

SCIENCE SAURUS © 2006

Grades 6-8

correlated to

**Arkansas
Science Curriculum
Framework**

Great Source®

EDUCATION GROUP



A Houghton Mifflin Company

YOUR ARKANSAS GREAT SOURCE REPRESENTATIVES

JIM & DEBRA SIMPSON

800-289-4490, option 4

Jim_Simpson@hmco.com



ScienceSaurus © 2006
correlated to
Arkansas Science Curriculum Framework
Grade 6

Strand 1: Nature of Science

Standard 1: Characteristics and Processes of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Processes of Science NS.1.6.1 Verify accuracy of observations	Student Handbook: 002, 009, 012, 013, 015, 018
NS.1.6.2 Apply components of experimental design used to produce empirical evidence: <ul style="list-style-type: none"> • hypothesis • replication • sample size • appropriate use of control • use of standardized variables 	Student Handbook: 003-009, 015, 017-018, 387, 396
NS.1.6.3 Compare scientific data using mean, median, mode, and range using SI units	Student Handbook: 384, 387
NS.1.6.4 Construct and interpret scientific data using <ul style="list-style-type: none"> • data tables/charts • bar and double bar graphs • line graphs • stem and leaf plots • line graphs 	Student Handbook: 010-012, 015, 385-401, 409
NS.1.6.5 Communicate results and conclusions from scientific inquiry	Student Handbook: 011-015, 017, 018, 385, 390-401
NS.1.6.6 Develop and implement strategies for long-term, accurate data collection	Student Handbook: 009-010, 015, 017-018, 385-389

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Characteristics of Science NS.1.6.7 Distinguish between scientific fact and opinion	Student Handbook: 002
NS.1.6.8 Explain the role of prediction in the development of a theory	Student Handbook: 002
NS.1.6.9 Define and give examples of laws and theories	Student Handbook: 002, 126-128, 182-184, 199, 270, 283-286, 300, 311, 315

Strand 2: Life Science

Standard 2: Living Systems: Characteristics, Structure, and Function

Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Structure and Function LS.2.6.1 Observe, describe, and illustrate plant and animal tissues: <ul style="list-style-type: none"> • muscle • blood • skin • xylem • phloem 	Student Handbook: 082, 084, 087, 093, 105, 107, 162
LS.2.6.2 Illustrate the hierarchical relationships of cells, tissues, and organs	Student Handbook: 076-099
LS.2.6.3 Investigate the functions of tissues	Student Handbook: 082-084, 087, 093, 105, 107, 162
LS.2.6.4 Model and explain the functions of animal organs: <ul style="list-style-type: none"> • heart • lung • kidneys • eyes • ears • skin • teeth 	Student Handbook: 083-092

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
LS.2.6.5 Model and explain the function of plant organs: <ul style="list-style-type: none"> • leaves • roots • stems • flowers 	Student Handbook: 082, 107, 111, 162
LS.2.6.6 Dissect organs, including but not limited to <ul style="list-style-type: none"> • heart • eye • lung • stem • root 	Student Handbook: 082, 086, 087, 089, 090, 092, 095, 097, 100, 101, 107, 108
LS.2.6.7 Describe the relationship between organ function and the following needs of cells: <ul style="list-style-type: none"> • oxygen • food • water • waste removal 	Student Handbook: 082, 088-093, 107, 162
LS.2.6.8 Investigate careers, scientists, and historical breakthroughs related to tissues and organs	Student Handbook: 076, 441, 450, 457, 461

Standard 3: Life Cycles, Reproduction, and Heredity

Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Heredity and Reproduction LS.3.6.1 Describe characteristics of plants and animals manipulated through selective breeding	Student Handbook: 120, 361
LS.3.6.2 Predict the outcome of selective breeding practices over several generations	Student Handbook: 120, 361
LS.3.6.3 Relate the development of Earth's present-day complex species from earlier, distinctly different simpler species	Student Handbook: 125-127

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
LS.3.6.4 Investigate careers, scientists, and historical breakthroughs related to adaptations and selective breeding	Student Handbook: 126, 127, 445, 449, 453, 458
Regulation and Behavior LS.3.6.5 Describe behavioral adaptations of organisms to the environment: <ul style="list-style-type: none"> • hibernation • estivation • tropism • territorial behavior • migration 	Student Handbook: 109-111, 127, 344
LS.3.6.6 Differentiate between innate behaviors: <ul style="list-style-type: none"> • migration • web spinning • defensive posture • communication • imprinting and learned behaviors • speaking a language • using tools • hunting skills 	Student Handbook: 103, 109-111, 344
LS.3.6.7 Describe the following structural adaptations for survival in the environment: <ul style="list-style-type: none"> • coloration • mimicry • odor glands • beaks • feet • wings • fur • ears • spines • teeth • thorns • characteristics of seeds 	Student Handbook: 108, 109, 111, 127
LS.3.6.8 Investigate careers, scientists, and historical breakthroughs related to learned and innate behaviors	Student Handbook: 460

Standard 4: Populations and Ecosystems

Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Populations and Ecosystems LS.4.6.1 Recognize environmental adaptations of plants and animals	Student Handbook: 109, 127, 128
LS.4.6.2 Conduct simulations demonstrating competition for resources within an ecosystem	Student Handbook: 127, 132
LS.4.6.3 Conduct simulations demonstrating natural selection	Student Handbook: 127
LS.4.6.4 Analyze natural selection	Student Handbook: 127

Strand 3: Physical Science

Standard 5: Matter and Changes

Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Properties of Matter PS.5.6.1 Identify common examples of chemical properties: <ul style="list-style-type: none">• ability to burn• ability to produce light• ability to react with other substances	Student Handbook: 251, 252, 269
PS.5.6.2 Compare and contrast characteristics of physical and chemical properties	Student Handbook: 251, 252, 359
PS.5.6.3 Conduct investigations using acid/base indicators	Student Handbook: 264
PS.5.6.4 Apply skills of scientific investigation to determine density using SI units	Student Handbook: 068, 202

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
PS.5.6.6 Use a density column to test the density of various solid objects (e.g., piece of candy, cork, candle, paper clip, egg)	Student Handbook: 068
PS.5.6.7 Identify characteristics of chemical changes: <ul style="list-style-type: none"> • burning • production of a new substance • production of light • color change • endothermic and exothermic reactions • reactivity 	Student Handbook: 252
PS.5.6.8 Conduct investigations comparing and contrasting physical and chemical changes	Student Handbook: 252, 389
PS.5.6.9 Demonstrate the law of the conservation of matter	Student Handbook: 270
PS.5.6.10 Investigate scientists, careers, and historical breakthroughs related to chemical properties and chemical changes	Student Handbook: 265, 445, 457, 458, 460

S t a n d a r d 6 : M o t i o n a n d F o r c e s

Students shall demonstrate and apply knowledge motion and forces using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Motions and Forces PS.6.6.1 Compare and contrast simple machines and compound machines	Student Handbook: 288-294
PS.6.6.2 Identify and analyze the simple machines that make up a compound machine	Student Handbook: 288-294
PS.6.6.3 Conduct investigations of various forces using SI units (newton)	Student Handbook: 275, 285, 287, 298

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
PS.6.6.4 Recognize and give examples of different types of forces: <ul style="list-style-type: none"> • gravitational forces • magnetic forces • friction 	Student Handbook: 275-279
PS.6.6.5 Understand why objects have weight	Student Handbook: 276, 298, 359
PS.6.6.6 Compare and contrast weight and mass	Student Handbook: 276, 298, 359, 438
PS.6.6.7 Describe the effects of force: <ul style="list-style-type: none"> • move a stationary object • speed up, slow down or change the direction of motion • change the shape of objects 	Student Handbook: 274-287, 295-298
PS.6.6.8 Conduct investigations to demonstrate change in direction caused by force	Student Handbook: 275, 280, 282, 284, 287
PS.6.6.9 Conduct investigations to calculate the change in speed caused by applying forces to an object	Student Handbook: 275, 284, 285
PS.6.6.10 Investigate careers, scientists, and historical breakthroughs related to compound machines and forces	Student Handbook: 283-286, 440, 442, 443, 459

Standard 7: Energy and Transfer of Energy

Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Energy PS.7.6.1 Classify examples of energy forms: <ul style="list-style-type: none"> • chemical • electromagnetic • mechanical • thermal • nuclear 	Student Handbook: 136, 300, 301-304, 311, 321, 327, 328, 347

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
PS.7.6.2 Summarize the application of the law of conservation of energy in real world situations: <ul style="list-style-type: none"> • electrical energy into mechanical energy • electrical energy into heat • chemical energy into mechanical energy • chemical energy into light 	Student Handbook: 300, 321, 328
PS.7.6.3 Conduct investigations demonstrating how energy can be converted from one form to another	Student Handbook: 300, 304, 318
PS.7.6.4 Investigate the transfer of energy in real world situations: <ul style="list-style-type: none"> • conduction • convection • radiation 	Student Handbook: 183, 304
PS.7.6.5 Investigate careers, scientists, and historical breakthroughs related to energy forms and conversions	Student Handbook: 321, 444, 449, 454

Strand 4: Earth and Space Systems

Standard 8: Earth Systems

Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Structure and Properties ESS.8.6.1 Identify and diagram the layers of the Earth: <ul style="list-style-type: none"> • crust • mantle • inner and outer core 	Student Handbook: 177
ESS.8.6.2 Model the layers of the Earth	Student Handbook: 176-177, 183-184
ESS.8.6.3 Model how convection currents in the mantle affect lithosphere movement	Student Handbook: 183
ESS.8.6.4 Conduct investigations to identify the variables within volcanoes that cause different types of eruptions	Student Handbook: 184, 185, 187

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
ESS.8.6.5 Diagram and explain how volcanoes work	Student Handbook: 184, 185, 187
ESS.8.6.6 Explain how volcanic activity relates to mountain formation	Student Handbook: 184, 187
ESS.8.6.8 Compare and contrast the different land forms caused by Earth's internal forces: <ul style="list-style-type: none"> • mountains • plateaus • trenches • islands 	Student Handbook: 165, 184, 187, 195, 196, 207
ESS.8.6.10 Identify the effects of earthquakes on Earth's surface: <ul style="list-style-type: none"> • tsunamis • floods • changes in natural and man-made structures 	Student Handbook: 186, 402
ESS.8.6.11 Investigate and map patterns of earthquake and volcanic activity	Student Handbook: 185
ESS.8.6.12 Locate earthquake belts on Earth: <ul style="list-style-type: none"> • Mediterranean-Trans-Asiatic • Circum-Pacific (Ring of Fire) 	Student Handbook: 185
ESS.8.6.13 Analyze how earthquake occurrences are recorded (seismograph) and measured (Richter scale)	Student Handbook: 186
ESS.8.6.14 Model the effect of major geological events on land and ocean features: <ul style="list-style-type: none"> • mountain building • ocean trenches • island formation • mid-ocean ridges 	Student Handbook: 181-185, 187, 207
ESS.8.6.15 Investigate careers, scientists, and historical breakthroughs related to internal forces that change the Earth	Student Handbook: 182, 186, 195, 446, 456, 461

Standard 9: Earth's History: Changes in Earth and Sky

Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Earth's History ESS.9.6.1 Research methods of determining geologic time: <ul style="list-style-type: none"> • fossil records • mountain building • rock sequencing 	Student Handbook: 181, 194-200
ESS.9.6.2 Model rock layer sequencing based on characteristics of fossils	Student Handbook: 195-197
ESS.9.6.3 Analyze evidence that supports the theory of plate tectonics: <ul style="list-style-type: none"> • matching coastlines • similar rock types • fossil record 	Student Handbook: 182-185, 199

Standard 10: Objects in the Universe

Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
Solar system: Sun, Earth, Moons, Planets, Galaxies ESS.10.6.1 Explain how planets seem to wander against the background of the stars	Student Handbook: 232, 233, 235
ESNS.10.6.2 Compare the distance of the following: <ul style="list-style-type: none"> • from the sun to Earth (light minutes) • from the next nearest star to Earth (light years) 	Student Handbook: 178, 240, 245
ESNS.10.6.3 Describe how astronomers measure distance to stars	Student Handbook: 245
ESNS.10.6.5 Explain the effect of the sun on comets	Student Handbook: 242

Student Learning Expectations, Grade 6	ScienceSaurus, Grades 6-8
ESNS.10.6.6 Compare and contrast comets, meteors, and asteroids by <ul style="list-style-type: none"> • size • orbits • nucleus • mass 	Student Handbook: 241-243
ESNS.10.6.7 Model moon phases demonstrating the position of Earth, moon, and sun	Student Handbook: 235
ESNS.10.6.8 Compare and contrast solar eclipse and lunar eclipse	Student Handbook: 236
ESNS.10.6.9 Investigate careers, scientists, and historical breakthroughs related to the sun and space travel	Student Handbook: 241, 248, 440, 448, 449, 452-453

ScienceSaurus © 2006
correlated to
Arkansas Science Curriculum Framework
Grade 7

Strand 1: Nature of Science

Standard 1: Characteristics and Processes of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Processes of Science NS.1.7.1 Interpret evidence based on observations	Student Handbook: 002, 011-013, 015, 017, 018
NS.1.7.2 Analyze components of experimental design used to produce empirical evidence: <ul style="list-style-type: none"> • hypothesis • replication • sample size • appropriate use of control • use of standardized variables 	Student Handbook: 003-009, 015, 017-018, 387, 396
NS.1.7.3 Interpret scientific data using mean, median, mode, and range using SI units	Student Handbook: 384, 387
NS.1.7.4 Construct and interpret scientific data using <ul style="list-style-type: none"> • histograms • circle graphs • scatter plots • double line graphs • line graphs by approximating line of best fit 	Student Handbook: 012, 015, 392-401
NS.1.7.5 Communicate results and conclusions from scientific inquiry	Student Handbook: 011-015, 017, 018, 385, 390-401
NS.1.7.6 Develop and implement strategies for long-term, accurate data collection	Student Handbook: 009-010, 015, 017-018, 385-389

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
NS.1.7.7 Distinguish between questions that can and cannot be answered by science	Student Handbook: 001, 003-004, 016-017, 414-416
NS.1.7.8 Explain the role of testability and modification in the development of a theory	Student Handbook: 002, 004, 182, 363, 416
NS.1.7.9 Compare and contrast hypotheses, laws, and theories	Student Handbook: 002, 006-010, 015, 017, 018, 126-128, 182-184, 199, 270, 283-286, 311, 315

Strand 2: Life Science

Standard 2: Living Systems: Characteristics, Structure, and Function

Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Structure and Function LS.2.7.1 Illustrate the hierarchical relationships of cells, tissues, organs, and organ systems	Student Handbook: 076-102
LS.2.7.2 Analyze how two or more organs work together to perform a function (e.g., mouth and stomach to digest food)	Student Handbook: 082-098
LS.2.7.3 Identify organ systems in vertebrates and plants	Student Handbook: 082-102, 107, 161-162
LS.2.7.4 Analyze the structure and function of tissues, organs, and organ systems of a vertebrate and an angiosperm using various models or methods of dissection	Student Handbook: 082, 084, 086, 087, 089, 090, 092, 093, 095, 097, 098, 100, 101, 107, 114, 161, 162
LS.2.7.5 Compare and contrast vertebrate systems and plant organ systems	Student Handbook: 082, 161-162

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
LS.2.7.6 Identify human body systems: <ul style="list-style-type: none"> • nervous • digestive • circulatory • respiratory • excretory • integumentary • skeletal/muscular • endocrine • reproductive 	Student Handbook: 082, 085-102
LS.2.7.7 Relate the structure of vertebrate and plant body systems to their functions	Student Handbook: 082, 085-102, 161-162
LS.2.7.8 Investigate functions of human body systems	Student Handbook: 082, 085-102
LS.2.7.9 Describe interactions between major organ systems	Student Handbook: 082, 085-102
LS.2.7.10 Investigate careers, scientists, and historical breakthroughs related to life systems	Student Handbook: 076, 442, 445, 449, 458, 461

Standard 3: Life Cycles, Reproduction, and Heredity

Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Heredity and Reproduction LS.3.7.1 Explain that the fertilized egg cell carries genetic information from each parent and multiplies to form a complete organism	Student Handbook: 099, 102, 114, 116
LS.3.7.2 Distinguish between sperm cells and egg cells	Student Handbook: 099-102, 114
LS.3.7.3 Compare and contrast the structure and function of the sperm cell and the egg cell in vertebrates and plants and their role in sexual reproduction	Student Handbook: 099-102, 106, 108, 114

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
LS.3.7.4 Investigate and analyze the development of embryos	Student Handbook: 102
LS.3.7.6 Dissect a flower to analyze the reproductive system of angiosperms (e.g., paper, plastic, or clay models; virtual dissection; or specimen dissection)	Student Handbook: 114
LS.3.7.7 Differentiate between sexual and asexual reproduction in <ul style="list-style-type: none"> • vertebrates • plants 	Student Handbook: 099, 106, 108, 114
LS.3.7.8 Identify the number and source of chromosomes in human body cells	Student Handbook: 077, 081, 116, 117, 118
LS.3.7.9 Identify the number and source of chromosomes in human sex cells	Student Handbook: 102, 114, 117
LS.3.7.10 Explain the role of cell division	Student Handbook: 080-081, 099, 102, 114
LS.3.7.11 Investigate careers, scientists, and historical breakthroughs related to reproduction	Student Handbook: 076, 118, 121, 442, 445, 449, 453, 458
Regulation and Behavior LS.3.7.12 Summarize the interactions between organ systems in the maintenance of homeostasis	Student Handbook: 084, 104

S t a n d a r d 4 : P o p u l a t i o n s a n d E c o s y s t e m s

Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Populations and Ecosystems LS.4.7.1 Explain the role of reproduction in the continuation of a species	Student Handbook: 106, 108, 112, 113, 127, 130

Strand 3: Physical Science

Standard 5: Matter and Changes

Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
<p>Properties of Matter PS.5.7.1 Explain how a small number of naturally-occurring elements can result in the large variety of substances found in the world</p>	<p>Student Handbook: 259, 260, 265, 266-268</p>
<p>PS.5.7.2 Create models of common compounds:</p> <ul style="list-style-type: none"> • water • carbon dioxide • salt • iron oxide • ammonia 	<p>Student Handbook: 079, 105, 107, 261, 262, 263, 267, 268, 273</p>
<p>PS.5.7.3 Identify compounds as substances consisting of two or more elements chemically combined</p>	<p>Student Handbook: 259, 262, 264, 267, 268</p>
<p>PS.5.7.4 Compare and contrast properties of compounds to those of the elements that compose them:</p> <ul style="list-style-type: none"> • salt: sodium, chlorine • water: hydrogen, oxygen • carbon dioxide: carbon, oxygen 	<p>Student Handbook: 079, 105, 107, 261, 262, 263, 267, 268</p>
<p>PS.5.7.5 Demonstrate techniques for forming and separating mixtures:</p> <ul style="list-style-type: none"> • mixing • magnetic attraction • evaporation • filtration • chromatography • settling 	<p>Student Handbook: 048, 216, 254, 271-273, 277, 315</p>
<p>PS.5.7.6 Classify substances as</p> <ul style="list-style-type: none"> • elements • compounds • mixtures 	<p>Student Handbook: 255, 259-273</p>
<p>PS.5.7.7 Distinguish among solvent, solute, and solution</p>	<p>Student Handbook: 271-273</p>

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
PS.5.7.8 Investigate the effect of variables on solubility rates	Student Handbook: 273
PS.5.7.9 Interpret solubility graphs	Student Handbook: 273
PS.5.7.10 Investigate scientists, careers, and historical breakthroughs related to elements, mixtures, and compounds	Student Handbook: 258, 265, 444, 445, 446, 457-458, 460-461

S t a n d a r d 6 : M o t i o n a n d F o r c e s

Students shall demonstrate and apply knowledge motion and forces using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Motions and Forces PS.6.7.1 Compare and contrast Newton's three laws of motion	Student Handbook: 283-286, 298
PS.6.7.2 Conduct investigations demonstrating Newton's first law of motion	Student Handbook: 284
PS.6.7.3 Demonstrate Newton's second law of motion	Student Handbook: 285
PS.6.7.4 Conduct investigations of Newton's third law of motion	Student Handbook: 286
PS.6.7.5 Explain how Newton's three laws of motion apply to real world situations (e.g., sports, transportation)	Student Handbook: 283-286
PS.6.7.6 Investigate careers, scientists, and historical breakthroughs related to laws of motion	Student Handbook: 283-286, 296, 297, 442, 450, 459

Standard 7: Energy and Transfer of Energy

Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Energy PS.7.7.1 Identify natural resources used to supply energy needs	Student Handbook: 323-331, 369
PS.7.7.2 Describe alternatives to the use of fossil fuels: <ul style="list-style-type: none"> • solar energy • geothermal energy • wind • hydroelectric power • nuclear energy • biomass 	Student Handbook: 300, 326-328, 335
PS.7.7.3 Conduct investigations to identify types of potential energy and kinetic energy	Student Handbook: 300, 301, 302, 306, 307
PS.7.7.4 Investigate alternative energy sources	Student Handbook: 335
PS.7.7.5 Investigate careers, scientists, and historical breakthroughs related to natural resources, alternative resources, electricity, and magnetism	Student Handbook: 319, 321, 357, 442, 443, 444, 445, 447, 454, 455, 458, 459

Strand 4: Earth and Space Systems

Standard 8: Earth Systems

Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
<p>Structure and Properties ESS.8.7.1 Describe the composition and physical characteristics of the atmosphere</p>	<p>Student Handbook: 212-215, 295</p>
<p>ESS.8.7.2 Investigate the influence of global patterns on local weather:</p> <ul style="list-style-type: none"> • movement of air masses • Coriolis effect • jet stream • global wind belts 	<p>Student Handbook: 205, 217, 221, 225</p>
<p>ESS.8.7.3 Conduct investigations demonstrating the effects of solar energy on the atmosphere</p>	<p>Student Handbook: 328, 335</p>
<p>ESS.8.7.4 Investigate the effect that oceans have on climate</p>	<p>Student Handbook: 228-229</p>
<p>ESS.8.7.5 Identify elements of weather:</p> <ul style="list-style-type: none"> • temperature • air pressure • wind speed • wind direction • humidity 	<p>Student Handbook: 071, 218-226</p>
<p>ESS.8.7.6 Conduct investigations using weather measurement devices:</p> <ul style="list-style-type: none"> • anemometers • barometers • sling psychrometers • thermometers 	<p>Student Handbook: 071-072, 224, 225, 226</p>

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
<p>ESS.8.7.7 Predict weather conditions using data on the following:</p> <ul style="list-style-type: none"> • temperature • air pressure: highs, lows, fronts • clouds • wind speed • wind direction • humidity 	<p>Student Handbook: 218-226</p>
<p>ESS.8.7.8 Identify the causes and effects of weather-related phenomena:</p> <ul style="list-style-type: none"> • thunderstorms • tornadoes/hurricanes/cyclones/typhoons • drought • acid precipitation 	<p>Student Handbook: 218, 224, 225, 229, 342, 351</p>
<p>ESS.8.7.10 Describe ways human beings protect themselves, others, and their property from adverse weather conditions</p>	<p>Student Handbook: 366, 367, 402-408</p>
<p>ESS.8.7.11 Describe and map climates of major Earth regions</p>	<p>Student Handbook: 227-230</p>
<p>ESS.8.7.12 Analyze the effect of the shape of Earth and the tilt of Earth's axis on climate</p>	<p>Student Handbook: 228, 233-234</p>
<p>ESS.8.7.13 Identify and explain the effects that human activities have on weather and atmosphere</p>	<p>Student Handbook: 348-351, 451-452, 459</p>
<p>ESS.8.7.14 Describe causes and effects of acid precipitation</p>	<p>Student Handbook: 342, 351</p>
<p>ESS.8.7.15 Investigate careers, scientists, and historical breakthroughs related to atmosphere and weather</p>	<p>Student Handbook: 448, 459</p>
<p>Cycles ESS.8.7.16 Conduct investigations demonstrating the water cycle</p>	<p>Student Handbook: 216</p>
<p>ESS.8.7.17 Explain the relationship between the water cycle and ground water</p>	<p>Student Handbook: 216, 330, 353</p>

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
ESS.8.7.18 Investigate cloud formation	Student Handbook: 223
ESS.8.7.19 Conduct investigations demonstrating the greenhouse effect	Student Handbook: 349
ESS.8.7.20 Research how human activities may contribute to global warming	Student Handbook: 349
ESS.8.7.21 Explain examples of actual events that cause temporary climate changes: <ul style="list-style-type: none"> • volcanic dust • drought • meteor impact 	Student Handbook: 128, 229, 241, 243

Standard 9: Earth's History: Changes in Earth and Sky

Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Earth's History ESS.9.7.1 Analyze charts to infer past atmospheric conditions based on the organisms found in the fossil record	Student Handbook: 128, 200
ESS.9.7.2 Demonstrate that Earth has a magnetic field that is detectible at the surface with a compass	Student Handbook: 320, 440, 455
ESS.9.7.3 Compare and contrast Earth's magnetic field to those of natural or human-made magnets with <ul style="list-style-type: none"> • North and South poles • lines of force 	Student Handbook: 320, 442, 455
ESS.9.7.4 Analyze evidence of sea floor spreading: <ul style="list-style-type: none"> • magnetic reversal • molten material • drilling samples 	Student Handbook: 184, 185, 207, 454

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
ESS.9.7.5 Research ways in which people have used compasses	Student Handbook: 440

S t a n d a r d 1 0 : O b j e c t s i n t h e U n i v e r s e

Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 7	ScienceSaurus, Grades 6-8
Solar system: Sun, Earth, Moons, Planets, Galaxies ESS.10.7.1 Identify and model the causes of night and day	Student Handbook: 232, 233, 234
ESNS.10.7.2 Compare and contrast Earth's day to those of other planets in our solar system	Student Handbook: 240
ESNS.10.7.3 Identify and model the cause of planetary years	Student Handbook: 234, 240
ESNS.10.7.4 Compare and contrast Earth's year to those of other planets in our solar system	Student Handbook: 240
ESNS.10.7.5 Identify and model the causes of seasons	Student Handbook: 234
ESNS.10.7.6 Investigate careers, scientists, and historical breakthroughs related to rotations and revolutions of bodies in space	Student Handbook: 441, 442, 452-453, 455, 456, 460

ScienceSaurus © 2006
 correlated to
Arkansas Science Curriculum Framework
Grade 8

Strand 1: Nature of Science

Standard 1: Characteristics and Processes of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Processes of Science NS.1.8.1 Justify conclusions based on appropriate and unbiased observations	Student Handbook: 011, 013, 015, 409
NS.1.8.2 Evaluate the merits of empirical evidence based on experimental design: <ul style="list-style-type: none"> • hypothesis • replication • sample size • appropriate use of control • use of standardized independent and dependent variables 	Student Handbook: 003-009, 015, 017-018, 387, 396
NS.1.8.3 Formulate a testable problem using experimental design	Student Handbook: 004, 016-019, 416
NS.1.8.4 Analyze a set of scientific data using mean, median, mode, and range using SI units	Student Handbook: 384, 387
NS.1.8.5 Suggest solutions to real world problems by analyzing scientific data in <ul style="list-style-type: none"> • data tables/charts • histograms • circle graphs • scatter plots • stem and leaf plots • line and double line graphs by approximating line of best fit 	Student Handbook: 010-012, 015, 385-401, 409

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
NS.1.8.6 Formulate inferences based on scientific data	Student Handbook: 011-015, 017, 018, 394, 398-400
NS.1.8.7 Communicate results and conclusions from scientific inquiry following peer review	Student Handbook: 011-015, 017, 018, 385, 390-401, 417-419
NS.1.8.8 Develop and implement strategies for long-term, accurate data collection	Student Handbook: 009-010, 015, 017-018, 385-389
Characteristics of Science NS.1.8.9 Generate questions that can and cannot be answered by science	Student Handbook: 001, 003-004, 016-017, 414-416
NS.1.8.10 Explain the role of peer review, evidence, and modification in the development of a theory	Student Handbook: 002, 004, 182, 363, 416
NS.1.8.11 Evaluate the merit of hypotheses, laws, and theories	Student Handbook: 002, 006-010, 015, 017, 018, 126-128, 182-184, 199, 270, 283-286, 311, 315

Strand 2: Life Science

Standard 2: Living Systems: Characteristics, Structure, and Function

Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Structure and Function LS.2.8.1 Illustrate the hierarchical relationships of cells, tissues, organs, organ systems, and organisms	Student Handbook: 074-102
LS.2.8.2 Identify different types of single-celled organisms: <ul style="list-style-type: none"> • protists • bacteria 	Student Handbook: 075, 076, 098, 133, 134, 135, 139, 151, 156-157, 159-160, 163, 330
LS.2.8.4 Describe and illustrate single-celled organisms found in pond water	Student Handbook: 134, 135, 156, 157

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
LS.2.8.5 Use a dichotomous key to classify organisms found in pond water	Student Handbook: 134, 135, 156, 164
LS.2.8.6 Compare and contrast characteristics of unicellular organisms and multi-cellular organisms	Student Handbook: 074-076, 151-163
LS.2.8.7 Classify cells as eukaryotic or prokaryotic	Student Handbook: 076, 080, 081, 160
LS.2.8.8 Identify and describe similarities and differences among organisms of different, but closely related taxa (e.g., pine trees, big cats, rodents, ungulates)	Student Handbook: 150-164
LS.2.8.9 Investigate careers, scientists, and historical breakthroughs related to organisms	Student Handbook: 150-151, 442, 443, 456, 454, 456, 457, 458

Standard 3: Life Cycles, Reproduction, and Heredity

Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Heredity and Reproduction LS.3.8.1 Identify and explain why inherited characteristics of living things depend on genes	Student Handbook: 110, 116-123
LS.3.8.2 Differentiate between dominant and recessive traits	Student Handbook: 122-123
LS.3.8.3 Observe and classify traits as dominant or recessive: <ul style="list-style-type: none"> • tongue rolling • detached earlobes • widow's peak • hitchhiker's thumb • dimples • unibrow 	Student Handbook: 122-123
LS.3.8.4 Differentiate among observed inherited traits and acquired traits of plants and animals	Student Handbook: 121-123

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
LS.3.8.5 Interpret simple genetic crosses using Punnett Squares	Student Handbook: 123
LS.3.8.6 Predict patterns that emerge from simple genetic crosses	Student Handbook: 121-123
LS.3.8.7 Conduct investigations demonstrating that the phenotype of a genetic trait is the result of genotype	Student Handbook: 123
LS.3.8.8 Explain how genetic variation within a species is a result of dominant traits and recessive traits	Student Handbook: 122-123, 127
LS.3.8.9 Compare and contrast patterns of embryological development for all vertebrates, including humans	Student Handbook: 102, 106
LS.3.8.10 Distinguish between characteristics of plants and animals through selective breeding	Student Handbook: 120, 361
LS.3.8.11 Investigate careers, scientists, and historical breakthroughs related to genetics	Student Handbook: 118, 120, 121, 445, 448, 449, 453, 458, 461
Regulation and Behavior LS.3.8.12 Compare the theory of evolution to the characteristics of a scientific theory	Student Handbook: 002, 126-128
LS.3.8.13 Identify basic ideas related to biological evolution: <ul style="list-style-type: none"> • diversity of species • variations within species • adaptations • natural selection • extinction of a species 	Student Handbook: 109, 125-128, 340, 344, 458
LS.3.8.14 Explain that the fossil record provides evidence of life forms' appearance, diversification, and extinction	Student Handbook: 126, 128, 198
LS.3.8.15 Explain the process of natural selection	Student Handbook: 127

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
LS.3.8.16 Identify genetic traits that make organisms more likely to survive and reproduce in a particular environment	Student Handbook: 109, 127, 128
LS.3.8.17 Investigate careers, scientists, and historical breakthroughs related to natural selection and the fossil record	Student Handbook: 126-127, 198, 445, 450, 453, 457, 458

S t a n d a r d 4 : P o p u l a t i o n s a n d E c o s y s t e m s

Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Populations and Ecosystems LS.4.8.1 Analyze the effect of changes in environmental conditions on the survival of individual organisms and entire species	Student Handbook: 109-111, 127, 340-344

S t r a n d 3 : P h y s i c a l S c i e n c e

S t a n d a r d 5 : M a t t e r a n d C h a n g e s

Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Properties of Matter PS.5.8.1 Compare the atomic theory to the characteristics of a scientific theory	Student Handbook: 002, 258
PS.5.8.2 Explain the structure of atoms	Student Handbook: 255-258, 315
PS.5.8.3 Determine the number of protons, neutrons, and electrons in an atom	Student Handbook: 256-258, 265, 268, 270
PS.5.8.4 Create atomic models of common elements	Student Handbook: 256, 258, 260, 263, 268, 270

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
PS.5.8.5 Investigate scientists, careers, and historical breakthroughs related to the atomic theory	Student Handbook: 258, 444, 460-461

S t a n d a r d 6 : M o t i o n a n d F o r c e s

Students shall demonstrate and apply knowledge motion and forces using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Motions and Forces PS.6.8.1 Model how motion and forces change Earth's surface: <ul style="list-style-type: none"> • compression • tension • weathering • erosion 	Student Handbook: 180-192, 195, 196, 351
PS.6.8.2 Conduct investigations demonstrating the field force (lines of force) in magnetic fields	Student Handbook: 320, 321
PS.6.8.3 Design and conduct investigations applying variables affecting the strength of an electromagnet	Student Handbook: 321
PS.6.8.4 Analyze and compare the relationship between electricity and magnetism	Student Handbook: 314-321
PS.6.8.5 Investigate careers, scientists, and historical breakthroughs related to motion and forces that change Earth's surface	Student Handbook: 182, 195, 446, 454, 456, 461

S t a n d a r d 7 : E n e r g y a n d T r a n s f e r o f E n e r g y

Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Energy PS.7.8.1 Construct open and closed electrical circuits: <ul style="list-style-type: none"> • series circuits • parallel circuits 	Student Handbook: 318

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
PS.7.8.2 Describe and diagram open and closed series and parallel circuits	Student Handbook: 318
PS.7.8.3 Compare and contrast open and closed series circuits and parallel circuits	Student Handbook: 318
PS.7.8.4 Conduct investigations demonstrating the characteristics of a wave: <ul style="list-style-type: none"> • wavelength • frequency • speed • amplitude 	Student Handbook: 305-306, 309, 313
PS.7.8.5 Conduct investigations of longitudinal and transverse waves to determine how they are different	Student Handbook: 307, 312
PS.7.8.6 Explain how energy is transferred through waves: <ul style="list-style-type: none"> • seismic waves • sound waves • water waves • electromagnetic waves 	Student Handbook: 186, 305-313
PS.7.8.7 Describe how waves travel through different kinds of media	Student Handbook: 305, 310, 311, 312
PS.7.8.8 Differentiate among reflection, refraction, and absorption of various types of waves	Student Handbook: 311
PS.7.8.9 Describe and diagram the electromagnetic spectrum	Student Handbook: 309
PS.7.8.10 Analyze the electromagnetic spectrum	Student Handbook: 309
PS.7.8.11 Investigate examples of real world uses of the electromagnetic spectrum	Student Handbook: 305, 309

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
PS.7.8.12 Conduct investigations demonstrating the separation of white light into its spectrum using refraction	Student Handbook: 309, 311, 459
PS.7.8.13 Compare ways to transfer information: <ul style="list-style-type: none"> • sound • light • radio • microwave energy 	Student Handbook: 305, 307, 308-313
PS.7.8.14 Investigate careers, scientists, and historical breakthroughs related to waves and the electromagnetic spectrum	Student Handbook: 443, 445, 446, 459

Strand 4: Earth and Space Systems

Standard 8: Earth Systems

Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Structure and Properties ESS.8.8.1 Analyze the causes and predict the consequences of global warming on the following: <ul style="list-style-type: none"> • weather • temperature • ocean water levels 	Student Handbook: 349
ESS.8.8.2 Investigate how global patterns of water currents influence local weather: <ul style="list-style-type: none"> • Gulf Stream • Atlantic Currents • California Current 	Student Handbook: 201, 205, 228-229
ESS.8.8.3 Conduct investigations to compare and contrast different landforms found on Earth: <ul style="list-style-type: none"> • mountains • plateaus • plains 	Student Handbook: 184, 187, 207-208

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
<p>ESS.8.8.4 Synthesize and model the result of both constructive and destructive forces on land forms:</p> <ul style="list-style-type: none"> • deposition • erosion • weathering • crustal deformation 	<p>Student Handbook: 180, 188-192, 195, 351</p>
<p>ESS.8.8.5 Compare and contrast the different landforms caused by Earth's external forces:</p> <ul style="list-style-type: none"> • plains • canyons • deltas • valleys • swamps 	<p>Student Handbook: 188, 192, 207, 208</p>
<p>ESS.8.8.7 Use topographic maps to identify surface features of Earth</p>	<p>Student Handbook: 172-174</p>
<p>ESS.8.8.8 Demonstrate an understanding of the agents of erosion:</p> <ul style="list-style-type: none"> • gravity • water • ice • wind • animals, including humans 	<p>Student Handbook: 192, 341</p>
<p>ESS.8.8.9 Using models of rivers, predict changes when variables, such as load, slope, amount of water, or the composition of a stream bed, are changed through erosion or deposition</p>	<p>Student Handbook: 192</p>
<p>ESS.8.8.10 Explain how weathering and erosion affect the oceans' salinity</p>	<p>Student Handbook: 192, 202, 206</p>
<p>ESS.8.8.11 Investigate careers, scientists, and historical breakthroughs related to external forces that change the Earth</p>	<p>Student Handbook: 182, 186, 194, 195, 443, 446, 454, 456, 461</p>
<p>Cycles ESS.8.8.12 Investigate the types of weathering involved in the breakdown of organic and inorganic components of Earth's surface</p>	<p>Student Handbook: 180, 188-192, 195, 351</p>

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
ESS.8.8.13 Illustrate soil profiles	Student Handbook: 140, 191
ESS.8.8.14 Apply knowledge of soil profiles to local soil samples	Student Handbook: 191
ESS.8.8.15 Investigate the formation of soil types	Student Handbook: 140, 191
ESS.8.8.16 Identify components of soil as inorganic or organic through investigations	Student Handbook: 191
ESS.8.8.17 Identify the basic nutrients needed by plants that are present in soils: <ul style="list-style-type: none"> • nitrogen • phosphorous • potassium 	Student Handbook: 139, 140, 191
ESS.8.8.18 Identify ways plants use organic and inorganic components in the soil	Student Handbook: 139, 140, 191
ESS.8.8.19 Investigate and analyze the composition of a variety of soils	Student Handbook: 191

S t a n d a r d 9 : E a r t h ' s H i s t o r y : C h a n g e s i n E a r t h a n d S k y

Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Earth's History ESS.9.8.1 Explain processes that have changed Earth's surface that have resulted from sudden events (e.g., earthquakes and volcanoes) and gradual changes (e.g., uplift, erosion, and weathering)	Student Handbook: 180-192, 195, 196, 351

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
ESS.9.8.2 Analyze how rock sequences may be disturbed by the following: <ul style="list-style-type: none"> • erosion • deposition • igneous intrusion • folding • faulting • uplifting 	Student Handbook: 180, 187-190, 192, 195, 196
ESS.9.8.3 Explain how scientists determine the relative ages of fossils found in layers of sedimentary rock: <ul style="list-style-type: none"> • law of superposition • law of cross-cutting 	Student Handbook: 195-196
ESS.9.8.4 Apply geologic laws of superposition and cross-cutting to determine the relative age of rock in a cross section	Student Handbook: 195-196

Standard 10: Objects in the Universe

Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
Solar system: Sun, Earth, Moons, Planets, Galaxies ESS.10.8.1 Summarize the effects of gravity on bodies in space	Student Handbook: 237, 276, 278
ESNS.10.8.2 Identify variables that affect the amount of gravitational force between two objects: <ul style="list-style-type: none"> • mass of the objects • distance between the objects 	Student Handbook: 276, 285
ESNS.10.8.3 Relate the effects of the moon's gravitational force on Earth's ocean tides	Student Handbook: 237
ESNS.10.8.4 Identify the causes of the following: <ul style="list-style-type: none"> • high tides • low tides • spring tides • neap tides 	Student Handbook: 237

Student Learning Expectations, Grade 8	ScienceSaurus, Grades 6-8
ESNS.10.8.5 Define the terms galaxy and universe	Student Handbook: 247, 283, 488
ESNS.10.8.6 Illustrate the appearance of galaxies as seen through a telescope: <ul style="list-style-type: none"> • clarity • shape 	Student Handbook: 247
ESNS.10.8.7 Compare and contrast the Milky Way Galaxy to other galaxies	Student Handbook: 247
ESNS.10.8.8 Illustrate the position of our solar system within the Milky Way Galaxy	Student Handbook: 247
ESNS.10.8.9 Investigate careers, scientists, and historical breakthroughs related to gravity, galaxies, and the universe	Student Handbook: 239, 283-286, 440, 441, 442, 444, 447, 448, 449, 450-451, 452-453, 455-456, 459, 460



TOLL FREE: 800-289-4490

VISIT OUR WEB SITE: WWW.GREATSOURCE.COM
