



KANSAS
Science Standards Eighth Grade
The Nature of Matter K
Chemistry L
Motion, Forces, and Energy M
Electricity and Magnetism N
Waves, Sound, and Light O © 2005

OBJECTIVES	PAGE REFERENCES
STANDARD 1: SCIENCE AS INQUIRY As a result of activities in grades 5-8, all students will develop the abilities to do scientific inquiry, be able to demonstrate how scientific inquiry is applied, and develop understandings about scientific inquiry.	
Benchmark 1: The students will demonstrate abilities necessary to do the processes of scientific inquiry. Indicators: The students will:	
1. Identify questions that can be answered through scientific investigations.	(K) LAB 30-31, 53, 88-89 (L) LAB 53, 86-87 (M) LAB 116-117, 168-169 (N) LAB 27 (O) LAB 26-27, 86-87
2. Design and conduct a scientific investigation.	(K) LAB 30-31, 88-89 A 104 (L) LAB 54-55, 86-87 (M) LAB 168-169, 174-175 (N) LAB 28-29 (O) LAB 26-27
3. Use appropriate tools, mathematics, technology, and techniques to gather, analyze, and interpret data.	(K) LAB 62-63 Activity 53 (L) LAB 53, 54-55 (M) LAB 88-89, 168-169 A 45 (N) LAB 28-29, 56-57 (O) LAB 86-87
4. Think critically to identify the relationship between evidence and logical conclusions.	(K) 135-136 R 17 (L) LAB 53 (M) LAB 174-175 IM 59 CA 130 (N) Applying Skills 19 LAB 28-29 CA 27

OBJECTIVES	PAGE REFERENCES
5. Apply mathematical reasoning to scientific inquiry.	(K) <i>Applying Math</i> 59, 84 LAB 62-63 (L) <i>Applying Math</i> 42 (M) LAB 116-117 A 45 QD 99 (N) <i>Applying Math</i> 21 (O) LAB 26-27
6. Communicate scientific procedures and explanations.	(K) <i>Communicating Your Data</i> 53, 63 (L) CA 77 (M) <i>Communicating Your Data</i> 81, 117 (N) <i>Communicating Your Data</i> 44 (O) <i>Communicating Your Data</i> 46, 119 A 4
Benchmark 2: The students will apply different kinds of investigations to different kinds of questions. Indicators: The students will:	
1. Differentiate between a qualitative and a quantitative investigation.	(K) <i>Science Skill Handbook</i> 132-135
2. Develop questions and adapt the inquiry process to guide an investigation.	(K) LAB 62-63, 118-119 (L) AIL 87 (M) LAB 116-117, 148-149 AIL 56 A 125 (O) AIL 26 CA 107
Benchmark 3: The students will analyze how science advances through new ideas, scientific investigations, skepticism, and examining evidence of varied explanations. Indicators: The students will:	
1. After doing an investigation, generate alternative methods of investigation and/or further questions for inquiry.	(K) AIL 30, 62 (L) AIL 54 CA 77 (M) AIL 88, 116 (N) AIL 56 (O) AIL 26, 86
2. Determine evidence which supports or contradicts a scientific breakthrough.	(K) R 17 TFYI 20
3. Identify faulty reasoning or conclusions that go beyond evidence and/or are not supported by data.	(K) Data analysis: 135-136 (L) 5 (N) EA 29

OBJECTIVES	PAGE REFERENCES
STANDARD 2: PHYSICAL SCIENCE As a result of activities in grades 5-8, all students will apply process skills to develop an understanding of physical science including: properties, changes of properties of matter, motion and forces, and transfer of energy.	
Benchmark 1: The students will observe, compare, and classify properties of matter. Indicators: The students will:	
1. Identify and communicate properties of matter, including phases of matter, boiling point, solubility, and density.	(K) 40-44, 72-76 <i>National Geographic</i> 48 <i>MiniLAB</i> 74 A 42 LD 43, 74 QD 44 MM 73 (L) 70-74
2. Using the characteristic properties of each original substance, distinguish components of various types of mixtures.	(K) 27-29 <i>Applying Science</i> 27 <i>LAB</i> 30-31 CA 31 (L) 65-69 VL 65 DI 67
3. Categorize chemicals to develop an understanding of properties.	(K) 22-23, 98-104, 105-114 <i>LAB</i> 24 DI 22, 102 SJ 101 IL 110 (L) 12-13 A 12
Benchmark 2: The students will observe, measure, infer, and classify changes in properties of matter. Indicators: The students will:	
1. Measure and graph the effects of temperature on matter.	(K) 45-52 <i>National Geographic</i> 48 <i>MiniLAB</i> 50 <i>LAB</i> 53 (L) 73 SJ 73 (M) <i>LAB</i> 168
2. Understand that total mass is conserved in chemical reactions.	(K) 87 (L) 40-41 <i>Applying Math</i> 42 VL 40 DI 41

OBJECTIVES	PAGE REFERENCES
3. Understand the relationship of elements to compounds.	(K) 25-26 <i>MiniLAB</i> 26 D 27 (L) 16-24, 64 <i>MiniLAB</i> 19 <i>LAB</i> 25 <i>Launch LAB</i> 95 QD 110
Benchmark 3: The students will investigate motion and forces. Indicators: The students will:	
1. Describe motion of an object (position, direction of motion, speed, potential, and kinetic energy).	(M) 8-13, 14-18, 127-128 <i>MiniLAB</i> 11, 133 <i>Activity</i> 12 <i>LAB</i> 56-57 CA 13 R 13 QD 127
2. Measure motion and represent data in a graph.	(M) 12, 18 DI 12 A 12 CA 13 CU 13, 18 R 18
3. Demonstrate an understanding that an object not being subjected to a force will continue to move at a constant speed in a straight line (Law of Inertia).	(M) 38-39 <i>National Geographic</i> 51 QD 38 A 38, 39
4. Demonstrate and mathematically communicate that unbalanced forces will cause changes in the speed or direction of an object's motion.	(M) 37, 42-46 <i>Applying Math</i> 45, 48 IM 34F SJ 45 DI 47
5. Understand that a force (e.g., gravity and friction) is a push or a pull.	(M) 36-41, 43 <i>Integrate Life Science</i> 37 <i>MiniLAB</i> 40 QD 38 A 39 DI 40
6. Investigate force variables of simple machines.	(M) 104-108, 109-115 <i>Applying Math</i> 105, 107 <i>National Geographic</i> 113 UA 106 A 111 MM 112 LD 112

OBJECTIVES	PAGE REFERENCES
Benchmark 4: The students will understand and demonstrate the transfer of energy.	
Indicators: The students will:	
1. Understand that energy can be transferred from one form to another, including mechanical, heat, light, electrical, chemical, and nuclear energy.	(L) 42-45 (M) 131-137 <i>National Geographic</i> 134 <i>LAB</i> 138 SJ 129 LD 132 QD 133 D 135 (N) 17, 50-51
2. Sequence the transmission of energy through various real life systems.	(M) 126, 133-135, 139-147 <i>National Geographic</i> 134 <i>LAB</i> 148-149 CA 137
3. Observe and communicate how light interacts with matter: transmitted, reflected, refracted, absorbed.	(O) 97-99, 101-106, 108-112 <i>National Geographic</i> 105 <i>LAB</i> 107 D 99 MM 102 VL 102 A 103 CA 112
4. Understand that heat energy can be transferred from hot to cold by radiation, convection, and conduction.	(M) 162-165 <i>MiniLAB</i> 164, 165 VL 165 LD 166 CA 167
STANDARD 5: SCIENCE AND TECHNOLOGY	
As a result of activities in grades 5-8, all students will demonstrate abilities of technological design and understandings about science and technology.	
Benchmark 1: The students will demonstrate abilities of technological design.	
Indicators: The students will:	
1. Identify appropriate problems for technological design.	(K) <i>Applying Science</i> 27 <i>LAB</i> 62-63 (M) <i>LAB</i> 26-27, 116-117, 174-175 (N) <i>LAB</i> 44 <i>MiniLAB</i> 46
2. Design a solution or product, implement the proposed design, evaluate the product.	(K) <i>LAB</i> 62-63 (M) <i>LAB</i> 26-27, 116-117 CA 55 MM 166 (N) <i>LAB</i> 44 <i>MiniLAB</i> 46

OBJECTIVES	PAGE REFERENCES
3. Communicate the process of technological design.	(K) <i>Communicating Your Data</i> 63 EX 4 (M) <i>Communicating Your Data</i> 27, 117 LAB 148-149 MM 166 (N) <i>Communicating Your Data</i> 44
Benchmark 2: The students will develop understandings of the similarities, differences, and relationships in science and technology. Indicators: The students will:	
1. Compare the work of scientists with that of applied scientists and technologists.	(K) 4-5 <i>You Do It</i> 5 (M) 52, 82-87 LAB 26-27, 88-89 <i>Science and Society</i> 118 (N) 2-5 CC 4 (O) 81-85
2. Evaluate limitations and trade-offs of technological solutions.	(K) AIL 118 (L) <i>National Geographic</i> 80 CC 4 E 5 (M) 140-143, 167 <i>Science and Society</i> 58 (N) LAB 84-85 <i>Science and Society</i> 86
3. Identify contributions to science and technology by many people and many cultures.	(K) <i>Science and History</i> 32 CD 10 (L) <i>Science and Society</i> 118 CC 43 (M) CD 9, 52 (N) CD 16, 53, 78 (O) CD 109
STANDARD 6: SCIENCE IN PERSONAL AND ENVIRONMENTAL PERSPECTIVES As a result of activities in grades 5-8, all students will apply process skills to explore and develop an understanding of issues of personal health, population, resources and environment, and natural hazards.	
Benchmark 1: The students will make decisions based on scientific understanding of personal health. Indicators: The students will:	
1. Identify individual nutrition, exercise, and rest needs based on science.	(L) 109-115 <i>MiniLAB</i> 109 <i>Applying Science</i> 112 LAB 116 A 113 R 115

OBJECTIVES	PAGE REFERENCES
2. Use a systemic approach to thinking critically about personal health risks and benefits.	(K) LAB 118-119 AIL 118 CA 119 (L) 114-115 DI 111 (M) <i>Science and Society</i> 58 (N) 25-26 DI 25
Benchmark 2: The students will understand the impact of human activity on resources and environment. Indicators: The students will:	
1. Investigate the effects of human activities on the environment.	(K) AIL 118 (L) <i>National Geographic</i> 80 A 80 (M) 141, 167 (N) <i>Integrate Environment</i> 80
2. Base decisions on perceptions of benefits and risks.	(K) LAB 118-119 (L) E 5 (M) 139-147 SJ 140 DI 144 AIL 148
Benchmark 3: The students will understand that natural hazards are dynamic examples of earth processes which cause us to evaluate risks. Indicators: The students will:	
1. Evaluate risks and define appropriate actions associated with natural hazards.	(N) 25-26 DI 25 (O) CC 28
2. Recognize patterns of internal and external earth processes that may result in natural hazards.	(N) 26 <i>Science and Society</i> 30 (O) <i>Integrate Earth Science</i> 14 IL 14
3. Communicate human activities that can cause/contribute to natural hazards.	(L) <i>National Geographic</i> 80 (O) 76
STANDARD 7: HISTORY AND NATURE OF SCIENCE As a result of activities in grades 5-8, all students will examine and develop an understanding of science as a historical human endeavor.	
Benchmark 1: The students will develop scientific habits of mind. Indicators: The students will:	
1. Practice intellectual honesty.	(K) LAB 88-89 <i>Science Skill Handbook</i> 147 CYD 53 (L) A 12 (M) <i>Communicating Your Data</i> 117 CA 89 (N) CYD 57 (O) 5

OBJECTIVES	PAGE REFERENCES
2. Demonstrate skepticism appropriately.	(K) LAB 118-119 136 (L) CC 4 (O) 5
3. Display open-mindedness to new ideas.	(K) <i>Communicating Your Data</i> 24 VL 75 (L) M 2 (M) LAB 26-27 AR 141
4. Base decisions on evidence.	(K) LAB 89 CA 61 (L) LAB 53, 116-117 (M) LAB 88-89 CA 103
Benchmark 2: The students will research contributions to science throughout history. Indicators: The students will:	
1. Recognize that new knowledge leads to new questions and new discoveries.	(K) 8-17 MM 9 TFYI 13 (M) <i>Science and Society</i> 118 (N) 73-83 CC 4
2. Replicate historic experiments to understand principles of science.	(K) MM 13 (M) QD 5 (N) E 4 (O) A 4
3. Relate contributions of men and women to the fields of science.	(K) 9-16 <i>Integrate Physics</i> 16 CD 107 (L) <i>Science and Society</i> 118 (M) 2-3 <i>Science and Society</i> 118 E 5 (N) 3-4 (O) <i>Science and History</i> 88-89 <i>Oops!</i> 120

Codes Used for TWE Pages

A	Activity
AIL	Alternative Inquiry Lab
AR	Active Reading
CA	Check Assessment
CC	Curriculum Connection
CD	Cultural Diversity
CU	Check for Understanding
CYD	Communicating Your Data
D	Discussion
DI	Differentiated Instruction
E	Extension
EA	Error Analysis
IL	Inquiry Lab
IM	Identifying Misconceptions
LD	Lab Demonstration
M	Motivate
MM	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TFYI	Teacher FYI
UA	Use an Analogy
VL	Visual Learning