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correlated to
Missouri
Science Grade Level Expectations
Grade 5



YOUR MISSOURI GREAT SOURCE REPRESENTATIVE

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Strand 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter

Concept C. Properties of matter can be explained in terms of moving particles too small to be seen without tremendous magnification

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Water Cycle and Weather</i> a. Recognize how changes in state (i.e., freezing/melting, condensation/evaporation) provide evidence that matter is made of particles too small to be seen	Student Handbook: 261, 262, 265	

Concept D. Physical changes in the state of matter that result from thermal changes can be explained by the Kinetic Theory of Matter

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water cycle and Weather</i> a. Classify matter as a solid, a liquid, or a gas, as it exists at room temperature, using physical properties (i.e., volume, shape, ability to flow)</p>	<p>Student Handbook: 260, 261, 262, 263</p>	
<p>b. Predict the effect of heat energy on the physical properties of water as it changes to and from a solid, liquid, or gas (i.e., freezing/melting, evaporation/condensation)</p>	<p>Student Handbook: 261, 262, 264, 265</p>	<p>Student Book: 114, 115, 116, 117, 118</p>

Concept I. Mass is conserved during any physical or chemical change

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water Cycle and Weather</i> a. Recognize the mass of water remains constant as it changes state (as evidenced in a closed container)</p>	<p>Opportunities to address: Student Handbook: 260, 261, 262, 263, 264</p>	

2. Energy has a source, can be transferred, and can be transformed into various forms but is conserved between and within systems

Concept A. Forms of energy have a source, a means of transfer (work and heat), and a receiver

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Solar System</i> a. Recognize light can be transferred from the source to the receiver (eye) through space in straight lines</p>	<p>Student Handbook: 309, 313</p>	<p>Student Book: 81, 82, 83, 84, 85, 86, 121, 124</p>
<p>b. Recognize how an object (e.g., moon, mirror, objects in a room) can only be seen when light is reflected from that object to the receiver (eye)</p>	<p>Student Handbook: 309, 312, 313</p>	<p>Student Book: 121, 122, 123, 124</p>

Concept C. Electromagnetic energy from the Sun (solar radiation) is a major source of energy on Earth

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water Cycle and Weather</i> a. Recognize the Sun as the primary source of energy for temperature change on Earth</p>	<p>Student Handbook: 200-201, 287, 294</p>	<p>Student Book: 121</p>

Strand 2: Properties and Principles of Force and Motion

2. Forces affect motion

Concept A. Forces are classified as either contact forces (pushes, pulls, friction, buoyancy) or noncontact forces (gravity, magnetism), that can be described in terms of direction and magnitude

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Work and Simple Machines</i> a. Identify the forces acting on a load and use a spring scale to measure the weight (resistance force) of the load	Opportunities to address: Student Handbook: 46, 270	Opportunity to address: Student Book: 111

Concept D. Newton’s Laws of Motion explain the interaction of mass and forces, and are used to predict changes in motion

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Work and Simple Machines</i> a. Describe how friction affects the amount of force needed to do work over different surfaces or through different media	Student Handbook: 274	Student Book: 112

Concept F. Simple machines (levers, inclined planes, wheel and axle, pulleys) affect the force applied to an object and/or direction of movement as work is done

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Work and Simple Machines</i> a. Explain how work can be done on an object (force applied and distance moved) (No formula calculations at this level)	Student Handbook: 280, 281, 282, 283	Student Book: 107

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
b. Recognize simple machines change the amount of effort force and/or direction of force	Student Handbook: 280, 281, 282, 283	Student Book: 107, 108, 109, 110
c. Compare the measures of effort force (measured using a spring scale to the nearest Newton) needed to lift a load with and without the use of simple machines	Opportunities to address: Student Handbook: 46, 280	Opportunities to address: Student Book: 108, 109, 110
d. Identify the simple machines in common tools and household items	Student Handbook: 280, 281, 282, 283	Student Book: 107, 108, 109, 110

Strand 3: Characteristics and Interactions of Living Organisms

1. There is a fundamental unity underlying the diversity of all living organisms

Concept D. Plants and animals have different structures that serve similar functions necessary for the survival of the organism

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Classification of Plants and Animals</i> a. Compare structures (e.g., wings vs. fins vs. legs; gills vs. lungs; feathers vs. hair vs. scales) that serve similar functions for animals belonging to different vertebrate classes	Student Handbook: 149, 150, 151, 152, 153, 154, 155	Student Book: 20, 21, 22, 23, 24, 31, 32, 36

Concept E. Biological classifications are based on how organisms are related

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Classification of Plants and Animals</i> a. Explain how similarities are the basis for classification</p>	<p>Student Handbook: 139, 140, 141, 142, 143, 144, 145, 146</p>	<p>Student Book: 13, 14, 15, 16, 17, 18, 26, 27, 49</p>
<p>b. Distinguish between plants (which use sunlight to make their own food) and animals (which must consume energy-rich food)</p>	<p>Student Handbook: 84, 86, 100, 101, 102, 103, 106, 107, 140, 141, 142</p>	<p>Student Book: 25, 26, 27, 28</p>
<p>c. Classify animals as vertebrates or invertebrates</p>	<p>Student Handbook: 146, 147, 148, 149</p>	
<p>d. Classify vertebrate animals into classes (amphibians, birds, reptiles, mammals, fish) based on their characteristics</p>	<p>Student Handbook: 149, 150, 151, 152, 153, 154, 155</p>	
<p>e. Identify plants or animals using simple dichotomous keys</p>	<p>Student Handbook: 140, 150</p>	<p>Opportunity to address: Student Book: 26</p>

2. Living organisms carry out life processes in order to survive

Concept C. Complex multicellular organisms have systems that interact to carry out life processes through physical and chemical means

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Classification of Plants and Animals</i></p> <p>a. Recognize the major life processes carried out by the major systems of plants and animals (e.g., support, reproductive, digestive, transport/circulatory, excretory, response) (Do NOT assess naming of organs within each system or explanation of the processes carried out by those systems)</p>	<p>Student Handbook: 98, 108, 109, 110, 111, 112-113, 114-115, 116-117, 118-119, 120-121, 122-123, 124-125</p>	<p>Student Book: 19, 20, 21, 22, 23, 24, 29</p>

Strand 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere, and Hydrosphere)

1. Earth's systems (geosphere, atmosphere, and hydrosphere) have common components and unique structures

Concept B. The hydrosphere is composed of water (a material with unique properties) and other materials

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water Cycle and Weather</i></p> <p>a. Classify major bodies of surface water (e.g., rivers, lakes, oceans, glaciers) as fresh or salt water, flowing or stationary, large or small, solid or liquid, surface or groundwater</p>	<p>Student Handbook: 171, 172, 173, 176, 183, 187, 190, 191, 192, 193, 194, 195, 196, 197</p>	<p>Student Book: 64, 65, 87</p>
<p>b. Relate the type of water body to the process by which it was formed</p>	<p>Student Handbook: 172, 173, 190, 191, 192</p>	<p>Opportunities to address: Student Book: 64, 65, 66</p>

Concept C. The atmosphere (air) is composed of a mixture of gases, including water vapor, and minute particles

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water Cycle and Weather</i> a. Recognize the atmosphere is composed of a mixture of gases, water, and minute particles</p>	<p>Student Handbook: 158, 187, 198, 199</p>	<p>Student Book: 78</p>

2. Earth’s systems (geosphere, atmosphere, and hydrosphere) interact with one another as they undergo change by common processes

Concept E. Changes in the form of water as it moves through Earth’s systems are described as the water cycle

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water Cycle and Weather</i> a. Describe and trace the path of water as it cycles through the hydrosphere, geosphere, and atmosphere (i.e., the water cycle: evaporation, condensation, precipitation, surface run-off/ groundwater flow)</p>	<p>Student Handbook: 188, 189, 205</p>	<p>Student Book: 57, 58, 59, 78, 87</p>
<p>b. Identify the different forms water can take (e.g., snow, rain, sleet, fog, clouds, dew) as it moves through the water cycle</p>	<p>Student Handbook: 188, 189, 205, 206, 207, 212, 214, 215</p>	<p>Student Book: 76, 77, 78, 87</p>

Concept F. Constantly changing properties of the atmosphere occur in patterns which are described as weather

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water Cycle and Weather</i> a. Identify and use appropriate tools (i.e., thermometer, anemometer, wind vane, hygrometer, barometer, rain gauge, satellite images, weather maps) to collect weather data (i.e., temperature, wind speed and direction, relative humidity, air pressure, precipitation, cloud type and cover)</p>	<p>Student Handbook: 202, 203, 204, 205</p>	<p>Opportunities to address: Student Book: 75, 76, 77, 78</p>
<p>b. Recognize and summarize relationships between weather data (e.g., temperature and time of day, cloud cover and temperature, wind direction and temperature) collected over a period of time</p>	<p>Student Handbook: 208, 210, 216, 217</p>	<p>Opportunity to address: Student Book: 75</p>

3. Human activity is dependent upon and affects Earth’s resources and systems

Concept A. Earth’s materials are limited natural resources affected by human activity

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Water Cycle and Weather</i> a. Explain how major bodies of water are important natural resources for human activity (e.g., food, recreation, habitat, irrigation, solvent, transportation)</p>	<p>Student Handbook: 320, 325, 330, 341, 342, 343</p>	<p>Student Book: 137</p>
<p>b. Describe how human needs and activities (e.g., irrigation, damming of rivers, waste treatment, sources of drinking water) have affected the quantity and quality of major bodies of fresh water</p>	<p>Student Handbook: 325, 330, 341, 342, 343</p>	<p>Student Book: 133, 134, 135, 137, 138</p>

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
c. Propose solutions to problems related to water quality and availability that result from human activity	Student Handbook: 325, 330, 347, 351	Student Book: 138

Strand 6: Composition and Structure of the Universe and the Motion of the Objects Within It

1. The universe has observable properties and structure

Concept A. The Earth, Sun, and moon are part of a larger system that includes other planets and smaller celestial bodies

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Solar System</i> a. Recognize the Earth is one of several planets within a solar system that orbits the Sun	Student Handbook: 218, 220, 226, 227, 228-233	Student Book: 83
b. Recognize the moon orbits the Earth	Student Handbook: 218, 222, 223, 224	Student Book: 81, 82, 83
c. Recognize planets look like stars and appear to move across the sky among the stars	Student Handbook: 236	

Concept B. The Earth has a composition and location suitable to sustain life

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Solar System</i> a. Describe physical features of the planet Earth that allows life to exist (e.g., air, water, temperature) and compare these to the physical features of the Sun, the moon, and other planets	Student Handbook: 225, 228-233	

2. Regular and predictable motions of objects in the universe can be described and explained as the result of gravitational forces

Concept B. The apparent position of the moon, as seen from Earth, and its actual position relative to Earth change in observable patterns

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Solar System</i> a. Sequence images of the lit portion of the moon seen from Earth as it cycles day-to-day in about a month in order of occurrence (Do NOT assess cause of moon phases)</p>	<p>Student Handbook: 222, 223, 224</p>	<p>Student Book: 82</p>

Concept C. The regular and predictable motions of the Earth and moon relative to the Sun explain natural phenomena on Earth, such as day, month, year, shadows, moon phases, eclipses, tides, and seasons

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Solar System</i> a. Recognize the Earth rotates once every 24 hours</p>	<p>Student Handbook: 218</p>	<p>Opportunities to address: Student Book: 84, 86</p>
<p>b. Relate changes in the length and position of a shadow to the time of day and apparent position of the Sun in the sky, as determined by Earth’s rotation</p>	<p>Opportunities to address: Student Handbook: 218, 219</p>	<p>Opportunities to address: Student Book: 83, 84, 86</p>
<p>c. Relate the apparent motion of the Sun, moon, and stars in the sky to the rotation of the Earth (Do not assess apparent motion of polar constellations)</p>	<p>Student Handbook: 218, 236, 237</p>	<p>Student Book: 83, 84, 85</p>

Strand 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking

Concept A. Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence - All Units</i> a. Formulate testable questions and explanations (hypotheses)	Student Handbook: 4, 5, 6	Student Book: 60-61, 78-79, 93-94, 99, 100, 117, 118, 151-152
b. Recognize the characteristics of a fair and unbiased test	Student Handbook: 4, 7, 8	Student Book: 78-79, 93-94, 99, 100, 106, 117, 118, 123, 151-152
c. Conduct a fair test to answer a question	Student Handbook: 4, 10, 11, 12	Student Book: 78-79, 93-94, 99, 100, 106, 117, 118, 123, 151-152
d. Make suggestions for reasonable improvements or extensions of a fair test	Student Handbook: 4, 12, 13, 14, 20	Student Book: 94, 99, 106, 118, 151-152

Concept B. Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence - All Units</i> a. Make qualitative observations using the five senses	Student Handbook: 10, 11	Student Book: 35, 55, 61, 71, 74, 78-79, 93-94, 106, 117, 123, 141, 151-152
b. Determine the appropriate tools and techniques to collect data	Student Handbook: 9, 10, 11, 41	Student Book: 60-61, 78-79, 93-94, 106, 117, 151-152

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
c. Use a variety of tools and equipment to gather data (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scales)	Student Handbook: 7, 9, 10, 11, 38-50, 51-53, 54-55	Student Book: 60-61, 78-79, 93-94, 106, 117, 151-152
d. Measure length to the nearest centimeter, mass to the nearest gram, volume to the nearest milliliter, temperature to the nearest degree Celsius, weight to the nearest Newton	Student Handbook: 38, 39, 41, 42, 44, 45, 46, 49	Student Book: 60, 117
e. Compare amounts/measurements	Student Handbook: 38, 39, 41, 42, 44, 45, 46, 49	Student Book: 61, 85, 106, 117
f. Judge whether measurements and computation of quantities are reasonable	Student Handbook: 13, 18	Student Book: 106, 117

Concept C. Evidence is used to formulate explanations

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence - All Units</i> a. Use quantitative and qualitative data as support for reasonable explanations	Student Handbook: 4, 10, 11, 12, 13, 15, 18	Student Book: 61, 94, 99, 100, 106, 117
b. Use data as support for observed patterns and relationships, and to make predictions to be tested	Student Handbook: 4, 10, 11, 12, 13, 15, 16, 19	Student Book: 17, 55, 61, 85, 117, 123, 131

Concept D. Scientific inquiry includes evaluation of explanations (hypotheses, laws, theories) in light of scientific principles (understandings)

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence - All Units</i> a. Evaluate the reasonableness of an explanation	Student Handbook: 4, 18	Student Book: 41, 117
b. Analyze whether evidence and scientific principles support proposed explanations	Student Handbook: 4, 17, 18	Student Book: 106, 117

Concept E. The nature of science relies upon communication of results and justification of explanations

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence - All Units</i> a. Communicate the procedures and results of investigations and explanations through: _ oral presentations _ drawings and maps _ data tables _ graphs (bar, single line, pictograph) _ writings	Student Handbook: 4, 21, 22	Student Book: 17, 29, 30, 36, 60-61, 71, 78-79, 93-94, 99, 100, 106, 117, 123, 151-152, 157

Strand 8: Impact of Science, Technology and Human Activity

1. The nature of technology can advance, and is advanced by, science as it seeks to apply scientific knowledge in ways that meet human needs

Concept A. Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Work and Simple Machines</i> a. Design and construct a machine, using materials and/or existing objects, that can be used to perform a task (Assess Locally)	Opportunities to address: Student Handbook: 280, 281, 282, 283	Student Book: 106

Concept B. Advances in technology often result in improved data collection and an increase in scientific information

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<i>Scope and Sequence – Work and Simple Machines/Water Cycle and Weather/Solar System/Classification of Plants and Animals</i> a. Describe how new technologies have helped scientists make better observations and measurements for investigations (e.g., telescopes, electronic balances, electronic microscopes, x-ray technology, computers, ultrasounds, computer probes such as thermometers)	Student Handbook: 359, 360, 361, 413-423	Student Book: 54, 102-103, 118, 142, 147, 150, 159-164

Concept C. Technological solutions to problems often have drawbacks as well as benefits

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – Simple Machines/Water Cycle and Weather/Solar System/Classification of Plants and Animals</i></p> <p>a. Identify how the effects of inventions or technological advances (e.g., complex machinery, technologies used in space exploration, satellite imagery, weather observation and prediction, communication, transportation, robotics, tracking devices) may be helpful, harmful, or both (Assess Locally)</p>	<p>Student Handbook: 355, 356, 357, 359, 360, 361, 362, 363</p>	<p>Student Book: 20-21, 44, 45, 84, 114-115, 118, 147, 148-149, 150, 153, 154-155, 156, 157, 158</p>

2. Historical and cultural perspectives of scientific explanations help to improve understanding of the nature of science and how science knowledge and technology evolve over time

Concept A. People of different gender and ethnicity have contributed to scientific discoveries and the invention of technological innovations

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence – All units</i></p> <p>a. Research biographical information about various scientists and inventors from different gender and ethnic backgrounds, and describe how their work contributed to science and technology (Assess Locally)</p>	<p>Student Handbook: 360, 361, 362, 367, 368, 369, 413-423, 424-435</p>	<p>Student Book: 70, 72, 108-109, 112, 150, 154-155, 156, 157, 158</p>

3. Science and technology affect, and are affected by, society

Concept A. People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done

Grade Level Expectations, Grade 5	ScienceSaurus, Grades 4-5	Science Daybook, Grade 5
<p><i>Scope and Sequence - All Units</i></p> <p>a. Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of people working alone or in groups solving everyday problems or learning through discovery)</p>	<p>Student Handbook: 362, 364-365, 366, 367</p>	<p>Student Book: 20-21, 70, 72, 74, 84, 102-103, 114-115, 136, 148-149, 153, 154-155, 156, 157, 158</p>
<p>b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (Assess Locally)</p>	<p>Student Handbook: 30</p>	<p>Student Book: 60-61, 78-79, 93-94, 99, 100, 106, 117, 123, 151-152</p>



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