations and predictions.	(A) <i>Lab: Design Your Own</i> 30-31 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 136-137 (E) <i>Lab: Design Your Own</i> 26-27
g. Communicate and defend scientific procedures and explanations.	(A) <i>Lab: Design Your Own</i> 30-31 (B) <i>Lab: Design Your Own</i> 22-23, 114-115 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab: Design Your Own</i> 82-83, 136-137 (E) <i>Lab: Design Your Own</i> 26-27
h. Recognize the differences among observations, hypotheses, mathematical laws, and theories.	(A) 10-13 DIS 11 IM 12 TTPK 156 (B) 4-5 (C) 4-5
635. CONCEPTS OF PHYSICAL SCIENCE.	
01. Understand the structure and function of matter and molecules and their interactions.	
a. Understand that all matter is made up of atoms, which may be combined in various kinds, ways, and numbers.	(A) 68-71 DIF 69 (E) 44-47, 49 <i>National Geographic</i> 48
b. Use properties to identify matter.	(A) DIV 75
c. Identify physical properties and know the nature of a physical change.	(A) 71, 75 VL 71
02. Understand chemical reactions.	
a. Demonstrate that chemical reactions may release or consume energy.	(A) 83, 84, 85 QD 71 (E) DIF 52
03. Understand concepts of motion and forces.	
a. Know how an object's position, direction of motion, and speed can be measured.	(A) <i>MiniLab</i> 77 (D) <i>Applying Math</i> 133
b. Compare and contrast the relationships among different forms of energy.	(A) 17, 84, 85 (E) 20, 51, 96-100 <i>National Geographic</i> 101 <i>Lab: Model and Invent</i> 116-117
04. Understand that the total energy in the universe is constant.	
a. Explain how energy can be transformed from one form to another but is neither destroyed nor created.	(E) 52-53 TFYI 52
b. Understand that energy is transferred from one place to another.	(E) 52-53
636. CELLULAR AND MOLECULAR CONCEPTS.	
01. Understand the cell is the basis of form and function for all living things and how living things carry out their life functions.	
a. Know the relationships among specialized cells, tissues, organs, organ systems, and organisms.	(A) 16, 41-47 (C) 8 (D) 94-95, 101-104, 119

STANDARDS	PAGE REFERENCES
b. Know the parts of plant and animal cells and the functions of the various cell structures.	(A) 41-46 <i>Lab</i> 48 QD 41 VL 43 MAM 45
c. Know that most cell functions involve chemical reactions.	(A) 44, 79, 83-87 <i>National Geographic</i> 81 <i>Lab</i> 88-89 TFYI 44 UA 79 AC 84 QD 86
d. Know that genes and chromosomes carry the information for traits.	(A) 100, 106-107, 114, 128 <i>The Nature of Science</i> 2
e. Know that traits are inherited, including dominant and recessive traits.	(A) 128-130, 132-134, 136-138 <i>National Geographic</i> 131 <i>Lab</i> 135 IL 129 IM 130
f. Know that genetic information is replicated and passed on to new cells.	(A) 98-102, 106-109, 114, 128 <i>Lab</i> 105 <i>MiniLab</i> 113 DIF 108 MAM 109
g. Know that transmission of chromosomal information to offspring occurs through asexual or sexual reproduction.	(A) 103, 106-109 LD 102
637. INTERDEPENDENCE OF ORGANISMS AND BIOLOGICAL CHANGE.	
01. Understand the theory of biological evolution.	
a. Know that species change over time when random variations in individuals enhance their survival and reproductive success in a particular environment.	(A) 156-163 <i>Applying Science</i> 159 <i>MiniLab</i> 161 VL 159
b. Know that species may become extinct when the environment changes and their adaptive characteristics are insufficient to allow their survival.	(E) 130
c. Know that biological classifications are based on similarities, which reflect their evolutionary relationships.	(A) 24-25, 169-171 IL 25 TFYI 169
638. MATTER, ENERGY, AND ORGANIZATION IN LIVING SYSTEMS.	
01. Understand the relationship between matter, energy, and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment.	
a. Know that the energy stored in food is primarily derived from the sun through photosynthesis.	(A) 17, 44, 84 <i>Lab</i> 88-89 UA 84 (B) 127-129 <i>MiniLab</i> 127 (E) 20, 50

STANDARDS	PAGE REFERENCES
b. Know that the distribution and abundance of organisms and populations in ecosystems are limited by the availability of matter and energy.	(E) 12, 14-15, 36, 38-40, 51-53 TFYI 69
c. Know that atoms and molecules cycle among the living and nonliving components of the biosphere.	(E) 44-48, 49 <i>National Geographic</i> 48 SJ 45 DIF 46, 48 AS 49
d. Trace energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores to carnivores and decomposers.	(E) 20-21, 50-53 DIF 51 AC 51 VL 52
02. Understand the individual behavior of organisms and their interactions in populations and communities as influenced by physiological and environmental factors.	
a. Know that organisms have behavioral responses to internal and external stimuli.	(A) 17 QD 17 (B) <i>Lab</i> 140-141 (C) 134-139, 140-144, 146-147 <i>MiniLab</i> 138 <i>Applying Science</i> 147 <i>Lab</i> 149 LD 136
b. Know that living organisms have the capacity to produce populations of infinite size but that environments and resources are finite.	(E) 12-16, 19 <i>MiniLab</i> 13, 17 <i>Applying Science</i> 15 <i>National Geographic</i> 18 <i>Lab: Design Your Own</i> 26-27
639. EARTH AND SPACE SYSTEMS.	
01. Understand scientific theories of origin and subsequent changes in the universe and earth systems.	
a. Know that there are interactions among the solid earth, oceans, atmosphere, and organisms, which result in a change of the earth's system. (Some interactions are observable such as earthquakes and volcanic eruptions, but many take place over hundreds of millions of years.)	(A) 23, 166-167 <i>Integrate Science</i> 23 (B) 16 <i>National Geographic</i> 17, 49 (E) 36-42, 44-47, 49, 102-105, 109-110 <i>National Geographic</i> 48 <i>Lab</i> 111
b. Compare earth with other planets with emphasis on conditions necessary for life.	(A) TFYI 74 (E) 9
c. Understand the motions that explain such occurrences as the day, the seasons, the year, phases of the moon, eclipses, and tides.	(E) 82
d. Know that the development of life caused dramatic changes in the composition of the earth's atmosphere.	See Glencoe's <i>The Changing Surface of Earth</i> (G) © 2005.
e. Know that the universe is constantly expanding.	See Glencoe's <i>Astronomy</i> (J) © 2005.
f. Know that stars and galaxies have a life cycle.	See Glencoe's <i>Astronomy</i> (J) © 2005.

STANDARDS	PAGE REFERENCES
g. Know methods used to estimate geologic time (observing rock sequences, using fossils to correlate the sequences at various locations).	(A) 167 <i>National Geographic</i> 168 MAM 167 AC 168 UA 169 DIF 168
02. Understand geo-chemical cycles and energy in the earth system.	
a. Know that earth systems have internal and external sources of energy.	(B) <i>Integrate Earth Science</i> 12 (E) 38-39, 41, 51 IES 51
b. Know that the earth's internal heat causes the plates of the earth's surface to move.	(B) IES 12
c. Know that the heating of the earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents affecting global climate.	(E) 41 DIF 41
640. TECHNOLOGY.	
01. Understand the relationship between science and technology and develop the abilities of technological design and application.	
a. Know that science and technology are human endeavors interrelated to each other, to society, and to the work place.	(A) 143-145 <i>The Nature of Science</i> 2-5 TFYI 144 (B) <i>Time: Science and Society</i> 116 <i>Integrate: Career</i> 50 (D) <i>The Nature of Science</i> 2-5 CB 3
b. Compare and contrast scientific inquiry and technological design in terms of activities, results, and influence on individuals and society: know that science enables technology and vice versa.	(A) 8-13 <i>The Nature of Science</i> 2-5 <i>National Geographic</i> 50-51 DIF 13 SJ 50 (B) <i>Time: Science and Society</i> 116 (D) <i>The Nature of Science</i> 2-5 CB 3
c. Create a tool to perform a specific function.	(B) <i>Lab: Model and Invent</i> 52-53 (C) <i>Lab: Model and Invent</i> 150-151 (D) <i>Oops! Accidents in Science</i> 28 IN 28 (E) <i>Lab: Model and Invent</i> 116-117
d. Use available and appropriate technology.	(A) <i>Lab: Design Your Own</i> 58-59 <i>Lab: Use the Internet</i> 118-119 <i>Science Online</i> 10, 17, 25 <i>Technology Skill Handbook</i> 201-204 (B) <i>Lab: Use the Internet</i> 84-85 (C) <i>Lab: Use the Internet</i> 124-125 (D) <i>Lab: Use the Internet</i> 26-27 (E) <i>Lab: Use the Internet</i> 84-85

STANDARDS	PAGE REFERENCES
e. Know the elements of technological design, which include the following: <ul style="list-style-type: none"> ● Identify a problem; ● Propose a solution; ● Implement a proposed solution; ● Evaluate the solution and its consequences; ● Communicate the problem, process, and solution. 	(C) <i>Lab: Model and Invent</i> 150-151 (D) <i>Oops! Accidents in Science</i> 28 IN 28 (E) <i>Lab: Model and Invent</i> 116-117
641. PERSONAL AND SOCIAL PERSPECTIVES.	
01. Understand common environmental quality issues, both natural and human induced.	
a. Identify environmental issues and conduct studies.	(B) <i>Lab: Design Your Own</i> 22-23 <i>National Geographic</i> 49 (E) 102-110, 130-136 <i>Lab</i> 76, 111, 144-145 <i>Lab: Use the Internet</i> 84-85 <i>Time: Science and Society</i> 86, 146 <i>National Geographic</i> 132
02. Understand the causes and effects of population change.	
a. Understand the effect of technological development and the growth of human population on the living and nonliving components of the environment.	(A) 143-145 <i>The Nature of Science</i> 2-5 (B) <i>Time: Science and Society</i> 116 (E) 13, 102-110, 133-136 <i>National Geographic</i> 18 <i>Time: Science and History</i> 28 <i>Lab</i> 111 TFYI 135
03. Understand the importance of natural resources and the need to manage and conserve them.	
a. Explore alternative sources of energy.	(E) 97-100 <i>National Geographic</i> 101 <i>Lab: Model and Invent</i> 116-117 ISS 97 DIF 99 QD 99
b. Understand the role and effect of management of natural resources.	(E) 96, 138-143 <i>Time: Science and Society</i> 146 IL 141
642. HISTORY OF SCIENCE.	
01. Understand the significance of major scientific milestones.	
a. Understand the impact of historical scientific events.	(A) 21, 23, 24-25, 53, 129, 157-159 <i>National Geographic</i> 22, 131 CDIV 12 (D) 181-182 <i>The Nature of Science</i> 2-3 <i>Time: Science and History</i> 84 <i>Integrate Social Studies</i> 182 <i>National Geographic</i> 183

STANDARDS	PAGE REFERENCES
643. INTERDISCIPLINARY CONCEPTS.	
01. Understand that interpersonal relationships are important in scientific endeavors.	
a. Work in teams to solve problems.	(A) <i>Lab: Design Your Own</i> 30-31 (C) <i>Lab: Design Your Own</i> 96-97 (D) <i>Lab</i> 25, 127 <i>Lab: Design Your Own</i> 136-137
02. Understand technical communication.	
a. Read, understand, and follow technical instructions.	(A) <i>Lab: Design Your Own</i> 58-59 <i>Lab</i> 113 <i>Technology Skill Handbook</i> 201-204 (B) <i>Lab</i> 132 (D) <i>Lab</i> 46, 54-55 (E) <i>MiniLab</i> 38 <i>Lab</i> 43, 111
b. Write and articulate technical information.	(A) DIF 51 VL 51 AS 145 (E) ITI 86 ISS 97 DIF 99 AC 101
c. Write a long-term investigation.	(B) <i>Lab: Design Your Own</i> 22-23, 114-115 <i>Lab</i> 140-141 (C) <i>Lab</i> 62-63 <i>Lab: Use the Internet</i> 124-125 (D) <i>Lab</i> 189 (E) <i>Lab: Design Your Own</i> 23-27 <i>Lab</i> 54-55

Codes Used for TWE Pages

AC	Activity
AR	Active Reading
AS	Assessment
CB	Content Background
CDIV	Cultural Diversity
DIF	Differentiated Instruction
DIS	Discussion
DIV	Daily Intervention
IES	Integrate Earth Science
IL	Inquiry Lab
IM	Identifying Misconceptions
IN	Invent
ISS	Integrate Social Studies
ITI	Investigate the Issue
LD	Lab Demonstration
MAM	Make a Model
QD	Quick Demo
SJ	Science Journal
TFYI	Teacher FYI
TTPK	Tying to Prior Knowledge
UA	Using an Analogy
VL	Visual Learning