KANSAS
Science Education Standards Eighth Grade
Life Science © 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.	SE: 6-7 *Lab: Design Your Own* 28-29, 200-201, 292-293, 418-419, 672-673, 702-703
2. Design and conduct a scientific investigation.	SE: *Lab: Design Your Own* 28-29, 144-145, 174-175, 200-201, 292-293, 418-419, 558-559, 702-703 TWE: AS 29, 293
3. Use appropriate tools, mathematics, technology, and techniques to gather, analyze, and interpret data.	SE: *Lab* 46, 133, 310, 501, 530-531 *Lab: Design Your Own* 56-57, 174-175, 350-351 *Lab: Use the Internet* 116-117, 446-447 *Applying Math* 131
4. Think critically to identify the relationship between evidence and logical conclusions.	SE: *Lab* 80, 310, 471, 530-531, 730-731, 787 *Lab: Design Your Own* 292-293, 418-419, 558-559, 672-673
5. Apply mathematical reasoning to scientific inquiry.	SE: *Applying Math* 72, 131, 623 *Lab* 133, 549, 603, 642-643, 730-731 *Lab: Design Your Own* 144-145, 174-175
6. Communicate scientific procedures and explanations.	SE: *Lab: Design Your Own* 28-29, 174-175, 294-295, 418-419 *Communicating Your Data* 29, 87, 117, 263, 419, 447, 501
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.	*Locators identify a variety of qualitative and quantitative investigations. SE: *Lab: Design Your Own* 28-29, 174-175, 350-351, 558-559, 672-673 *Lab* 86-87, 318-319, 730-731 *Science Skill Handbook* 806-807
2. Develop questions and adapt the inquiry process to guide an investigation.	SE: *Lab: Design Your Own* 144-145, 200-201, 292-293, 418-419, 558-559, 612-613, 702-703 *Lab: Model and Invent* 230-231

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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.	SE: *Lab* 133, 318-319, 603 TWE: AS 145, 293
2. Determine evidence which supports or contradicts a scientific breakthrough.	SE: 51, 110-111, 167-169 *National Geographic* 20, 129, 659 *Lab* 133, 730-731 *Integrate Social Studies* 658 TWE: VL 20
3. Identify faulty reasoning or conclusions that go beyond evidence and/or are not supported by data.	SE: 19, 155 TWE: IM 155
STANDARD 3: LIFE SCIENCE **As a result of activities in grades 5-8, all students will apply process skills to explore and understand structure and function in living systems, reproduction and heredity, regulation and behavior, populations and ecosystems, and diversity and adaptations of organisms.**	
Benchmark 1: The students will model structures of organisms and relate functions to the structures. **Indicators: The students will:**	
1. Relate the structure of cells, organs, tissues, organ systems, and whole organisms to their functions.	SE: 45, 302-309, 337-338, 366, 380, 496-498, 525-529, 569-571, 577-580, 594-599
2. Compare organisms composed of single cells with organisms that are multi-cellular.	SE: 186-191, 210-219, 222-226, 241-243, 246-259, 330-349, 360-384, 394-417, 428-444 *Lab* 46, 221, 343, 379
3. Conclude that breakdowns in structure or function of an organism may be caused by disease, damage, heredity or aging.	SE: 489, 499, 547, 555, 557, 574-576, 581, 661-663, 666-671 *National Geographic* 546 TWE: SJ 114
Benchmark 2: The students will understand the role of reproduction and heredity for all living things. **Indicators: The students will:**	
1. Conclude that reproduction is essential to the continuation of a species.	SE: 17, 154 TWE: RC 17 TFYI 17
2. Differentiate between asexual and sexual reproduction in plants and animals.	SE: 101-102, 104-107, 272-275, 330, 338, 341, 367, 401 *MiniLab* 273
3. Infer that the characteristics of an organism result from heredity and interactions with the environment.	SE: 112-114, 126-132, 134-139
4. Understand that hereditary information contained in the genes (part of the chromosomes) of each cell is passed from one generation to the next.	SE: 112-114, 126-127, 137-139

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Benchmark 3: The students will describe the effects of a changing external environment on the regulation/balance of internal conditions and processes of organisms. **Indicators: The students will:**	
1. Understand the effects of a change in environmental conditions on behavior of an organism by carrying out a full investigation.	SE: *Lab: Design Your Own* 28-29, 418-419, 702-703 *Lab* 318-319, 471 TWE: LD 458 IL 463
2. Identify behaviors of an organism that are responses made to internal or environmental stimuli.	SE: 15, 456-461, 462-466, 468-470 *Lab: Design Your Own* 28-29, 418-419, 702-703 *Lab* 318-319, 471 *Applying Science* 469 TWE: AC 466
3. Explain that all organisms must be able to maintain and regulate stable internal conditions to survive in a constantly changing external environment.	SE: 15, 18, 520, 595 *Science Online* 15 *Lab* 310 *Lab: Design Your Own* 418-419
Benchmark 4: The students will identify and relate interactions of populations of organisms within an ecosystem. **Indicators: The students will:**	
1. Recognize that all populations living together and the physical factors with which they interact compose an ecosystem.	SE: 685-687, 696-700, 712-718 *Lab* 719 *Lab: Use the Internet* 760-761 TWE: TFYI 685 DIF 686 VL 686
2. Classify organisms in a system by the function they serve (producers, consumers, decomposers).	SE: 82, 189-190, 229, 696-697, 726-727 TWE: DIF 727
3. Trace the energy flow from the sun (source) to producers (chemical energy) to other organisms in food webs.	SE: 696-697, 727-729 TWE: MAM 698 VL 699 DIF 727 DS 727 AC 727
4. Relate the limiting factors of biotic and abiotic resources with a species' population growth, decline, and survival.	SE: 690 TWE: DIF 691
Benchmark 5: The students will observe the diversity of living things and relate their adaptations to their survival or extinction. **Indicators: The students will:**	
1. Conclude that millions of species of animals, plants, and microorganisms may look dissimilar on the outside but have similarities in internal structures, developmental characteristics, and chemical processes.	SE: 14-17, 51, 81, 83, 110, 167-169 TWE: TTPK 14 AC 17
2. Understand that adaptations of organisms -- changes in structure, function, or behavior -- contribute to biological diversity.	SE: 158-161, 331-333 *Visualizing Arthropod Diversity* 376 TWE: LD 158 DIF 333

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3. Associate extinction of a species with environmental changes and insufficient adaptive characteristics.	SE: 363, 417 *Integrate Earth Science* 363 *Integrate History* 417
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.	SE: *Oops! Accidents in Science* 264, 504 *Lab: Model and Invent* 792-793 TWE: LI 264 INV 504 AC 777
2. Design a solution or product, implement the proposed design, evaluate the product.	SE: *Oops! Accidents in Science* 504 *Lab: Model and Invent* 792-793 TWE: INV 504 AC 777
3. Communicate the process of technological design.	SE: *Oops! Accidents in Science* 264, 504 *Lab: Model and Invent* 792-793 TWE: DS 264 INV 504 AC 777
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.	Locators identify a variety of features that highlight the work of scientists and those that apply science and technology to solve problems. SE: *Time: Science and History* 58, 560 *Integrate Career* 83, 137, 228 *Oops! Accidents in Science* 118, 264, 504 *Time: Science and Society* 532
2. Evaluate limitations and trade-offs of technological solutions.	SE: 142, 774 *Time: Science and Society* 294 *Integrate Social Studies* 773 *Lab: Model and Invent* 792-793 TWE: DS 773 VSE 777
3. Identify contributions to science and technology by many people and many cultures.	SE: 19, 21, 22-23, 51, 658 *Time: Science and History* 58, 176, 560 *Time: Science and Society* 532 TWE: CC 9 CDIV 10

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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.	SE: 494, 512-516, 518-521 *Science Online* 514 *MiniLab* 515 *Applying Science* 516 *Lab* 522 TWE: CC 513, 515 DIF 514 IL 520
2. Use a systemic approach to thinking critically about personal health risks and benefits.	SE: 548, 575-576, 602, 662-664 *MiniLab* 515 *Applying Science* 516 TWE: CC 513 DIF 514 IL 520 AC 521 IM 662
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.	SE: 754, 755, 778-786 *Launch Lab* 769 *MiniLab* 772 *Integrate Social Studies* 773 TWE: AS 769 DS 779 TFYI 781
2. Base decisions on perceptions of benefits and risks.	SE: 788-791 *Time: Science and Society* 294, 762 *Applying Science* 790 *Science Online* 790 TWE: DS 773 SJ 774
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.	SE: 778, 782 *National Geographic* 742 TWE: DIF 742 DS 782 IM 782

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2. Recognize patterns of internal and external earth processes that may result in natural hazards.	See Glencoe's *Earth Science* © 2005 SE: 210-214, 246-247, 280-289, 300-303, 330-335, 465-469, 493-495 TWE: SCB 208E CC 287 QD 466
3. Communicate human activities that can cause/contribute to natural hazards.	SE: 780 *Integrate Earth Science* 750 *Launch Lab* 769 TWE: IES 750
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.	SE: 7-10 *Lab: Design Your Own* 28-29 *Lab: Use the Internet* 446-447 *Science Skill Handbook* 810 TWE: DS 58
2. Demonstrate skepticism appropriately.	SE: 7-10 *Science Skill Handbook* 810
3. Display open-mindedness to new ideas.	SE: 7-10 *Oops! Accidents in Science* 264, 504 *Time: Science and Society* 294, 762 *Lab: Model and Invent* 792-793
4. Base decisions on evidence.	SE: *Lab: Design Your Own* 200-201 *Time: Science and Society* 294 *Applying Science* 516, 790 TWE: DIF 514
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.	SE: 7-11 *Science Skill Handbook* 810 TWE: TFYI 10 DS 58
2. Replicate historic experiments to understand principles of science.	SE: *Lab* 730-731
3. Relate contributions of men and women to the fields of science.	SE: 19, 21, 22-23, 51, 111, 658 *Time: Science and History* 58, 176, 560 *Time: Science and Society* 532 TWE: CC 9 CDIV 10

Codes Used for TWE Pages

AC	Activity
AS	Assessment
CC	Curriculum Connection
CDIV	Cultural Diversity
DIF	Differentiated Instruction
DS	Discussion
IES	Integrate Earth Science
IL	Inquiry Lab
IM	Identifying Misconceptions
INV	Invent
LD	Lab Demonstration
LI	List
MAM	Make a Model
RC	Reading Check
SJ	Science Journal
TFYI	Teacher FYI
TTPK	Tie to Prior Knowledge
VL	Visual Learning
VSE	Visualizing Solar Energy