OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
GRADE K			
K	**K-PS2-1 Motion and Stability: Forces and Interactions**		
	K-PS2-1: Students who demonstrate understanding can: Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. (Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other (e.g. ramps such as blocks or wooden moldings with cars and balls; paper towel threaded on rope or string across the classroom). Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.	**Forces and Motion:** • Pushes and pulls can have different strengths and directions. • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. **Types of Interactions:** • When objects touch or collide, they push on one another and can change motion. • When objects touch or collide, they push on one another and can change motion. **Relationship Between Energy and Forces:** • A bigger push or pull makes things speed up or slow down more quickly.	FOSS 3E Materials in Our World Investigations Guide, Investigation 2, Part 1, 2 pp. 105-107 FOSS 3E Materials in Our Teacher Resources, Teacher Masters 10-11 FOSS 3E Materials in Our World Science Resources Book, "The Story of a Chair," pp. 3-8 Investigations Guide p. 70 Where it it? Is it moving? Delta Science First Reader, pp. 12-20
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.** **• With guidance, plan and conduct an investigation in collaboration with peers.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence		FOSS 3E Materials in our World Investigations Guide, Investigation 1, Parts 4-5 pp. 83-86, 89-91; Interdisciplinary Extension: "Conduct another sinking wood investigation," p. 94 FOSS 3E Materials in Our World Teacher Resources, Teacher masters 7-8

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Cause and Effect • Simple tests can be designed to gather evidence to support or refute student ideas and causes.		FOSS 3E Materials in our World Investigations Guide, Investigation 1, Parts 4-5 pp. 83-86, 89-91; Interdisciplinary Extension: "Conduct another sinking wood investigation," p. 94 FOSS 3E Materials in Our World Teacher Resources, Teacher masters 7-8 Where is it? Is it moving? Delta Science First Reader, pp. 12-20
K	**K-PS2-2 Motion and Stability: Forces and Interactions**		
	K-PS2-2 Students who demonstrate understanding can: Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.* (Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn and using a rope or string to pull an object.) Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.	**Forces and Motion:** • Pushes and pulls can have different strengths and directions. • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.	FOSS 3E Materials in Our World Investigations Guide, Investigation 2, Parts 1-2, pp. 105-107 FOSS 3E Materials in Our World Teacher Resources, Teacher Masters 10-11 FOSS 3E Materials in Our World Science Resources Book, "The Story of a Chair," pp. 3-8 Investigations Guide p. 70 Where is it? Is it moving? Delta Science First Reader, pp. 12-20
		Defining Engineering Problems: (secondary to K-PS2-2) • A situation that people want to change or create can be approached as a problem to be solved through engineering. • Such problems may have many acceptable solutions.	FOSS 3E Materials in our World Investigations Guide, Investigation 3, Parts 4-5, pp. 163-167, 172-174; Investigation 5, Part 4, pp. 246-248 FOSS 3E Materials in Our World Teacher Resources, Teacher Masters 19-22 FOSS 3E Materials in Our World Science Resources Book, "Land, Air and Water," pp 53-57 Investigations Guide p. 246

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data **Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.** **• Analyze data from tests of an object or tool to determine if it works as intended.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Materials in our World Investigation 1, Parts 4-5, pp. 83-86, 89-91; Interdisciplinary Extension: Conduct another sinking wood investigation, p. 94 FOSS 3E Materials in Our World Teacher Resources, Teacher Master 7
	Crosscutting Concepts: Cause and Effect • Simple tests can be designed to gather evidence to support or refute student ideas about causes.		FOSS 3E Materials in our World Investigation 1, Parts 4-5, pp. 83-86, 89-91; Interdisciplinary Extension: Conduct another sinking wood investigation, p. 94 FOSS 3E Materials in Our World Teacher Resources, Teacher Master 7 Where is it? Is it moving? Delta Science First Reader, pp. 12-20
K	**K-PS3-1 Energy**		
	K-PS3-1 Students who demonstrate understanding can: Make observations to determine the effect of sunlight on Earth's surface. (Clarification Statement: Examples of Earth's surface could include sand, soil, rocks, and water. Examples can extend beyond natural objects on Earth's surface to include man-made objects such as plastics, asphalt, or concrete.) Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/ cooler.	**Conservation of Energy and Energy Transfer:** • Sunlight warms Earth's surface.	FOSS 3E Trees and Weather Investigations Guide, Investigation 3, Part 2, pp. 134, 148-150 FOSS 3E Trees and Weather Teacher Resources, Teacher Master 24 FOSS 3E Trees and Weather Science Resources Book, Glossary, p. 48

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.** **• Make observations (firsthand or from media) to collect data that an be used to make comparisons.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Materials in Our World Investigations Guide, Investigation 1, Parts 4-5, pp. 83-86, 89-91; Interdisciplinary Extension: Conduct another sinking wood investigation, p. 94 FOSS 3E Materials in Our World Teacher Resources, Teacher Master 7
	Crosscutting Concepts: Cause and Effect • Events have causes that generate observable patterns.		Planning and carrying out investigations: FOSS 3E Materials in Our World Investigations Guide, Investigation 1, Parts 4-5, pp. 83-86, 89-91; Interdisciplinary Extension: Conduct another sinking wood investigation, p. 94 FOSS 3E Materials in Our World Teacher Resources, Teacher Masters 7, 23
K	**K-PS3-2 Energy**		
	K-PS3-2 Students who demonstrate understanding can: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.* (Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.) Assessment Boundary: N/A	**Conservation of Energy and Energy Transfer:** • Sunlight warms Earth's surface.	FOSS 3E Animals Two by Two Investigations Guide, Investigation 2 Interdisciplinary Extensions "Test for surface preferences," p. 125 FOSS 3E Animals Two by Two Investigations Guide, Investigation 3, Part 2, pp. 146-151 FOSS 3E Animals Two by Two Teacher Resources, Teacher Master 23

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Animals Two by Two Investigations Guide, Investigation 2 Interdisciplinary Extensions "Test for surface preferences," p. 125 FOSS 3E Animals Two by Two Investigations Guide, Investigation 3, Part 2, pp. 146-151 FOSS 3E Animals Two by Two Teacher Resources, Teacher Master 23
	Crosscutting Concepts: Cause and Effect • Events have causes that generate observable patterns.		FOSS 3E Animals Two by Two Investigations Guide, Investigation 2 Interdisciplinary Extensions "Test for surface preferences," p. 125 FOSS 3E Animals Two by Two Investigations Guide, Investigation 4, Part 4, pp. 192-193 FOSS 3E Animals Two by Two Teacher Resources, Teacher Master 30
K	**K-LS1-1 From Molecules to Organisms: Structure and Processes**		

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	K-LS1-1 Students who demonstrate understanding can: Use observations to describe patterns of what plants and animals (including humans) need to survive. (Clarification Statement: Examples of patterns could include that plants make their own food while animals do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.) Assessment Boundary: Students are not expected to understand the mechanisms of photosynthesis.	**Organization for Matter and Energy Flow in Organisms:** •All animals need food in order to live and grow. • Animals obtain their food from plants or from other animals. • Plants need water and light to live and grow.	FOSS 3E Animals Two by Two Investigations Guide, Investigation 1, Parts 2, 4, pp. 64-66, 74-75; Investigation 2, Part 3, pp. 118-121; Investigation 3, Parts 1-2, pp. 141-143, 148-151; Investigation 4, Part 4, pp. 192-193 FOSS 3E Animals Two by Two Teacher Resources, Teacher Masters 16, 27 FOSS 3E Animals Two by Two Science Resources Book, "Fish Same and Different," pp. 3-9, "Birds Outdoors," pp. 20 -28, "Worms in Soil," pp. 37-47, "Isopods" pp. 48-54, "Animals All Around Us" pp. 55-66; "Living and Nonliving," pp. 67-86 Investigations Guide p. 76, 89,156-157, 178, 186-187, 194 FOSS 3E Trees and Weather Investigations Guide, Investigation 1, Part 6, pp. 85-89
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations **4. Analyzing and interpreting data** **Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.** **• Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Animals Two by Two Investigations Guide, Investigation 1, Parts 2, 4, pp. 64-66, 74-75; Investigation 2, Part 3, pp. 118-121; Investigation 3, Parts 1-2, pp. 141-143, 148-151; Investigation 4, Part 4, pp. 192-193 FOSS 3E Animals Two by Two Teacher Resources, Teacher Masters 16, 27

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Patterns • Patterns in the natural and human designed world can be observed and used as evidence.		FOSS 3E Animals Two by Two Investigations Guide, Investigation 1, Parts 2, 4, pp. 64-66, 74-75; Investigation 2, Part 3, pp. 118-121; Investigation 3, Parts 1-2, pp. 141-143, 148-151; Investigation 4, Part 4, pp. 192-193 FOSS 3E Animals Two by Two Teacher Resources, Teacher Masters 16, 27
K	**K-ESS2-1 Earth's Systems**		
	K-ESS2-1 Students who demonstrate understanding can: Use and share observations of local weather conditions to describe patterns over time. (Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.) Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.	**Weather and Climate:** • Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. • People measure these conditions to describe and record the weather and to notice patterns over time.	FOSS 3E Trees and Weather Investigations Guide, Investigation 3, Parts 1-3, pp. 141-144, 148 - 150, 154-158 FOSS 3E Trees and Weather Teacher Resources, Teacher Masters 23-24 FOSS 3E Trees and Weather Science Resources Book, "Weather," pp. 24-35, "My Apple Tree," pp. 36-39, "Orange Trees," pp.40-43, "Maple Trees," pp. 44-46 Investigations Guide, pp. 158, 176, 186, 203

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations **4. Analyzing and interpreting data** **Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.** **• Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Analyzing and interpreting data: FOSS 3E Trees and Weather Investigations Guide, Investigation 3, Part 1-2, pp. 141-144, 148 - 150 FOSS 3E Trees and Weather Teacher Resources, Teacher Masters 23, 24
	Crosscutting Concepts: Patterns • Patterns in the natural and human designed world can be observed and used as evidence.		FOSS 3E Trees and Weather Investigations Guide, Investigation 3, Part 1-2, pp. 141-144, 148 - 150 FOSS 3E Trees and Weather Teacher Resources, Teacher Masters 23, 24
K	**K-ESS2-2 Earth's Systems**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	K-ESS2-2 Students who demonstrate understanding can: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. (Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete, or a dandelion spreading seeds to generate more dandelions.) Assessment Boundary: Arguments should be based on qualitative not quantitative evidence.	**Biogeology:** • Plants and animals can change their environment.	FOSS 3E Animals Two by Two Investigations Guide, Investigation 2, Parts 2-3, pp. 113-114, 118-121; Investigation 3, Parts 2, 4, pp. 147-151, 192-193 FOSS 3E Animals Two by Two Science Resources Book, "Birds Outdoors," pp. 20-28, "Worms In Soil," pp. 37-47, "Isopods," pp. 48-54 Investigations Guide, pp. 89, 156-157, 178 FOSS 3E Trees and Weather Invesigations Guide, Investigation 4, Parts 1-9, pp. 171-172, 175, 180-181, 184-185, 189-190, 193-194, 197, 204-205 FOSS 3E Trees and Weather Teacher Resources, Teacher Masters 27-29 FOSS 3E Trees and Weather Science Resources Book, "My Apple Tree, pp. 36-39, "Orange Trees" pp.40-43, "Maple Trees", pp. 44-46 Investigations Guide , pp. 158, 176,186, 203
		Human Impacts on Earth Systems: • Things that people do to live comfortably can affect the world around them.	FOSS 3E Materials in Our World Investigations Guide, Investigation 1, Part 1 pp. 58-63; Investigation 5, Part 4, pp. 246-248 FOSS 3E Materials in Our World Science Resources Book, "Story of a Chair" pp. 3-8, "The Story of a Box" pp. 13-18, "What is Fabric Made From?" pp 19-31, "How are Fabrics Used?" pp 32-40, "How are Rocks, Soil and Water Used?", "Land, Air and Water" pp. 53-57 Investigations Guide, pp. 70, 145, 199, 216, 238, 246

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).** **• Construct an argument with evidence to support a claim.** 8. Obtaining, evaluating, and communicating information		FOSS 3E Materials in Our World Investigations Guide, Investigation 1, Part. 1 pp. 58-63 FOSS 3E Materials in Our World Teacher Resources, Teacher Master 19 FOSS 3E Materials in Our World Science Resources Book, "Story of a Chair," pp. 3-8, "The Story of a Box," pp. 13-18 Investigations Guide, pp. 70, 145
	Crosscutting Concepts: Systems and System Models • Systems in the natural and designed world have parts that work together.		FOSS 3E Materials in Our World Investigations Guide, Investigation 1, Part. 1, pp. 58-63, Investigation 3, Part 4, pp. 163-167 FOSS 3e Materials in Our World Science Resources Book, "Story of a Chair," pp. 3-8, "The Story of a Box," pp. 13-18 Investigations Guide, pp. 70, 145
K	**K-ESS3-1 Earth and Human Activity**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	K-ESS3-1 Students who demonstrate understanding can: Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. (Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.) Assessment Boundary: N/A	**Natural Resources:** • Living things need water, air, and resources from the land, and they live in places that have the things they need. • Humans use natural resources for everything they do.	FOSS 3E Animals Two by Two Investigations Guide, Investigation 1, Parts 2,4, pp. 64-66, 74-75; Investigation 2, Parts 1-3, pp. 107-110, 118-121; Investigation 3, Parts 1-2, pp. 141-143, 148-151; Investigation 4, Part 1,4, pp. 171-173, 192-193 FOSS 3E Animals Two by Two Teacher Resources, Teacher Masters 13, 16, 20, 23, 26-27 FOSS 3E Materials in Our World Investigations Guide, Investigation 1, Part. 1, pp. 58-63; Investigation 5, Part 4, pp. 246-248 FOSS 3E Materials in Our World Science Resources Book, "Story of a Chair," pp. 3-8, "The Story of a Box" pp. 13-18, "What is Fabric Made From?" pp 19-31, "How are Fabrics Used?" pp 32-40, "How are Rocks, Soil and Water Used?" , "Land, Air and Water" pp. 53-57 Investigations Guide, pp. 70, 145, 199, 216, 238, 246
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models** **Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions.** **• Use a model to represent relationships in the natural world.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Animals Two by Two Investigations Guide, Investigation 1, Parts 2,4, pp. 64-66, 74-75; Investigation 2, Parts 1-3, pp. 107-110, 118-121; Investigation 3, Parts 1-2, pp. 141-143, 148-151; Investigation 4, Part 1,4, pp. 171-173, 192-193 FOSS 3E Animals Two by Two Teacher Resources, Teacher Masters 13, 16, 20, 23, 26-27

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Systems and System Models • Systems in the natural and designed world have parts that work together.		FOSS 3E Animals Two by Two Investigations Guide Investigation 4, Parts 1, 4, pp.171-173, 192-193 FOSS 3E Animals Two by Two Teacher Resources, Teacher Masters 21-23
K	**K-ESS3-2 Earth and Human Activity**		
	K-ESS3-2 Students who demonstrate understanding can: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.* (Clarification Statement: Emphasis is on local forms of severe weather and safety precautions associated with that severe weather.) Assessment Boundary: N/A	**Natural Hazards:** • Some kinds of severe weather are more likely than others in a given region. • Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.	FOSS 3E Trees and Weather Science Resources Book, "Weather," pp. 24-35 FOSS 3E Trees and Weather Investigations Guide p. 158
		Defining and Delimiting an Engineering Problem: • Asking questions, making observations, and gathering information are helpful in thinking about problems. ** Connections to Engineering, Technology, and Application of Science*	FOSS 3E Trees and Weather Investigations Guide Investigation 3, Parts 1-3, pp. 141-144, 148-150 FOSS 3E Teacher Resources, Teacher Masters 23-24 FOSS 3E Trees and Weather Science Resources Book, "Weather", pp. 24-35, "My Apple Tree, pp. 36-39, "Orange Trees" pp.40-43, "Maple Trees", pp. 44-46 Investigations Guide p. 158, 176,186, 203 FOSS 3E Materials in Our World Investigations Guide Investigation 5, Part 4 pp. 246-248 FOSS 3E Materials in Our World Science Resources Book "Land, Air, and Water " pp. 53-57 Investigations Guide p. 246

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
		Interdependence of Science, Engineering, and Technology: • People encounter questions about the natural world every day.	FOSS 3E Trees and Weather Investigations Guide Investigation 3, Parts 1-3, pp. 141-144, 148-150 Teacher Masters 23,24 FOSS 3E Trees and Weather Science Resources Book, "Weather", pp. 24-35, "My Apple Tree, pp. 36-39, "Orange Trees" pp.40-43, "Maple Trees", pp. 44-46 Investigations Guide p. 158, 176,186, 203
		Influence of Engineering, Technology, and Science on Society and the Natural World: • People depend on various technologies in their lives; human life would be very different without technology.	FOSS 3E Trees and Weather Science Resource Book "Weather", pp. 24-35 FOSS 3E Trees and Weather Investigations Guide, p. 158 FOSS 3E Materials in Our World Science Resources Book, "Story of a Chair" pp. 3-8, "The Story of a Box" pp. 13-18 FOSS 3E Materials In Our World Investigations Guide 70, 145
	Science & Engineering Practices **1. Asking questions (for science) and defining problems (for engineering)** **Asking questions and defining problems in grades K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.** **• Ask questions based on observations to find more information about the designed world.** 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Asking Questions and defining problems: FOSS 3E Trees and Weather Investigations Guide Investigation 3, Parts 1-3, pp. 141-144, 148-150 FOSS 3E Trees and Weather Teacher Resources, Teacher Masters 23-24 FOSS 3E Trees and Weather Science Resources Book, "Weather", pp. 24-35, "My Apple Tree, pp. 36-39, "Orange Trees" pp.40-43, "Maple Trees", pp. 44-46 Investigations Guide, pp. 158, 176, 186, 203 FOSS 3E Materials in Our World Investigations Guide, Investigation 5, Part 4, pp. 246-248

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Cause and Effect • Events have causes that generate observable patterns.		FOSS 3E Trees and Weather Investigations Guide Investigation 3, Parts 1-3, pp. 141-144, 148-150 FOSS 3E Trees and Weather Teacher Masters 23-24
GRADE 1			
1	**1-PS4-1 Waves and Their Applications in Technologies for Information Transfer**		
	1-PS4-1 Students who demonstrate understanding can: Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. (Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.) Assessment Boundary: N/A	**Wave Properties:** • Sound can make matter vibrate, and vibrating matter can make sound.	FOSS 3E Balance and Motion Investigations Guide, Investigation 4, Parts 1-3, pp. 170-174, 178-181, 186-188 FOSS 3E Balance and Motion Teacher Resources, Notebook Sheets 5-7 FOSS 3E Balance and Motion Science Resources Book, "Strings in Motion" pp. 30-35 Investigations Guide, p. 182
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.** **• Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Balance and Motion Investigations Guide, Investigation 4, Parts 1-3, pp. 170-174, 178-181, 186-188 FOSS 3E Balance and Motion Teacher Resources, Notebook Sheets 5-7

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Cause and Effect • Simple tests can be designed to gather evidence to support or refute student ideas about causes.		FOSS 3E Balance and Motion Investigations Guide, Investigation 4, Parts 1-3, pp. 170-174, 178-181, 186-188 FOSS 3E Balance and Motion Teacher Resources, Notebook Sheets 5-7
1	**1-PS4-2 Waves and Their Applications in Technologies for Information Transfer**		
	1-PS4-2 Students who demonstrate understanding can: Make observations to construct an evidence-based account that objects can be seen only when illuminated. (Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light. This can be explored with light tables, 3-way mirrors, overhead projectors and flashlights.) Assessment Boundary: N/A	**Electromagnetic Radiation:** • Objects can be seen if light is available to illuminate them or if they give off their own light.	
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing Explanations and designing solutions: FOSS 3E Balance and Motion Investigations Guide, Investigation 4, Parts 1-2, pp. 170-174, 178-181; Investigation 5, Part 1, pp. 202-206 FOSS 3E Balance and Motion Teacher Resources, Notebook Sheets 5-6 FOSS 3E Balance and Motion Science Resources Book, "Move It, but Don't Touch It," pp. 36-40 Investigations Guide, p. 207

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Cause and Effect • Simple tests can be designed to gather evidence to support or refute student ideas about causes.		FOSS 3E Balance and Motion Investigations Guide, Investigation 5, Part 1, pp. 202-206 FOSS 3E Balance and Motion Science Resources Book, "Move It, but Don't Touch It," pp. 36-40 Investigations Guide, p. 207
1	**1-PS4-3 Waves and Their Applications in Technologies for Information Transfer**		
	1-PS4-3 Students who demonstrate understanding can: Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. (Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).) Assessment Boundary: Assessment does not include the speed of light or assessment of descriptive words like transparent, translucent, opaque or reflective.	**Electromagnetic Radiation:** • Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. • Mirrors can be used to redirect a light beam. (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.)	
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.** **• Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Balance and Motion Investigations Guide, Investigation 4, Parts 1-3, pp. 170-174, 178-181, 186-188; Investigation 5, Part 1, 202-206 FOSS 3E Balance and Motion Teacher Resources, Notebook Sheets 5-7

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Cause and Effect • Simple tests can be designed to gather evidence to support or refute student ideas about causes.		Planning and carrying out investigations: FOSS 3E Balance and Motion Investigations Guide, Investigation 4, Parts 1-3, pp. 170-174, 178-181, 186-188 FOSS 3E Balance and Motion Teacher Resources, Notebook Sheets 5-7
1	**1-PS4-4 Waves and Their Applications in Technologies for Information Transfer**		
	1-PS4-4 Students who demonstrate understanding can: Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.* (Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drumbeats.) Assessment Boundary: Assessment does not include technological details for how communication devices work.	**Information Technologies and Instrumentation:** • People also use a variety of devices to communicate (send and receive information) over long distances. ** Connections to Engineering, Technology, and Application of Science*	FOSS 3E Balance and Motion Investigations Guide Investigation 4, Parts 1-2, pp. 170-174, 178-181 FOSS 3E Balance and Motion Teacher Resources, Notebook Sheets 5-6 FOSS 3E Balance and Motion Science Resources Book, "Strings in Motion," pp. 30-35 Investigations Guide, p. 182
		Influence of Engineering, Technology, and Science, on Society and the Natural World: • People depend on various technologies in their lives; human life would be very different without technology.	FOSS 3E Air and Weather Science Resources Book "Understanding the Weather," pp. 25-30 Investigations Guide, p. 166 FOSS 3E Balance and Motion Science Resources Book, "Tools and Machines," pp. 41-46 Investigations Guide, p. 213

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Use tools and materials provided to design a device that solves a specific problem.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations and designing solutions: FOSS 3E Air and Weather Investigations Guide, Investigation 1, Parts 2, 5, 66-69, 71, 91-93 Interdisciplinary Extensions "Construct a wind catcher," p. 174 FOSS 3E Air and Weather Teacher Resources, Notebook Sheets 2, 5
	Crosscutting Concepts • N/A		N/A
1	**1-LS1-1 From Molecules to Organisms: Structure and Processes**		
	1-LS1-1 Students who demonstrate understanding can: Use materials to design a solution to a human problem by mimicking how plants and/ or animals use their external parts to help them survive, grow, and meet their needs.* (Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes	**Structure and Function:** • All organisms have external parts. • Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. • Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.	FOSS 3E Plants and Animals Investigations Guide, Investigation 3, Part 2, pp. 147-154; Investigation 1, Part 3, pp. 75-80; Investigation 2, Parts 1-3 pp. 105-108, 112-116, 119-121 FOSS 3E Plants and Animals Teacher Resources, Notebook sheets 3-4, 6 FOSS 3E Plants and Animals Science Resources Book, "What do Plants Need?" pp. 3-9, "How Seeds Travel" pp. 19-26, "Plants and Animals Around the World" pp. 34-56 Investigations Guide 64, 90, 152-153

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	and ears.) Assessment Boundary: N/A	**Information Processing:** • Animals have body parts that capture and convey different kinds of information needed for growth and survival. • Animals respond to these inputs with behaviors that help them survive. • Plants also respond to some external inputs. ** Connections to Engineering, Technology, and Application of Science*	FOSS 3E Plants and Animals Science Resources Book, "Plants and Animals Around the World" pp. 34-56; "What do Plants Need?" pp. 3-9
		Influence of Engineering, Technology, and Science, on Society and the Natural World: • Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.	FOSS 3E Plants and Animals Investigations Guide Investigation 3, Interdisciplinary Extensions, Worm Bin, p. 171 FOSS 3E Air and Weather Investigations Guide, Investigation 1, Part 2 pp. 66-69 FOSS 3E Air and Weather Teachers Resources, Notebook Sheet 1
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Use tools and materials provided to design a device that solves a specific problem.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Air and Weather Investigations Guide, Investigation 1, Part 2 pp. 66-69, Investigation 3, Parts 3-5, pp. 157-159, 163-165, 170-172; Investigation 3, Interdisciplinary Extensions, Construct a wind structure, p. 174, Make Wind Chimes, p. 175 FOSS 3E Air and Weather Teacher Resources, Notebook Sheets 1, 9

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Structure and Function • The shape and stability of structures of natural and designed objects are related to their function(s).		FOSS 3E Air and Weather Investigations Guide, Investigation 1, Part 2 pp. 66-69, Investigation 3, Parts 3-5, pp. 157-159, 163-165, 170-172; Investigation 3, Interdisciplinary Extensions, Construct a wind structure, p. 174, Make Wind Chimes, p. 175 FOSS 3E Air and Weather Teacher Resources, Notebook Sheets 1, 9
1	**1-LS1-2 From Molecules to Organisms: Structure and Processes**		
	1-LS1-2 Students who demonstrate understanding can: Read text and use media to determine patterns in behavior of parents and offspring that help offspring survive. (Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring). Information may be obtained through observations, media, or text.) Assessment Boundary: N/A	**Growth and Development of Organisms:** • Adult plants and animals can have young. • In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.	FOSS 3E Plants and Animals Investigations Guide Investigation 3, Parts 1-3, pp. 105-108, 112-116, 119-121; Investigation 4 , Parts 1-2, pp. 185-188, 192-195, 199-201 FOSS 3E Plants and Animals Teacher Resources, Notebook Sheets 5-8 FOSS 3E Plants and Animals Science Resources Book, "Animals and Their Young," pp. 57-70 Investigations Guide, p. 202

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence **8. Obtaining, evaluating, and communicating information** **Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.** **• Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.**		Obtaining, evaluating, and communicating information: FOSS 3E Plants and Animals Investigations Guide, Investigation 3, Parts 1-3, pp. 105-0108, 112-116, 119-121; Investigation 4 , Parts 1-2, pp. 185-188, 192-195, 199-201 FOSS 3E Plants and Animals Teacher Resources, Notebook Sheets 5-8 FOSS 3E Plants and Animals Science Resources Book, "Plants and Animals Around the World" pp. 34-56, "Animals and Their Young" pp. 57-70 Investigations Guide, pp. 152-153, 202
	Crosscutting Concepts: Patterns • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.		FOSS 3E Plants and Animals Investigations Guide Investigation 4 , Part 1-2 pp. 185-188, 192-195 FOSS 3E Plants and Animals Teacher Resources, Notebook Sheets 7-8 FOSS 3E Plants and Animals Science Resources Book, "Plants and Animals Around the World" pp. 34-56, "Animals and Their Young" pp. 57-70 Investigations Guide pp. 152-153, 202
	1-LS3-1 Heredity: Inheritance and Variation of Traits		
	1-LS3-1 Students who demonstrate understanding can: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. (Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.)	**Inheritance of Traits:** • Young animals are very much, but not exactly like, their parents. • Plants also are very much, but not exactly, like their parents.	FOSS 3E Plants and Animals Investigations Guide, Investigation 4, Part 3, pp. 199-201; Interdisciplinary Extensions Video " All about Animal LIfe Cycles" FOSS 3E Plants and Animals Science Resources Book, "Animals and Their Young," pp. 57-70 p. 205-206 Investigations Guide, p. 202 FOSS 3E Plants and Animals Investigations Guide Investigation 1, Part 4, pp. 86-89

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.	**Variation of Traits:** • Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.	FOSS 3E Plants and Animals Science Resources Book, "Animals and Their Young," pp. 57-70 FOSS 3E Plants and Animals Investigations Guide, Investigation 1, Part 4, pp. 86-89; Interdisciplinary Extensions Video " All about Animal LIfe Cycles" p. 205-206
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations and designing Solutions: FOSS 3E Plants and Animals Investigations Guide, Investigation 3, Part 2, pp. 147-151 pp. 105-108 FOSS 3E Plants and Animals Teacher Resources, Notebook Sheets 4-5
	Crosscutting Concepts: Patterns • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.		FOSS 3E Plants and Animals Science Resources Book, "Animals and Their Young," pp. 57-70 Investigations Guide p. 202 FOSS 3E Plants and Animals Investigations Guide, Investigation 1, Part 4, pp. 86-89; Interdisciplinary Extensions Video " All about Animal LIfe Cycles" pp. 205-206
1	**1-ESS1-1 Earth's Place in the Universe**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	1-ESS1-1 Students who demonstrate understanding can: Use observations of the sun, moon, and stars to describe patterns that can be predicted. (Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.) Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.	**The Universe and its Stars:** • Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.	FOSS 3E Air and Weather Investigations Guide, Investigation 4, Parts 2-3, 191-195, 200-202 FOSS 3E Air and Weather Science Resources Book, "Changes in the Sky," pp. 31-42 Investigations Guide, p. 192
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations **4. Analyzing and interpreting data** **Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.** **• Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Analyzing and interpreting data: FOSS 3E Air and Weather Investigations Guide, Investigation 2, Parts 1-4, pp. 107-110, 114-117,120-121, 125; Investigation 4, Parts 2-3, pp. 191-195, 200-202 FOSS 3E Air and Weather Teacher Resources, Notebook Sheets 6-7
	Crosscutting Concepts: Patterns • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.		FOSS 3E Air and Weather Investigations Guide, Investigation 2, Parts 1-4, pp. 107-110, 114-117,120-121, 125; Investigation 4, Parts 2-3, pp. 191-195, 200-202 FOSS 3E Air and Weather Teacher Resources, Notebook Sheets 6-7
1	**1-ESS1-2 Earth's Place in the Universe**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	1-ESS1-2 Students who demonstrate understanding can: Make observations at different times of year to relate the amount of daylight and relative temperature to the time of year. (Clarification Statement: Emphasis is on relative comparisons of the amount of daylight and temperature in the winter to the amount in the spring, fall or summer.) Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.	**Earth and the Solar System:** • Seasonal patterns of sunrise and sunset can be observed, described, and predicted.	FOSS 3E Air and Weather Investigations Guide, Investigation 4, Part 3, pp. 200-203 FOSS 3E Air and Weather Science Resources Book "Seasons," pp. 43-49 Investigations Guide, p. 203
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, which provide data to support explanations or design solutions.** **• Make observations (firsthand or from media) to collect data that can be used to make comparisons.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Air and Weather Investigations Guide, Investigation 4, Part 3, pp. 200-203 FOSS 3E Air and Weather Science Resources Book "Seasons," pp. 43-49 Investigations Guide p. 203
	Crosscutting Concepts: Patterns • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.		Analyzing and interpreting data: FOSS 3E Air and Weather Investigations Guide, Investigation 4, Parts 1-3, 186-187,191-195, 200-202 FOSS 3E Air and Weather Teacher Resources, Teacher Masters 22-23
1	**1-ESS3-1 Earth and Human Activity**		
	1-ESS3-1 Students who demonstrate understanding can: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*	**Human Impacts on Earth Systems:** • Things that people do to live comfortably can affect the world around them. But, they can make choices that reduce their impacts on the land, water, air, and other living things.	FOSS 3E Air and Weather Science Resources Book "Resources," pp. 50-59 Investigations Guide, p. 204

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	(Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.) Assessment Boundary: N/A	**Developing Possible Solutions:** • Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.	FOSS 3E Air and Weather Investigations Guide, Investigation 3, Parts 2-4, pp. 152-153, 157-159, 163-165 FOSS 3E Air and Weather Teacher Resources, Notebook Sheets 8-9
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence **8. Obtaining, evaluating, and communicating information** **Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.** **• Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas.**		Obtaining, evaluating and communicatimg information: FOSS 3E Air and Weather Investigations Guide, Investigation 3, Parts 2-4, pp. 152-153, 157-159, 163-165 FOSS 3E Air and Weather Teacher Resources, Notebook Sheets 8-9
	Crosscutting Concepts: Cause and Effect • Events have causes that generate observable patterns.		FOSS 3E Air and Weather Investigations Guide, Investigation 2, Parts 1-4, pp. 107-110, 114-117, 120-121, 128-129, 131 FOSS 3E Air and Weather Science Resources Book "Clouds," pp. 8-9, "What is the Weather Today" pp. 10-18 Investigations Guide pp. 122-123
GRADE 2			
2	**2-PS1-1 Matter and Its Interactions**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	2-PS1-1 Students who demonstrate understanding can: Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. (Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share. Investigations could include ice and snow melting or frozen objects thawing.) Assessment Boundary: N/A	**Structure and Properties of Matter:** • Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. • Matter can be described and classified by its observable properties. • Different properties are suited to different purposes.	FOSS 3E Solids and Liquids Investigations Guide, Investigation 1, Parts 1-5, pp. 54-61, 64-69, 72-74, 77-79, 82-86; Investigation 2, Parts 1-4 , pp. 105- 107, 11-115, 119-123, 126-129 FOSS 3E Solids and Liquids Teacher Resources, Notebook Sheets, 1-10
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, which provide data to support explanations or design solutions.** **• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Solids and Liquids Investigations Guide, Investigation 4, Parts 1-5, pp. 189-195, 199-201, 205-207, 211-214, 219-220 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 15-19
	Crosscutting Concepts: Cause and Effect • Events have causes that generate observable patterns.		FOSS 3E Solids and Liquids Investigations Guide, Investigation 4, Parts 1-5, pp. 189-195, 199-201, 205-207, 211-214, 219-220 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 15-19
2	**2-PS1-2 Matter and Its Interactions**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	2-PS1-2 Students who demonstrate understanding can: Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* (Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency (e.g. paper towels could be utilized to measure absorbency and strength).) Assessment Boundary: Assessment of quantitative measurements is limited to length.	**Structure and Properties of Matter:** • Different properties are suited to different purposes. ** Connections to Engineering, Technology, and Application of Science*	FOSS 3E Solids and Liquids Investigations Guide, Investigation 1, Part 4, pp. 77-79; Investigation 4, Part 3 pp. 205-207 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 4, 18
		Influence of Engineering, Technology, and Science, on Society and the Natural World: • Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.	FOSS 3E Solids and Liquids Investigations Guide, Investigation 1, Part 4, pp. 77-79; Investigation 4, Part 3 pp. 205-207 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 4, 18
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations **4. Analyzing and interpreting data** **Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.** **• Analyze data from tests of an object or tool to determine if it works as intended.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Analyzing and interpreting data: FOSS 3E Solids and Liquids Investigations Guide Investigation 3, Part 4, pp. 162-164, 165; Investigation 4, Parts 2-3, pp. 199-201, 205-207 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 12-13, 17-18
	Crosscutting Concepts: Cause and Effect • Simple tests can be designed to gather evidence to support or refute student ideas about causes.		FOSS 3E Solids and Liquids Investigations Guide, Investigation 4, Parts 2, 4, pp. 199-201, 211-214 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 17, 19
2	**2-PS1-3 Matter and Its Interactions**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	2-PS1-3 Students who demonstrate understanding can: Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. (Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects. Provide students with the same number of objects to create a different object.) Assessment Boundary: Do not introduce terminology associated with the Law of Conservation of Matter just concepts. Chemical change is outside of this performance expectation.	**Structure and Properties of Matter:** • Different properties are suited to different purposes. • A great variety of objects can be built up from a small set of pieces.	FOSS 3E Solids and Liquids Science Resources Book Everything Matters," pp. 3-9, "Solids Objects and Materials" p. 18; "Comparing Solids and Liquids," p. 44 Investigations Guide, pp. 60, 68, 172 FOSS 3E Solids and Liquids Investigations Guide, Investigation 1, Part 4, pp. 77-79; Interdisciplinary Extensions Build a Paper Bridge, p. 89
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations (for science) and designing Solutions (for engineering): FOSS 3E Solids and Liquids Investigations Guide, Investigation 1, Part 4, pp. 77-79; Investigation 1, Part 5, pp. 82-82; Interdisciplinary Extensions Build a Paper Bridge, p. 89 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 5

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Energy and Matter • Objects may break into smaller pieces and be put together into larger pieces, or change shapes.		FOSS 3E Solids and Liquids Science Resources Book "Comparing Solids and Liquids," p. 44 Investigations Guide, p. 172 FOSS 3E Solids and Liquids Investigations Guide, Investigation 1, Part 4, pp. 77-79; Interdisciplinary Extensions Build a Paper Bridge, p. 89
2	**2-PS1-4 Matter and Its Interactions**		
	2-PS1-4 Students who demonstrate understanding can: Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. (Clarification Statement: Demonstrations of reversible changes could include materials such as water, butter or crayons at different temperatures. Demonstrations of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.) Assessment Boundary: N/A	**Chemical Reactions:** • Heating or cooling a substance may cause changes that can be observed. • Sometimes these changes are reversible, and sometimes they are not.	FOSS 3E Solids and Liquids Investigations Guide, Investigation 4, Part 4, pp. 211-214 FOSS 3E Solids and Liquids Teacher Resources, Notebook Master 19 FOSS 3E Solids and Liquids Science Resources Book, "Heating and Cooling, pp. 53-58 Investigations Guide p. 215
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).** **• Construct an argument with evidence to support a claim.** 8. Obtaining, evaluating, and communicating information		Engaging in Argument from evidence: FOSS 3E Solids and Liquids, Investigations Guide, Investigation 1, Part 3, pp. 72-72; Investigation 4, Part 3 pp. 205-207 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 3, 18

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Cause and Effect • Events have causes that generate observable patterns.		FOSS 3E Solids and Liquids Investigations Guide, Investigation 4, Part 1-2, 4-5, pp. 289-195, 199-201, 211-214, 219-220 FOSS 3E Solids and Liquids Teacher Resources, Notebook Masters 15-17, 19 FOSS Solids and Liquids Science Resources Book, "Heating and Cooling," pp. 53-58 Investigations Guide, p. 215
2	**2-LS2-1 Ecosystems: Interactions, Energy, and Dynamics**		
	2-LS2-1 Students who demonstrate understanding can: Plan and conduct an investigation to determine if plants need sunlight and water to grow. (Clarification Statement: Investigations should be limited to testing one variable at a time.) Assessment Boundary: Assessment is limited to testing one variable at a time.	**Interdependent Relationships in Ecosystems:** • Plants depend on water and light to grow.	FOSS 3E Insects and Plants Investigations Guide, Investigation 2, Part 1-2, 4, pp. 102-106 , 110-115, 126-129 FOSS 3E Insects and Plants Teacher Resources, Notebook Master 3
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, which provide data to support explanations or design solutions.** **• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Insects and Plants Investgation Guide, Investigation 2, Part 1-2, 3-4, pp. 102-106 , 110-115, 118-120, 126-129; Interdisciplinary Extensions Plant your brassica harvest, p. 130 FOSS 3E Insects and Plants Teacher Resources, Notebook Masters 3-6

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Cause and Effect • Events have causes that generate observable patterns.		Planning and carrying out investigations: FOSS 3E Insects and Plants Investigations Guide, Investigation 2, Part 1-2, 4, pp. 119-115, 102-106, 126-129; Interdisciplinary Extensions Plant your brassica harvest, p. 130
2	**2-LS2-2 Ecosystems: Interactions, Energy, and Dynamics**		
	2-LS2-2 Students who demonstrate understanding can: Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.* (Clarification Statement: Examples include: placing socks on the outside of students' shoes and walking outside allows socks to gather seeds; plant sock(s) to see what grows; using an eyedropper to move liquids from one container to another emulating hummingbirds or bees pollinating plants.) Assessment Boundary: N/A	**Interdependent Relationships in Ecosystems:** • Plants depend on animals for pollination or to move their seeds around.	FOSS 3E Insects and Plants Investigations Guide, Investigation 2, Part 3, pp. 118-122; Investigation 5, Part 4, pp. 250-252; Video "What is Pollination" p. 250 FOSS 3E Insects and Plants Teacher Resources, Notebook Masters 4-6 FOSS 3E Insects and Plants Science Resources Book, "So Many Kinds, So Many Places," pp. 27-31 Investigations Guide, p. 155
		Developing Possible Solutions: **(secondary to 2-LS2-2)** • Designs can be conveyed through sketches, drawings, or physical models. • These representations are useful in communicating ideas for a problem's solutions to other people.	FOSS 3E Insects and Plants Investigations Guide, Investigation 5, Part 4, pp. 250-252

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models** **Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions.** **• Develop a simple model based on evidence to represent a proposed object or tool.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing and Using Models: FOSS 3E Insects and Plants Investgations Guide, Investigation 5, Part 4, pp. 250-253
	Crosscutting Concepts: Structure and Function • The shape and stability of structures of natural and designed objects are related to their function(s).		FOSS 3E Insects and Plants Investgations Guide, Investigation 5, Part 4, pp. 250-253
2	**2-LS4-1 Biological Unity and Diversity**		
	2-LS4-1 Students who demonstrate understanding can: Make observations of plants and animals to compare the diversity of life in different habitats. (Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats. Students could explore different habitats around their school, aquariums, neighborhoods.) Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.	**Biodiversity and Humans:** • There are many different kinds of living things in any area, and they exist in different places on land and in water.	FOSS 3E Insects and Plants Investgations Guide, Investigation 3, Parts 2, 4, pp. 151-154, 168-172 FOSS 3E Insects and Plants Science Resources Book, Glossary p. 79, "Animals and Plants in Their Habitats," pp. 3-17 Investigations Guide, p. 76

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, which provide data to support explanations or design solutions.** **• Make observations (firsthand or from media) to collect data which can be used to make comparisons.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Insects and Plants Investgation Guide, Investigation 3, Parts 2, 4, pp. 151-154 FOSS 3E Insects and Plants Science Resources Book, "Animals and Plants in Their Habitats," pp. 3-17 Investigations Guide, p. 76
	Crosscutting Concepts: N/A • N/A		N/A
2	**2-ESS1-1 Earth's Place in the Universe**		
	2-ESS1-1 Students who demonstrate understanding can: Use information from several sources to provide evidence that Earth events can occur quickly or slowly. (Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.) Assessment Boundary: Assessment does not include quantitative measurements of timescales.	**The History of Planet Earth:** • Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.	FOSS 3E Pebbles, Sand, and Silt Investigations Guide, Investigation 1, Part 1, pp. 53- 56; Investigation 2, Part 2, pp. 104-107 FOSS 3E Pebbles, Sand, and Silt Teacher Resources, Notebook Master 1 FOSS 3E Pebbles, Sand and Silt Science Resources Book, "Exploring Rocks" pp. 3-10; "The Story of Sand," pp. 14-20 Investigations Guide, pp. 74, 106

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Make observations from several sources to construct an evidencebased account for natural phenomena.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Pebbles, Sand, and Silt Investigations Guide, Investigation 1, Part 1, pp. 53- 56; Investigation 2, Part 2, pp. 104-107 FOSS 3E Pebbles, Sand, and Silt Teacher Resources, Notebook Master 1 FOSS 3E Pebbles, Sand and Silt Science Resources Book, "Exploring Rocks" pp. 3-10; "The Story of Sand," pp. 14-20 Investigations Guide, pp. 74, 106
	Crosscutting Concepts: Stability and Change • Things may change slowly or rapidly.		FOSS 3E Pebbles, Sand, and Silt Science Resources Book, "Exploring Rocks," pp. 3-10; "The Story of Sand," pp. 14-20 Investigations Guide pp 74, 106
2	**2-ESS2-1 Earth's Systems**		
	2-ESS2-1 Students who demonstrate understanding can: Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*	**Earth Materials and Systems:** • Wind and water can change the shape of the land.	FOSS 3E Pebbles, Sand, and Silt Science Resources Book, "Exploring Rocks," pp. 3-10; "The Story of Sand," pp. 14-20; "Rocks Move," pp. 22-23 Investigations Guide, pp 74, 106, 121
	(Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land. Students could explore these ideas with sand tables or soil and water in large containers.)	**Optimizing the Design Solution:** (secondary to 2-ESS2-1) • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. ** Connections to Engineering, Technology, and Application of Science*	FOSS 3E Solids and Liquids Investigation 1, Part 4-5 pp. 77-79, 82-86 ; Interdisciplinary Extensions "Provide for ongoing construction" p. 89 FOSS 3E Pebbles, Sand, and Silt Investigations Guide Investigation 4, Interdisciplinary Extensions "Home/School Connection" p. 200
	Assessment Boundary: N/A	**Influence of Engineering, Technology, and Science on Society and the Natural World:** • Developing and using technology has impacts on the natural world.	FOSS 3E Pebbles, Sand, and Silt Science Resources Book, "Making Things with Rocks," pp. 24-29 Investigations Guide, p. 142 FOSS 3E Solids and Liquids Science Resources Book, "Towers," pp. 19-22 Investigations Guide, p. 77

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.** **• Compare multiple solutions to a problem.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations and designing solutions: FOSS 3E Pebbles, Sand, and Silt Investigations Guide Investigation 4, Interdisciplinary Extensions "Home/School Connection" p. 200 FOSS 3E Solids and Liquids Investigations Guide, Investigation 1, Part 4 pp. 77-79; Interdisciplinary Extensions Build a Paper Bridge, p. 89
	Crosscutting Concepts: Stability and Change • Things may change slowly or rapidly.		FOSS 3E Pebbles, Sand, and Silt Science Resources Book, "The Story of Sand," pp. 14-20; "Rocks Move," pp. 22-23 Investigations Guide, pp. 74, 106, 121
2	**2-ESS2-2 Earth's Systems**		
	2-ESS2-2 Students who demonstrate understanding can: Develop a model to represent the shapes and kind of land and bodies of water in an area. (Clarification Statement: See Disciplinary Core Ideas.) Assessment Boundary: Assessment does not include quantitative scaling in models.	**Plate Tectonics and Large-Scale System Interactions:** • Maps show where things are located. • One can map the shapes and kinds of land and water in any area.	

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models** **Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions.** **• Develop a model to represent patterns in the natural world.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Pebbles, Sand, and Silt Investigations Guide, Investigation 4, Part 1, pp. 176-180
	Crosscutting Concepts: Patterns • Patterns in the natural world can be observed.		FOSS 3E Pebbles, Sand, and Silt Investigations Guide, Investigation 1, Parts 1, 3, pp. 53-56, 64-67 FOSS 3E Pebbles, Sand, and Silt Teacher Resources, Notebook Masters 1, 3 FOSS 3E Pebbles, Sand, and Silt Science Resources Book, "Exploring Rocks," pp. 3-10; "The Story of Sand," pp. 14-20; "Rocks Move," pp. 22-23 Investigations Guide, pp. 74, 106, 121
2	**2-ESS2-3 Earth's Systems**		
	2-ESS2-3 Students who demonstrate understanding can: Obtain information to identify where water is found on Earth and that it can be solid or liquid. (Clarification Statement: See Disciplinary Core Ideas.) Assessment Boundary: N/A	**The Roles of Water in Earth's Surface Processes:** • Water is found in the ocean, rivers, lakes, and ponds. • Water exists as solid ice and liquid form.	FOSS 3E Pebbles, Sand, and Silt, Investigations Guide, Investigation 4, Part 3, pp. 193-196 FOSS 3E Pebbles, Sand, and Silt Teacher Resources, Notebook Masters 17-18 FOSS 3E Pebbles, Sand, and Silt, Science Resources Book, "States of Water" pp. 52-58 Investigations Guide, p. 196

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Science & Engineering Practices 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence **8. Obtaining, evaluating, and communicating information** **Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.** **• Obtain information using various texts, text features (e.g., headings, tables, contents, glossaries, electronic menus, icons, and other media that will be useful in answering scientific questions.**		Obtaining, evaluating, and communicating information: FOSS 3E Pebbles, Sand, and Silt, Science Resources Book, "States of Water," pp. 52-58 Investigations Guide, p. 196 FOSS 3E Pebbles, Sand and Silt Science Resources Book, "Exploring Rocks" pp. 3-10; "The Story of Sand" pp. 14-20; "Rocks Move" pp. 22-23 Investigations Guide, pp. 74, 106, 121
	Crosscutting Concepts: Patterns • Patterns in the natural world can be observed.		FOSS 3E Pebbles, Sand, and Silt Investigations Guide, Investigation 1, Parts 1, 3, pp. 53-56, 64-67 FOSS 3E Pebbles, Sand, and Silt Teacher Resources, Notebook Masters 1, 3 FOSS 3E Pebbles, Sand, and Silt Science Resources Book, "Exploring Rocks" pp. 3-10; "The Story of Sand" pp. 14-20; "Rocks Move" pp. 22-23 Investigations Guide, pp 74, 106, 121
GRADE 3			
3	**3-PS2-1 Motion and Stability: Forces and Interactions**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-PS2-1: Students who demonstrate understanding can: Plan and conduct investigations on the effects of balanced and unbalanced forces on the motion of an object. (Connected to 3-PS2-2) (Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from opposite sides will not produce any motion at all.) Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.	**Forces and Motion:** • Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.)	FOSS NG Motion and Matter Investigations Guide, Investigation 1, Part 3, pp. 107-114 FOSS NG Motion and Matter Science Resources book, "Change of Motion," pp. 10-15 FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 78-79
		Types of Interactions: • Objects in contact exert forces on each other.	FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-2, pp. 88-95, 99-103 FOSS NG Motion and Matter Teacher Resources, Science Notebook Sheets 1-2, 4-5 FOSS NG Motion and Matter Science Resources book, "Magnetism and Gravity," pp. 3-7 and "What Scientists Do," pp. 8-9 FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 78-79

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** **• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 79-80 Planning and carrying out investigations: FOSS NG Motion and Matter Investigations Guide, Investigation 1, Part 1, pp. 88-90, 99-100 Other practices: FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-3, pp. 92, 94, 102, 111, 113
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified.		FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-3, pp. 80, 91, 95, 103, 108
3	**3-PS2-2 Motion and Stability: Forces and Interactions**		
	3-PS2-2: Students who demonstrate understanding can: Make observations and/or measurements of the object's motion to provide evidence that a pattern can be used to predict future motion. (Connected to 3-PS2-1) (Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.) Assessment Boundary: Assessment does not include technical terms such as period and frequency.	**Forces and Motion:** • The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)	FOSS Next Generation Motion and Matter Investigations Guide, Investigation 2, Parts 1-2, pp. 129-133, 136-141 FOSS Next Generation Motion and Matter Teacher Resources, Science Notebook Sheets, 6-7 FOSS Next Generation Motion and Matter Science Resources book, "Patterns of Motion," pp. 16-17

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** **• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 79-80 Planning and carrying out investigations: FOSS NG Motion and Matter Investigations Guide, Investigation 2, Pars 2-3 , pp. 137, 145-149 Other practices: FOSS NG Motion and Matter Investigations Guide, Investigation 2, Parts 1-4, pp. 130, 138, 141, 145, 148-149, 156, 160
	Crosscutting Concepts: Patterns • Patterns of change can be used to make predictions		FOSS NG Motion and Matter Investigations Guide, Investigation 2, Parts 2-3, pp. 124, 132-133, 140, 145
3	**3-PS2-3 Motion and Stability: Forces and Interactions**		
	3-PS2-3: Students who demonstrate understanding can: Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. (Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.) Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.	**Types of Interactions:** • Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.	FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-3, pp. 88-95, 99-103, 107-114 FOSS NG Motion and Matter INvestigations Guide, Investigation 3, Part 4, pp. 200-204 FOSS NG Motion and Matter Teacher Resources, Science Notebook Sheets 1-2, 4-5 FOSS NG Motion and Matter Science Resources book •"Magnetism and Gravity," pp. 3-7 •"What Scientists Do," pp. 8-9 • "Change of Motion," pp. 10-15 • "Magnets at Work," pp. 42-45 FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 78-79; Investigation 3, pp. 171-172

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	1. Asking questions (for science) and defining problems (for engineering) Asking questionss and defining problems in grades 3-5 builds on grades K-2 experiences and progresses to specifying qualitative relationships. **• Ask questions that can be investigated based on patterns such as cause and effect relationships.** 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 79-80; Investigation 3, pp. 171-172 Asking questions: FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-2, pp. 88, 99, 102 Investigation 3, Part 4, pp. 201-203 Other practices: FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-3, pp. 90, 92, 94, 99-100, 102, 111, 113 Investigation 3, Part 4, pp. 201-203
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified.		FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-3, pp. 80, 91, 95, 103, 108.
3	**3-PS2-4 Motion and Stability: Forces and Interactions**		
	3-PS2-4: Students who demonstrate understanding can: Define a simple design problem that can be solved by applying scientific ideas about magnets.* (Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.) Assessment Boundary: N/A	**Types of Interactions:** • Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.	FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-3, pp. 88-95, 99-103, 107-114 FOSS NG Motion and Matter Investigations Guide, Investigation 3, Part 4, pp. 200-204 FOSS NG Motion and Matter Teacher Resources, Science Notebook Sheets 1-2, 4-5 FOSS NG Motion and Matter Science Resources book •"Magnetism and Gravity," pp. 3-7 •"What Scientists Do," pp. 8-9 • "Change of Motion," pp. 10-15 • "Magnets at Work," pp. 42-45 FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 78-79; Investigation 3, pp. 171-172

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
		Interdependence of Science, Engineering, and Technology: • Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.	FOSS NG Motion and Matter Investigations Guide, Investigation 3, Parts 1-4, pp. 176-180, 184-189, 193-197, 200-204 FOSS NG Motion and Matter Science Resources book • "What Engineers Do," pp. 22-31 • "Science Practices," p. 32 •"Engineering Practices," p. 33 • "Soap Box Derby," pp. 34-37 • "How Engineers and Scientists Work Together," pp. 40-41 • "Magnets at Work," pp. 42-45 FOSS NG Motion and Matter Investigations Guide, Investigation 3, pp. 171-172
	1. Asking questions (for science) and defining problems (for engineering) Asking questionss and defining problems in grades 3-5 builds on grades K-2 experiences and progresses to specifying qualitative relationships. **• Ask questions that can be investigated based on patterns such as cause and effect relationships.** 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS NG Motion and Matter Investigations Guide, Investigation 1, pp. 79-80; Investigation 3, pp. 171-172 Asking questions: FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-2, pp. 88, 99, 102 Investigation 3, Parts 3-4, pp. 193-194, 201-203 Other practices: FOSS NG Motion and Matter Investigations Guide, Investigation 1, Parts 1-3, pp. 90, 92, 94, 99-100, 102, 111, 113 Investigation 3, Parts 1-4, pp. 176, 178-179, 187, 194, 201-203
	Crosscutting Concepts: N/A		N/A
3	**3-LS1-1 From Molecules to Organisms: Structure and Processes**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS1-1: Students who demonstrate understanding can: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. (Clarification Statement: Changes different organisms go through during their life form a pattern.) Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction or microscopic organisms.	**Growth and Development of Organisms:** • Reproduction is essential to the continued existence of every kind of organism. • Plants and animals have unique and diverse life cycles.	FOSS NG Structures of Life Investigations Guide, Investigations Guide, pp. 38-47, 82-84, 141-142 FOSS NG Structures of Life Investigations Guide, Investigation 1, Parts 1-4, pp. 93-99, 104-111, 114-119, 124-130; Investigation 2, Parts 1-3, pp. 147-152, 156-163, 167-172 FOSS NG Structures of Life Teacher Resources, Scinece Notebooks sheets, 1-9 FOSS NG Structures of Life Science Resources book •"The Reason for Fruit," pp. 3-7 • "The Most Important Seed," pp. 8-11 • "Barbara McClintock," pp. 12-15 •"Nature Journal--How Seeds Travel," pp. 16-21 • "Germination," pp. 22-25 • "Life Cycles," pp. 26-33
	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Develop models to describe phenomena.** 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing models: FOSS NG Structures of Life Investigations Guide, Investigation 1, Part 4, p. 127 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 1, Parts 1-4, pp. 94, 98, 105, 109, 114, 116-119, 126, 128; Investigation 2, pp. 148-159
	Crosscutting Concepts: Patterns • Patterns of change can be used to make predictions		FOSS NG Structures of Life Investigations Guide, Investigation 1, Parts 1-2, pp. 94, 111; Investigation 2,
3	**3-LS2-1 Ecosystems: Interactions, Energy, and Dynamics**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS2-1: Students who demonstrate understanding can: Construct an argument that some animals form groups that help members survive. (Clarification Statement: Arguments could include examples of group behavior such as division of labor in a bee colony, flocks of birds staying together to confuse or intimidate predators, or wolves hunting in packs to more efficiently catch and kill prey.) Assessment Boundary: N/A	**Social Interactions and Group Behavior:** • Being part of a group helps animals obtain food, defend themselves, and cope with changes. • Groups may serve different functions and vary dramatically in size.	FOSS NG Structures of Life Investigations Guide, pp, 190-192; Investigation 3, Part 1, pp. 232-238, 260 FOSS NG Structures of Life Teacher Resources, Science Notebook sheet 21 FOSS NG Structures of Life Science Resources book, "Life on Earth," pp. 50-63
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** **• Construct an argument with evidence, data, and/or a model.** 8. Obtaining, evaluating, and communicating information		Engaging in argument: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 3, pp. 235, 238 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 3, pp. 231-234, 237
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified.		FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 3, p. 232
3	**3-LS3-1 Heredity: Inheritance and Variation of Traits**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS3-1: Students who demonstrate understanding can: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. (Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.) Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.	**Inheritance of Traits:** • Many characteristics of organisms are inherited from their parents. **Variation of Traits:** • Different organisms vary in how they look and function because they have different inherited information.	FOSS NG Structures of Life Investigations Guide, pp. 190-192; Investigation 3, Part 2, pp. 212-228 FOSS NG Structures of Life Teacher Resources, Science Notebook sheets, 14-20 FOSS NG Structures of Life Science Resources book • "Adaptations," pp. 42-49 • "Barbara McClintock," pp. 12-15
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems **4. Analyzing and interpreting data Analyzing data in 3-5 builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** **• Analyze and interpret data to make sense of phenomena using logical reasoning.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Analyzing/interpreting data: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 2, p. 225 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 2, pp. 218, 220, 223, 225-226, 228
	Crosscutting Concepts: Patterns • Patterns of change can be used to make predictions		FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 3, p. 234
3	**3-LS3-2 Heredity: Inheritance and Variation of Traits**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS3-2: Students who demonstrate understanding can: Use evidence to support the explanation that traits can be influenced by the environment. (Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; a pet dog that is given too much food and little exercise may become overweight; and animals who teach their offspring skills like hunting.) Assessment Boundary: N/A	**Inheritance of Traits:** • Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. **Variation of Traits:** • The environment also affects the traits that an organism develops.	FOSS NG Structures of Life Investigations Guide, pp. 190-192; Investigation 3, Part 4, pp. 242-249; Investigation 3, Part 5, pp. 253-260 FOSS NG Structures of Life Teacher Resources, Science Notebook sheets, 22-23 FOSS NG Structures of Life Science Resources book • "Inside a Snail's Shell," pp. 64-65 • "A Change in the Environment," pp. 66-69 • "Food Chains," pp. 70-73
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering) Constructing explanations in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** **• Use evidence (e.g., observations, patterns) to support an explanation.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations: FOSS NG Structures of Life Investigations Guide, Investigation 3, Parts 4-5, pp. 245, 256 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 3, Parts 4-5, pp. 244, 248-249, 253, 255
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified.		FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 4, pp. 245, 248-249
3	**3-LS4-1 Biological Unity and Diversity**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS4-1: Students who demonstrate understanding can: Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. (Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.) Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.	**Evidence of Common Ancestry and Diversity:** • Some kinds of plants and animals that once lived on Earth are no longer found anywhere. • Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.	FOSS NG Structures of Life Investigations Guide, pp. 278-280; Investigation 4, Part 2, pp. 296-302 FOSS NG Structures of Life Teacher Resources, Science Notebook sheets, 27-28 FOSS NG Structures of Life Science Resources book • "Barn Owls," pp. 78-79 • "Fossils," pp. 81-88 • "Skeletons on the Outside," pp. 89-90 • "Crayfish, Snails, and Humans," pp. 91-92
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems **4. Analyzing and interpreting data Analyzing data in 3-5 builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** **• Analyze and interpret data to make sense of phenomena using logical reasoning.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Analyzing/interpreting data: FOSS NG Structures of Life Investigations Guide, Investigation 4, Part 2, p. 297 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 4, Part 2, pp. 297, 299, 301-302
	Crosscutting Concepts: Scale, Proportion, and Quantity • Observable phenomena exist from very short to very long time periods.		FOSS NG Strucutures of Life Investigations Guide, Investigation 4, Part 2, pp. 298, 300
3	**3-LS4-2 Biological Unity and Diversity**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS4-2: Students who demonstrate understanding can: Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and reproducing. (Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.) Assessment Boundary: N/A	**Natural Selection:** • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.	FOSS NG Structures of Life Investigations Guide, pp. 190-192; Investigation 3, Part 2, pp. 212-228, Part 4, pp. 242-249 FOSS NG Structures of Life Teacher Resources, Science Notebook sheets, 14-20, 22-23 FOSS NG Structures of Life Science Resources book • "Adaptations," pp. 42-49 • "Barbara McClintock," pp. 12-15 • "Inside a Snail's Shell," pp. 64-65 • "A Change in the Environment," pp. 66-69
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering) Constructing explanations in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** **• Use evidence (e.g., observations, patterns) to support an explanation.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 2, pp. 220, 228, Part 4, p. 245 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 2, pp. 218, 223, 225-226, Part 4, pp. 244, 248-249
	Crosscutting Concepts: Scale, Proportion, and Quantity • Observable phenomena exist from very short to very long time periods.		FOSS NG Strucutures of Life Investigations Guide, Investigation 4, Part 2, pp. 298, 300
3	**3-LS4-3 Biological Unity and Diversity**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS4-3: Students who demonstrate understanding can: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other. Assessment Boundary: N/A	**Adaptation:** • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	FOSS NG Structures of Life Investigations Guide, pp. 190-192; Investigation 3, Part 2, pp. 212-228, Part 4, pp. 242-249 FOSS NG Structures of Life Teacher Resources, Science Notebook sheets, 14-20, 22-23 FOSS NG Structures of Life Science Resources book • "Adaptations," pp. 42-49 • "Barbara McClintock," pp. 12-15 • "Inside a Snail's Shell," pp. 64-65 • "A Change in the Environment," pp. 66-69
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** **• Construct an argument with evidence, data, and/or a model.** 8. Obtaining, evaluating, and communicating information		Engaging in argument: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 3, pp. 235, 238 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 3, Parts 2-4, pp. 218, 220, 223, 225-226, 228, 231-234, 237, 244-245, 248
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified.		FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 4, pp. 245, 248-249
3	**3-LS4-4 Biological Unity and Diversity**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-LS4-4: Students who demonstrate understanding can: Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* (Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.) Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.	**Ecosystem Dynamics, Functioning, and Resilience:** • When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4) **Biodiversity and Humans:** • Populations live in a variety of habitats, and change in those habitats affects the organisms living there.	FOSS NG Structures of Life Investigations Guide, pp. 190-192; Investigation 3, Part 4, pp. 242-249; Investigation 3, Part 5, pp. 253-260 FOSS NG Structures of Life Teacher Resources, Science Notebook sheets, 22-23 FOSS NG Structures of Life Science Resources book • "Inside a Snail's Shell," pp. 64-65 • "A Change in the Environment," pp. 66-69 • "Food Chains," pp. 70-73
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** **• Construct an argument with evidence, data, and/or a model.** 8. Obtaining, evaluating, and communicating information		Engaging in argument: FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 4, p. 249 Other practices: FOSS NG Structures of Life Investigations Guide, Investigation 3, Parts 4-5, pp. 244-245, 248, 255-256
	Crosscutting Concepts: Systems and System Models • A system can be described in terms of its components and their interactions.		FOSS NG Structures of Life Investigations Guide, Investigation 3, Part 5, pp. 255-257
3	**3-ESS2-1 Earth's Systems**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-ESS2-1: Students who demonstrate understanding can: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. (Clarification Statement: Examples of data at this grade level could include average temperature, precipitation, and wind direction.) Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.	**Weather and Climate:** • Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.	FOSS NG Water and Climate Investigations Guide, Investigation 3, Part 1, pp. 202-209 Investigation 4, Part 1, pp. 257-261 FOSS NG Water and Climate Teacher Resources, Science Notebook Sheets, 11-13, 18 FOSS NG Water and Climate Science Resources book, "Studying Weather," pp. 30-36 FOSS NG Water and Climate Investigations Guide, 38-47, 194-195, 251-252
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems **4. Analyzing and interpreting data Analyzing data in 3-5 builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** **• Analyze and interpret data to make sense of phenomena using logical reasoning.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS NG Water and Climate Investigations Guide, pp. 38-47, 195, 251 Analyzing/interpreting data: FOSS NG Water and Climate Investigations Guide, Investigation 3, Part 1, pp. 206-207 Investigation 4, Part 1, pp. 258-259 Other practices: FOSS NG Water and Climate Investigations Guide, Investigation 3, Part 1, pp. 204, 206, 208 Investigation 4, Part 1, pp. 259, 261
	Crosscutting Concepts: Patterns • Patterns of change can be used to make predictions		FOSS NG Water and Climate Investigations Guide, Investigation 3, Part 1, pp. 195, 206, 209 Investigation 4, Part 1, pp. 260-261
3	**3-ESS2-2 Earth's Systems**		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	3-ESS2-2: Students who demonstrate understanding can: Obtain and combine information to describe climates in different regions of the world. (Clarification Statement: N/A) Assessment Boundary: N/A	**Weather and Climate:** • Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	FOSS NG Water and Climate Investigations Guide, pp. 251-252 FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 2, pp. 264-269 FOSS NG Water and Climate Science Resources book, "Climate Regions," pp. 48-54 FOSS NG Water and Climate Investigations Guide, pp. 38-47
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence **8. Obtaining, evaluating, and communicating information Obtaining, evaluating, and communicating information in 3-5 builds on K-2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.** **• Obtain and combine information from books and other reliable media to explain phenomena.**		FOSS NG Water and Climate Investigations Guide, pp. 38-47, 251 Obtain/evaluate/communicate info: FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 2, p. 267 Other practices: FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 2, pp. 265, 267
	Crosscutting Concepts: Patterns • Patterns of change can be used to make predictions		FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 2, pp. 265, 269
3	**3-ESS3-1 Earth and Human Activity**		
	3-ESS3-1: Students who demonstrate understanding can: Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* (Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, tornado shelters and lighting rods.) Assessment Boundary: N/A	**Natural Hazards:** • A variety of natural hazards result from natural processes. • Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)	FOSS NG Water and Climate Investigations Guide, pp. 251-252 FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 3, pp. 273-279 FOSS NG Water and Climate Science Resources book, "Wetlands for Flood Control," pp. 55-60 and "Conserving Water during Droughts," pp. 61-62

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
		Influence of Engineering, Technology, and Science on Society and the Natural World: • Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).	FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 3, pp. 273-279 FOSS NG Water and Climate Science Resources book, "Wetlands for Flood Control," pp. 55-60 and "Conserving Water during Droughts," pp. 61-62
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** **• Construct an argument with evidence, data, and/or a model.** 8. Obtaining, evaluating, and communicating information		FOSS NG Water and Climate Investigations Guide, pp. 38-47, 79-80, 137, 195, 291 Engaging in argument: FOSS NG Water and Climate Investigations Guide, Investigation 1, Part 3, p. 111; Investigation 2, Part 1, p. 149; Investigation 3, Parts 3, 5, pp. 218, 238-239; Investigation 5, Part 2, p. 311 Other practices: FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 3, pp. 275-276
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified.		FOSS NG Water and Climate Investigations Guide, Investigation 4, Part 3, pp. 274, 276
GRADE 4			
	4-PS3-1 Energy		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	4-PS3-1 Students who demonstrate understanding can: Use evidence to construct an explanation relating the speed of an object to the energy of that object. (Clarification Statement: Energy can be moved from place to place by moving objects or through sound, light, or electric currents. At this grade level, no attempt is made to give a precise or complete definition of energy.) Assessment Boundary: Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.	**Definitions of Energy:** • The faster a given object is moving, the more energy it possesses.	FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Parts 1-4, pp. 106-111, 114-119, 123-129,133-142 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 7-10 FOSS 3E Motion, Force and Models Science Resources Book, "Bowling" p. 14; "Force and Energy" pp. 15-18; "Potential and Kinetic Energy at Work, pp. 19-20; "Coming to a Stop" pp. 21-26 Investigations Guide, p. 119, 128, 138
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering) Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** **• Use evidence (e.g., measurements, observations, patterns) to construct an explanation.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing Explanations and Designing Solution: FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Parts 1-4, pp. 106-111, 114-119, 123-129,133-142 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 7-10
	Crosscutting Concepts: Energy and Matter • Energy can be transferred in various ways and between objects.		Constructing Explanations and Designing Solution: FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Parts 2-4, pp. 114-119, 123-129,133-142 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10
	4-PS3-2 Energy		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	4-PS3-2 Students who demonstrate understanding can: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. (Clarification Statement: When energy is transferred it can stay in the same form, change forms, or both. Examples of this can include a moving arm throwing a baseball, the light from the sun warming a windowpane, and two moving objects colliding and changing their motion.) Assessment Boundary: Assessment does not include quantitative measurements of energy.	**Definitions of Energy:** • Energy can be moved from place to place by moving objects or through sound, light, or electric currents.	FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Parts 2-3, pp. 114-119, 123-129 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10 FOSS 3E Motion, Force and Models Science Resources Book "Bowling" , p. 14, "Force and Energy" pp. 15-18 , "Potential and Kinetic Energy at Work, pp. 19-20, "Coming to a Stop" pp. 21-26 Investigations Guide, pp. 119, 128, 138, 140 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Parts 1-2, 4, pp. 72-79, 84-91, 102-107 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-5

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4		**Conservation of Energy and Energy Transfer:** • Energy is present whenever there are moving objects, sound, light, or heat. • When objects collide, energy can be transferred from one object to another, thereby changing their motion. • In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. • Light also transfers energy from place to place. • Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. • The currents may have been produced to begin with by transforming the energy of motion into electrical energy.	FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Parts 2-3, pp. 114-119, 123-129 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10 FOSS 3E Motion, Force and Models Science Resources Book "Force and Energy" pp. 15-18 , "Potential and Kinetic Energy at Work, pp. 19-20, "Coming to a Stop" pp. 21-26, "Concussion Discussion" pp. 27-33 Investigations Guide, pp. 128, 138, 140 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Parts 1-2, 4, pp. 72-79, 84-91, 102-107 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-5 FOSS 3E Energy and Electromagnetism Science Resources Book, "Edison Sees the Light" pp. 3-7, "Electricity" pp. 8-12, "Energy" pp. 2-21; "Light Interactions," pp. 73-78 Investigations Guide, pp. 79, 90, 105, 265

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K– 2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** **• Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2 Part 2,3 114-119, 123-129 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Part 1, 2,4 pp. 72-79, 84-91, 102-107 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-5
	Crosscutting Concepts: Energy and Matter • Energy can be transferred in various ways and between objects.		Planning and carrying out investigations: FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Part 2-3, pp. 114-119, 123-129 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Parts 1-2, 4, pp. 72-79, 84-91, 102-107 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-5
	4-PS3-3 Energy		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	4-PS3-3 Students who demonstrate understanding can: Ask questions and predict outcomes about the changes in energy that occur when objects collide. (Clarification Statement: Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.) Assessment Boundary: Assessment does not include quantitative measurements of energy	**Definitions of Energy:** • Energy can be moved from place to place by moving objects or through sound, light, or electric currents.	FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2 Parts 2-3, pp. 114-119, 123-129 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10 FOSS 3E Motion, Force and Models Science Resources Book "Bowling" , p. 14, "Force and Energy" pp. 15-18 , "Potential and Kinetic Energy at Work, pp. 19-20, "Coming to a Stop" pp. 21-26, Investigations Guide p. 119,128,138, 140 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Parts 1-2, 4, pp. 72-79, 84-91, 102-107 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-5
		Conservation of Energy and Energy Transfer: • Energy is present whenever there are moving objects, sound, light, or heat. • When objects collide, energy can be transferred from one object to another, thereby changing their motion. • In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.	FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2 Parts 2,3, 4 114-119, 123-129,133-142 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10 FOSS 3E Motion, Force and Models Science Resources Book, "Bowling" , p. 14, "Force and Energy" pp. 15-18 , "Potential and Kinetic Energy at Work, pp. 19-20, "Coming to a Stop" pp. 21-26, "Concussion Discussion" Investigations Guide, pp. 119, 128, 138, 140

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
		Relationship Between Energy and Forces: • When objects collide, the contact forces transfer energy so as to change the objects' motions.	FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2 Parts 2, 4, pp. 114-119, 133-142 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Master 8
	1. Asking questions (for science) and defining problems (for engineering) Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. **• Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.** 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Asking Questions and defining problems: FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Parts 2, 4, pp. 114-119, 133-142 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Master 8
	Crosscutting Concepts: Energy and Matter • Energy can be transferred in various ways and between objects.		FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 2, Parts 2-3, 4, pp. 114-119, 123-129,133-142 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 8-10
	4-PS3-4 Energy		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	4-PS3-4 Students who demonstrate understanding can: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.* (Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat, mousetrap cars, rubber band-powered vehicles. Examples of constraints could include the materials, cost, or time to design the device.) Assessment Boundary: N/A	**Conservation of Energy and Energy Transfer:** • Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.	FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Parts 1-2, 4, pp. 72-78, 84-89, 102-104, 106-107; Investigation 2, Parts 1-4, pp. 124-127, 130-133, 137-139, 143-145, 147; Investigation 4, Part 3, pp. 236-238, 239-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-10, 19 FOSS 3 Energy and Electromagnetism Science Resources Book, "Edison Sees the Light" pp. 3-7, "Electricity" pp. 8-12, "Energy" pp. 2-21 Investigations Guide pp. 79, 90, 105
		Energy in Chemical Processes and Everyday Life: • The expression “produce energy” typically refers to the conversion of stored energy into a desired form for practical use.	FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Parts 1-2, 4, pp. 72-78, 84-89, 102-104, 106-107 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-5 FOSS 3E Energy and Electromagnetism Science Resources Book, "Energy" pp. 2-21 Investigations Guide, p. 105

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4		**Defining Engineering Problems** (secondary to 4-PS3-4) • Possible solutions to a problem are limited by available materials and resources (constraints). • The success of a designed solution is determined by considering the desired features of a solution (criteria). • Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. ** Connections to Engineering, Technology, and Application of Science*	FOSS 3E Energy and Electromagnetism Investigation 2, Part 3, pp. 137-139 Investigation 4, Part 3, 236-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 9, 19 FOSS 3E Motion, Force, and Models Investigation 4, Parts 1-3, pp. 191-197,202-204, 210-213, 215 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 13, 16
		Influence of Engineering, Technology, and Science on Society and the Natural World: • Engineers improve existing technologies or develop new ones.	FOSS 3E Energy and Electromagnetism Science Resources Book "Electromagnets Everywhere", pp. 55-63 Investigations Guide, p. 231 FOSS 3E Motion, Force, and Models Science Resources Book, "The Path to Invention," pp. 55-59 Investigations Guide, p. 214
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering) Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** **• Apply scientific ideas to solve design problems.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Motion, Force, and Models Investigation 4, Parts 1-3, pp. 191-197,202-204, 210-213, 215 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 13, 16 FOSS 3E Energy and Electromagnetism Investigation 2, Part 3, pp. 137-139; Investigation 4, Part 3, 236-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 9, 19

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Energy and Matter • Energy can be transferred in various ways and between objects.		FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 1, Parts 1-2, 4, pp. 72-78, 84-89, 102-104, 106-107; Investigation 2, Parts 1-4, pp. 124-127, 130-133, 137-139, 143-145, 147; Investigation 4, Part 3, pp. 236-238, 239-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 1-10, 19
	4-PS4-1 Waves and Their Applications in Technologies for Information Transfer		
	4-PS4-1 Students who demonstrate understanding can: Develop a model of waves to describe patterns in terms of amplitude and wavelength and to show that waves can cause objects to move. (Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves. Examples of wave patterns could include the vibrating patterns associated with sound; the vibrating patterns of seismic waves produced by earthquakes.) Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.	**Wave Properties:** • Waves, which are regular patterns of motion, can be made in water by disturbing the surface. • When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach. • Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).	FOSS 3E Energy and Electromagnetism Science Resources Book, "Morse Gets Clicking," pp. 64-70 Investigations Guide, p. 239

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Develop a model using an analogy, example, or abstract representation to describe a scientific principle.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 4 , Parts 1-3, pp. 191-197,202-204, 210-213, 215 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 13, 16 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 2, Part 3, pp. 137-139; Investigation 4, Part 3, 236-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 9, 19
	Crosscutting Concepts: Patterns • Similarities and differences in patterns can be used to sort and classify natural phenomena.		FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 4, Parts 1-3, pp. 219-225, 228-232, 236-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters, 17-19 FOSS 3E Science Resources Book, "Morse Gets Clicking," 64-70
	4-PS4-2 Waves and Their Applications in Technologies for Information Transfer		
	4-PS4-2 Students who demonstrate understanding can: Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. (Clarification Statement: N/A) Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.	**Electromagnetic Radiation:** • An object can be seen when light reflected from its surface enters the eyes.	FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 5, Part 1 , pp. 259-263 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 20-21

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Develop a model to describe phenomena.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 5, Part 1 , pp. 259-263; Investigation 5, Interdisciplinary Extensions, "Construct a periscope" p. 280 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 20-21
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified.		FOSS 3E Energy and Electromagnetism Science Resources Book, "Throw a little light on the Sight" pp. 79-83 Investigations Guide, p. 275 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 5, Part 1 , pp. 259-263 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 20-21
	4-PS4-3 Waves and Their Applications in Technologies for Information Transfer		
	4-PS4-3 Students who demonstrate understanding can: Generate and compare multiple solutions that use patterns to transfer information.* (Clarification Statement: Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, QR codes, barcodes, and using Morse code to send text.)	**Information Technologies and Instrumentation:** • Digitized information can be transmitted over long distances without significant degradation. • High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa.	FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 4, Part 3, pp. 236-242; Interdisciplinary Extensions, "Investigate Emergency Codes" p. 243 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Master 19 FOSS 3E Energy and Electromagnetism Science Resources Book, "Electromagnets Everywhere" pp. 55-63, "Morse Gets Clicking" pp. 64-70 Investigations Guide, pp.231, 239

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	Assessment Boundary: N/A	**Optimizing The Design Solution** (secondary to 4-PS4-3) • Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 2, Part 3, pp. 137-139; Investigation 4, Part 3, 236-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 9, 19 FOSS 3E Motion, Force, and Models Science Resources Book, "Scientists and Models," pp. 44-51 Investigations Guide, p. 198
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering) Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** **• Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 2, Part 3, pp. 137-139; Investigation 4, Part 3, 236-242 FOSS 3E Energy and Electromagnetism Teacher Resources, Notebook Masters 9, 19 FOSS 3E Motion, Force, and Models Science Resources Book, "Scientists and Models," pp. 44-51 Investigations Guide, p. 198
	Crosscutting Concepts: Patterns • Similarities and differences in patterns can be used to sort and classify designed products.		FOSS 3E Motion, Force, and Models Investigations Guide, Investigation 3, Parts 1-3, pp. 154-158, 161-166, 169-174 FOSS 3E Motion, Force, and Models Teacher Resources, Notebook Masters 11-14 FOSS 3E Motion, Force, and Models Science Resources Book, "Graphing Data," pp. 38-43
	4-LS1-1 From Molecules to Organisms: Structure and Processes		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	4-LS1-1 Students who demonstrate understanding can: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. (Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.) Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.	**Structure and Function:** • Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.	FOSS 3E Environments Investigations Guide, Investigation 1, Part 1, pp. 74-77, 79-82; Investigation 3, Parts 1-4, pp. 177-180, 182, 185, 188-191, 194-196201-204, 206-207; Investigation 4 Part 3, pp.251-253; Interdisciplinary Extensions, "Observe adult brine shrimp" p. 211 FOSS 3E Environments Teacher Resources, Notebook Masters 1-2, 14-18 FOSS 3E Environments Science Resources Book, "Two Terrestrial Environments" pp. 3-12, "Isopods" pp 16-17, "Amazon Rainforest Journal" pp. 18-26, "Brine Shrimp ", p. 52, "Variation and Selection", pp. 73-79, "Darkling Beetles" pp. 96-99 Investigations Guide, pp. 78, 91, 102-103, 181, 205, 83
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** **• Construct an argument with evidence, data, and/or a model.** 8. Obtaining, evaluating, and communicating information		Engaging in argument: FOSS 3E Environments Investigations Guide, Investigation 1, Part 1, pp. 123-126, 128; Investigation 3, Parts 1-4 pp. 177-180, 182, 185, 188-191, 194-196,201-204, 206-207 FOSS 3E Environments Teacher Resources Notebook Masters 1-2, 14-18
	Crosscutting Concepts: Systems and System Models • A system can be described in terms of its components and their interactions.		FOSS 3E Environments Investigations Guide, Investigation 1, Part 1 pp. 123-126, 128; Ivestigation 2, Parts 2-4, pp.131-134, 136-137,141-145, 147, 151-153,156; Investigation 3, Parts 1-4, pp. 177-180, 182, 185, 188-191, 194-196, 201-204, 206-207 FOSS 3E Environments Teacher Resources, Notebook Masters 1-2, 10-13, 14-18

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	**4-LS1-2 From Molecules to Organisms: Structure and Processes**		
	4-LS1-2 Students who demonstrate understanding can: Use a model to describe that animals' receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. (Clarification Statement: Emphasis is on systems of information transfer. Examples of response to stimuli include animals running from predators and plant leaves turning toward the sun.) Assessment Boundary: Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.	**Information Processing:** • Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. • Animals are able to use their perceptions and memories to guide their actions.	FOSS 3E Environments Investigations Guide, Investigation 2, Part 4, pp. 151-156 FOSS 3E Science Resources Book, "The Mono Lake Story" pp. 53-59 Investigations Guide, pp. 186-187
	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Use a model to test interactions concerning the functioning of a natural system.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing and Using Models: FOSS 3E Environments Investigations Guide, Investigation 2, Part 1, pp. 123-126, 128; Investigation 3, Parts 1-3, pp. 177-180, 182, 185, 188-191, 194-196 FOSS 3E Environments Teacher Resources, Notebook Masters 8-9, 14-18
	Crosscutting Concepts: Systems and System Models • A system can be described in terms of its components and their interactions.		FOSS 3E Environments Investigations Guide, Investigation 2, Part 1, pp. 123-126, 128; Investigation 3, Parts 1-3, pp. 177-180, 182, 185, 188-191, 194-196 FOSS 3E Environments Teacher Resources, Notebook Masters 8-9, 14-18
	4-ESS1-1 Earth's Place in the Universe		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	4-ESS1-1 Students who demonstrate understanding can: Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.) Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.	**The History of Planet Earth:** • Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. • The presence and location of certain fossil types indicate the order in which rock layers were formed.	FOSS 3E Soils, Rocks and Landforms Investigations Guide, Investigation 1, Parts 2-3, pp. 75-79, 83-87; Investigation 2, Part 1-4, pp. 114-119, 121,125-132, 136-139, 143-145, 147 FOSS 3E Solis, Rocks, and Landforms Teacher Resources, Notebook Masters 1-2, 8-13 FOSS 3E Soils, Rocks and Landforms Science Resources Book, "Weathering" pp. 6-8, "Erosion and Deposition" pp. 9-14,"Landforms Photo Album" p. 15-22, "It Happened So Fast"; "Where Do Rocks Come From" pp. 37, Glossary, p. 70 Investigations Guide, pp. 88, 120, 125,146 FOSS 3E Environments Science Resources Book, "Animals From the Past" pp. 9--95 Investigations Guide, p, 248 FOSS 3E Energy and Electromagnetism Science Resources Book, "Energy" pp. 19
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering) Constructing explanations and designing solutions in 3-5 builds on K-2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** **• Identify the evidence that supports particular points in an explanation.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations and designing solutions: FOSS 3E Soils, Rocks and Landforms Investigations Guide, Investigation 2, Parts 1-4, pp. 114-119, 121,125-132, 136-139, 143-145, 147 FOSS 3E Soils, Rocks, and Landfomrs Teacher Resources, Notebook Masters 8-13

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Patterns • Patterns can be used as evidence to support an explanation.		FOSS 3E Soils, Rocks and Landforms Investigations Guide, Investigation 1, Parts 2-3, pp. 75-79, 83-87; Investigation 2, Parts 1-4, pp. 114-121,125-132, 136-139, 143-147 FOSS 3E Solis, Rocks, and Landforms Teacher Resources, Notebook Masters 1-2, 8-13 FOSS 3E Soils, Rocks and Landforms Science Resources Book, "Weathering" pp. 6-8, "Erosion and Deposition" pp. 9-14,"Landforms Photo Album" p. 15-22, "It Happened So Fast" Investigations Guide, pp. 88, 120, 125,146
	4-ESS2-1 Earth's Systems		
	4-ESS2-1 Students who demonstrate understanding can: Plan and conduct investigations on the effects of water, ice, wind, and vegetation on the relative rate of weathering and erosion. (Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.) Assessment Boundary: Assessment is limited to a single form of weathering or erosion.	**Earth Materials and Systems:** • Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.	FOSS 3E Soils, Rocks, and Landforms Investigations Guide, Investigation 1, Parts 2-3, pp. 75-79, 83-87; Investigation 2, Part 1-4, pp. 114-119, 121,125-132, 136-139, 143-145, 147 FOSS 3E Soils, Rocks, and Landforms Teacher Reources, Notebook Masters 3-6, 8-13 FOSS 3E Soils, Rocks, and Landforms Science Resources Book, "Weathering" pp. 6-8, "Erosion and Deposition" pp. 9-14,"Landforms Photo Album" p. 15-22, "It Happened So Fast" Investigations Guide pp. 88, 120, 125,146

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** **• With guidance, plan and conduct an investigation with peers.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Soils, Rocks, and Landforms Investigations Guide, Investigation 1, Parts 2-3, pp. 75-79, 83-87; Investigation 2, Part 1-4, pp. 114-119, 121,125-132, 136-139, 143-145, 147 FOSS 3E Soils, Rocks, and Landforms Teacher Resources, Notebook Masters 3-6, 8-13
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified, tested, and used to explain change.		FOSS 3E Soils, Rocks, and Landforms Investigations Guide, Investigation 1, Parts 2-3, pp. 75-79, 83-87; Investigation 2, Part 1-4, pp. 114-119, 121,125-132, 136-139, 143-145, 147 FOSS 3E Soils, Rocks, and Landforms Teacher Reources, Notebook Masters 3-6, 8-13 FOSS 3E Soils, Rocks, and Landforms Science Resources Book, "Weathering" pp. 6-8, "Erosion and Deposition" pp. 9-14,"Landforms Photo Album" p. 15-22, "It Happened So Fast" Investigations Guide pp. 88, 120, 125,146
	4-ESS2-2 Earth's Systems		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4	4-ESS2-2 Students who demonstrate understanding can: Analyze and interpret data from maps to describe patterns of Earth's features. (Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.) Assessment Boundary: N/A	**Plate Tectonics and Large-Scale System Interactions:** • The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. • Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. • Major mountain chains form inside continents or near their edges. • Maps can help locate the different land and water features areas of Earth.	FOSS 3E Soils, Rocks, and Landforms Investigations Guide, Investigation 2, Part 4, pp, 143-145,147 FOSS 3E Soils, Rocks, and Lanforms Science Resources Book, "It Happened So Fast" pp. 22-33 Investigations Guide, p. 146
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations **4. Analyzing and interpreting data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** **• Analyze and interpret data to make sense of phenomena using logical reasoning.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Soils, Rocks, and Landforms Investigations Guide, Investigation 2, Interdisciplinary Extensions "How much is a million" p., 149; Home/School Connection p. 150

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Patterns • Patterns can be used as evidence to support an explanation.		FOSS 3E Soils, Rocks, and Landforms Investigations Guide, Investigation 1, Parts 2-3, pp. 75-79, 83-87; Investigation 2, Part 1-4, pp. 114-119, 121,125-132, 136-139, 143-145, 147 FOSS 3E Soils, Rocks, and Landforms Teacher Reources, Notebook Masters 3-6, 8-13 FOSS 3E Soils, Rocks, and Landforms Science Resources Book, "Weathering" pp. 6-8, "Erosion and Deposition" pp. 9-14,"Landforms Photo Album" p. 15-22, "It Happened So Fast" Investigations Guide pp. 88, 120, 125,146
	4-ESS3-1 Earth and Human Activity		
4	4-ESS3-1 Students who demonstrate understanding can: Obtain and combine information to describe that energy and fuels are derived from renewable and non-renewable resources and how their uses affect the environment. (Clarification Statement: Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fissile materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.) Assessment Boundary: N/A	**Natural Resources:** • Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. • Some resources are renewable over time, and others are not.	FOSS 3E Soils, Rocks, and Landforms, Investigations Guide, Investigation 4, Part 1, pp. 208-211 FOSS 3E Soils, Rocks, and Landforms Teacher Resources, Notebook Master 20 FOSS 3E Energy and Electromagnetism Investigations Guide, Investigation 2, Part 4, pp. 143-145, 147; Interdisciplinary Extension "Research solar cell technology" p. 149 FOSS 3E Energy and Electromagnetism Science Resources Book, "Energy" pp. 13-21, "Ms. Osgood's Class Report" pp. 34-35 Investigations Guide pp. 105, 146

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence **8. Obtaining, evaluating, and communicating information Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluate the merit and accuracy of ideas and methods.** **• Obtain and combine information from books and other reliable media to explain phenomena.**		Obtaining, evaluating, and communicating information: FOSS 3E Energy and Electromagnetism Science Resources Book, "Energy" pp. 13-21, "Ms. Osgood's Class Report" pp. 34-35 Investigations Guide pp. 105, 146
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified and used to explain change.		FOSS 3E Energy and Electromagnetism Science Resources Book, "Energy" pp. 13-21, "Ms. Osgood's Class Report" pp. 34-35 Investigations Guide, p. 105, 146
	4-ESS3-2 Earth and Human Activity		
	4-ESS3-2 Students who demonstrate understanding can: Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.* (Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.) Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.	**Natural Hazards:** • A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). • Humans cannot eliminate the hazards but can take steps to reduce their impacts.	FOSS 3E Soils, Rocks, and Landforms Investigations Guide, Investigation 2, Part 4, pp. 143-145, 147 FOSS 3E Soils, Rocks and Landforms Science Resources Book, "Weathering" pp. 6-8, "Erosion and Deposition" pp. 9-14,"Landforms Photo Album" p. 15-22, "It Happened So Fast" , "Where Do Rocks Come From" pp. 34-37, "Geoscientists at Work", pp. 59-63 Investigations Guide pp. 88, 120, 125,146, 166, 212

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
4		**Designing Solutions to Engineering Problems:** • Testing a solution involves investigating how well it performs under a range of likely conditions. (secondary to 4-ESS3-2) ** Connections to Engineering, Technology, and Application of Science*	FOSS 3E Soils, Rocks, and Landforms Science Resources Book, "Geoscientists at Work", pp. 59-63 Investigations Guide, p. 212
		Influence of Engineering, Technology, and Science on Society and the Natural World: • Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands.	FOSS 3E Soils, Rocks and Landforms Science Resources Book, "Geoscientists at Work", pp. 59-63 Investigations Guide, p. 212
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking **6. Constructing explanations (for science) and designing solutions (for engineering) Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** **• Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.** 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Constructing explanations (for science) and designing Solutions (for engineering): FOSS 3E Soils, Rocks and Landforms Science Resources Book, "Geoscientists at Work", pp. 59-63 Investigations Guide, p. 212 FOSS 3E Energy and Electromagnetism Science Resources Book, "Alternative Sources of Electricity" p. 33 Investigations Guide, p. 146
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified and used to explain change.		FOSS 3E Soils, Rocks, and Landforms Investigations Guide Investigation 2, Part 4, pp. 143-145, 147 FOSS 3E Soils, Rocks, and Landforms Science Resources Book, "It Happened So Fast" pp. 22-33 Investigations Guide p. 146
GRADE 5			
	5-PS1-1 Matter and Its Interactions		

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	5-PS1-1 Students who demonstrate understanding can: Develop a model to describe that matter is made of particles too small to be seen. (Clarification Statement: Examples of evidence that could be utilized in building models include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.) Assessment Boundary: Assessment does not include atomicscale mechanism of evaporation and condensation or defining the unseen particles.	**Structure and Properties of Matter:** • Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. • A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon; the effects of air on larger particles or objects.	FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 1, Parts 1-3, pp. 62-67, 70-73, 75, 78-81; nvestigation 4, Parts 1-3 pp.185-189, 193-195, 199-202 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 1-4, 13 FOSS 3E Mixtures and Solutions Science Resources Book "Mixtures", pp, 3-7, "Solutions Up Close" pp. 14-15, "The Air" pp. 20-23, "A Sweet Solution" pp. 35-36 Investigations Guide pp. 74, 106,120, 167
	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Develop a model to describe phenomena.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing and Using Models: FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 1, Parts 1-3, pp. 62-67, 70-73, 75, 78-81; nvestigation 4, Parts 1-3 pp.185-189, 193-195, 199-202 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 1-4, 13
	Crosscutting Concepts: Scale, Proportion, and Quantity • Natural objects exist from the very small to the immensely large.		FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 1, Parts 1-3, pp. 6, 62-67,70-75, 78-81; Investigation 2, Parts 1-4, pp. 103-106, 109-115, 118-121, 125-130; Investigation 3, Parts 1-3, pp. 147-153, 156-159, 163-168
	5-PS1-2 Matter and Its Interactions		
	5-PS1-2 Students who demonstrate understanding can: Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is	**Structure and Properties of Matter:** • The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.	FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 1, Part 2, pp. 70-73, 75 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 3-4

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	conserved. (Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that forms new substances.) Assessment Boundary: Assessment does not include distinguishing mass and weight.	**Chemical Reactions:** • No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.)	FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 4, Parts 1-4, pp. 183-190; 193-196, 199-204 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 13-14 FOSS 3E Mixtures and Solutions Science Resources Book, "Ask a Chemist," pp. 38-41; "When Substances Change," pp. 42-46; "Air Bags," pp. 47-48; "East Bay Academy for Young Scientists," pp. 49-52
5	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data **5. Using mathematics and computational thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.** **• Measure and graph quantities such as weight to address scientific and engineering questions and problems.** 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Using mathematics and computatonal thinking: FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 1, Part 2, pp. 70-73, 75 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 3-4 FOSS 3E Mixtures and Solutions Investgation 2, Part 2, pp. 109-113, 115; Part 3, pp. 118-119; Investigation 3, Parts 1-3, pp. 148-152, 156-159, 163-166 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 6-8, 10-12

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Scale, Proportion, and Quantity • Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.		FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 1, Part 2, pp. 70-73, 75; Investigation 2, Parts 2-3, pp. 109-113, 118-119; Investigation 3, Parts 1-3, pp. 151-152, 156-159, 160-166 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 3-4, 6-8, 10-12
	5-PS1-3 Matter and Its Interactions		
	5-PS1-3 Students who demonstrate understanding can: Make observations and measurements to identify materials based on their properties. (Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.) Assessment Boundary: Assessment does not include density or distinguishing mass and weight.	**Structure and Properties of Matter:** • Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.)	FOSS 3E Mixtures and Solutions Investigation 1, Part 3, pp. 78-81; Investigation 2, Part 3, pp. 118-119; Investigation 3, Part 3 pp. 163-166, 168; Investigation 4, Part 2 pp. 193-195 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 12, 14

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** **• Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		FOSS 3E Mixtures and Solutions Investigation 1, Part 3, pp. 78-81; Investigation 2, Part 3, pp. 118-119; Investigation 3, Part 3 pp. 163-166, 168; Investigation 4, Part 2 pp. 193-195 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 12, 14
	Crosscutting Concepts: Scale, Proportion, and Quantity • Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.		FOSS 3E Mixtures and Solutions Investigations Guide Investigation 1, Part 2, pp. 70-73, 75; Investigation 2, Part 2, pp. 109-113; Investigation 2, Part 3, 118-119; Investigation 3, Part 1, 2, 3 pp. 151-152, 156-159, 160-166 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 3-4, 6-8, 10-12
	5-PS1-4 Matter and Its Interactions		
	5-PS1-4 Students who demonstrate understanding can: Conduct an investigation to determine whether the mixing of two or more substances results in new substances. (Clarification Statement: Examples of interactions forming new substances can include mixing baking soda and vinegar. Examples of interactions not forming new substances can include mixing baking soda and water.)	**Chemical Reactions:** • When two or more different substances are mixed, a new substance with different properties may be formed.	FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 4, Parts 1-3, pp. 185-189, 193-195, 199-202 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 13-14

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models **3. Planning and carrying out investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** **• Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.** 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Planning and carrying out investigations: FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 4, Parts 1-3, pp. 185-189, 193-195, 199-202 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 13-14
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified, tested, and used to explain change.		FOSS 3E Mixtures and Solutions Investigations Guide, Investigation 4, Parts 1-3, pp. 185-189, 193-195, 199-202 FOSS 3E Mixtures and Solutions Teacher Resources, Notebook Masters 13-14
	5-PS2-1 Motion and Stability: Forces and Interactions		
	5-PS2-1 Students who demonstrate understanding can: Support an argument that the gravitational force exerted by the Earth is directed down. (Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical earth. Earth causes objects to have a force on them that point toward the center of the Earth, "down". Support for arguments can be drawn from diagrams, evidence, and data that are provided.) Assessment Boundary: Mathematical representation of gravitational force is not assessed.	**Types of Interactions:** • The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.	FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 3, Part 2, pp. 514-163 FOSS 3E Sun, Moon and Planets Science Resources Book, "Why Doesn't the Earth Fly Off Into Space?" pp. 54-55; " How Did Earth's Moon Form?, pp.56-57

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** 8. Obtaining, evaluating, and communicating information		Engaging in argument from evidence: FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 3, Part 2, pp. 514-163 FOSS 3E Sun, Moon and Planets Science Resources Book , "Why Doesn't the Earth Fly Off Into Space?" pp. 54-55 "
	Crosscutting Concepts: Cause and Effect • Cause and effect relationships are routinely identified, tested, and used to explain change.		FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 3, Part 2, pp. 514-163 FOSS 3E Sun, Moon, and Planets Science Resources Book , "Why Doesn't the Earth Fly Off Into Space?" pp. 54-55; " How Did Earth's Moon Form?, pp. 56-57
	5-PS3-1 Energy		
	5-PS3-1 Students who demonstrate understanding can: Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. (Clarification Statement: Examples of models could include diagrams, and flow charts.) Assessment Boundary: Assessment does not include cellular mechanisms of	**Energy in Chemical Processes and Everyday Life:** • The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).	FOSS 3E Living Systems Investigations Guide Investigation 1, Part 2, pp. 70-76; Investigation 2, Part 2, pp. 116-122 FOSS 3E Living Systems Teacher Resources, Notebook Masters 1-2, 5 FOSS 3E Living Systems Science Resources Book "The Biosphere" pp. 7-11, "Producers" pp. 17-20, pp. 21-25 Investigations Guide, pp. 77, 118

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	digestive absorption.	**Organization of Matter and Energy Flow in Organisms:** • Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.	FOSS 3E Living Systems Investigations Guide, Investigation 1, Part 3, 82-86; Investigation 2, Part 3, pp. 127-128, 130-134 FOSS 3E Living Systems Teacher Resources, Notebook Masters 3, 6-9 FOSS 3E Living Systems Science Resources Book, "The Biosphere" pp. 7-11, " Nature's Recycling" pp. 12-14, "Getting Nutrients" pp. 21-25 Investigations Guide, p. 77, 87, 129
5	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Use models to describe phenomena.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing and using models: FOSS 3E Living Systems Investigations Guide Investigation 1, Part 2-3, pp. 70 - 76, 82-88; Investigation 2, Parts 2-3, pp. 116-122, 127-128, 131-135 FOSS 3E Living Systems Teacher Resources, Notebook Masters 1-3, 5-9 FOSS 3E Living Systems Science Resources Book "The Biosphere" pp. 7-11, "Producers" pp. 17-20, "Getting Nutrients" pp. 21-25 Investigations Guide, pp. 77, 118, 129

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	Crosscutting Concepts: Energy and Matter • Energy can be transferred in various ways and between objects.		FOSS 3E Living Systems Investigations Guide Investigation 1, Part 2-3, pp. 70 - 76, 82-88; Investigation 2, Parts 2-3, pp. 116-122, 127-128, 131-135 FOSS 3E Living Systems Teacher Resources, Notebook Masters 1-3, 5-9 FOSS 3E Living Systems Science Resources Book "The Biosphere" pp. 7-11, "Producers" pp. 17-20, "Getting Nutrients" pp. 21-25 Investigations Guide, pp. 77, 118, 129
	5-LS1-1 From Molecules to Organisms: Structure and Processes		
	5-LS1-1 Students who demonstrate understanding can: Support an argument that plants get the materials they need for growth chiefly from air and water. (Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.)	**Organization for Matter and Energy Flow in Organisms:** • Plants acquire their material for growth chiefly from air and water.	FOSS 3E Living Systems Investigations Guide, Investigation 2 , Part 2, 116-122; Investigation 3, Part 1, pp. 155-165 FOSS 3E Living Systems Teacher Resources, Notebook Masters 5, 10-11 FOSS 3E Living Systems Science Resources Book "Producers" pp. 17-20, "Plant Vascular Systems" pp. 30-36 Investigations Guide, pp. 118, 163

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world.** **• Support an argument with evidence, data, or a model.** 8. Obtaining, evaluating, and communicating information		Engaging in argument from evidence: FOSS 3E Living Systems Investigations Guide, Investigation 2 , Part 2, 116-122; Investigation 3, Part 1, pp. 155-165 FOSS 3E Living Systems Teacher Resources, Notebook Masters 5, 10-11 FOSS 3E Living Systems Science Resources Book "Producers" pp. 17-20, "Plant Vascular Systems" pp. 30-36 Investigations Guide, pp. 118, 163
	Crosscutting Concepts: Energy and Matter • Matter is transported into, out of, and within systems.		FOSS 3E Living Systems Investigations Guide, Investigation 3, Parts 1-3, pp. 155-162, 165, 168-173, 177-178, 180-182, 184-185 FOSS 3E Living Systems Teacher Resources, Notebook Masters 10-15 FOSS 3E Living Systems Science Resources Book, "The Human Digestion System" pp. 26-27, "Plant Vascular Systems" pp. 30-36, "The Story of Maple Syrup" pp. 37-41, "The Human Circulatory System" 42-47 Investigations Guide, pp. 130, 163, 170
	5-LS2-1 Ecosystems: Interactions, Energy, and Dynamics		

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
	5-LS2-1 Students who demonstrate understanding can: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. (Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.) Assessment Boundaries: Assessment does not include molecular explanations.	**Interdependent Relationships in Ecosystems:** • The food of almost any kind of animal can be traced back to plants. • Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. • Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” • Decomposition eventually restores (recycles) some materials back to the soil. • Organisms can survive only in environments in which their particular needs are met. • A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. • Newly introduced species can damage the balance of an ecosystem.	FOSS 3E Living Systems Investigations Guide Investigation 1, Parts 2-3, pp. 70-76, 82-88; Investigation 2, Parts 2-3, pp. 116-122, 127-128, 131-135; Investigation 4, Part 5, pp. 241-246 FOSS 3E Living Systems Teacher Resources, Notebook Master 1-3, 5-9 FOSS 3E Living Systems Science Resources Book "The Biosphere" pp. 7-11, "Producers" pp. 17-20, "Nature's Recycling System" pp. 12-14 ,"Getting Nutrients" pp. 21-25; "Monarch Migration" pp.64-66, "North Atlantic Ocean Ecosystem" pp. 67-73 Investigations Guide, pp. 77, 118, 87, 129, 236, 244

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5		**Cycles of Matter and Energy Transfer in Ecosystems:** • Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. • Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.	FOSS 3E Living Systems Investigations Guide Investigation 1, Parts 2-3, pp. 70-76, 82-88; Investigation 2, Parts 2-3, pp. 116-122, 127-128, 131-135; Investigation 2, Part 2 pp. 105-112 FOSS 3E Living Systems Teacher Resources, Notebook Master 1-9 FOSS 3E Living Systems Science Resources Book "The Biosphere" pp. 7-11, "Producers" pp. 17-20, "Nature's Recycling System" pp. 12-14 Investigations Guide, pp. 77, 118, 87
	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Develop a model to describe phenomena.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing and Using Models: FOSS 3E Living Systems Investigations Guide, Investigation 1, Part 3, pp. 82-88; Investigation 2, Parts 2-3, pp. 116-122, 127-128, 131-135 FOSS 3E Living Systems Teacher Resources, Notebook Masters 3, 5-9
	Crosscutting Concepts: Systems and System Models • A system can be described in terms of its components and their interactions.		FOSS 3E Living Systems Investigations Guide Investigation 1, Parts 1-3, pp. 63-67, 70-76, 82-88; Investigation 2, Parts 2-3, pp. 116-122, 127-128, 131-135; Investigation 3, Parts 1-3, pp. 155-162, 165, 168-173, 177-178, 180-182, 184-185; Investigation 4, Part 5, pp. 241-246 FOSS 3E Living Systems Teacher Resources, Notebook Masters 1-3, 5-15

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Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	**5-LS2-2 Ecosystems: Interactions, Energy, and Dynamics**		
	5-LS2-2 Students who demonstrate understanding can: Use models to explain factors that upset the stability of local ecosystems. (Clarification Statement: Factors that upset an ecosystem's stability includes: invasive species, drought, human development, and removal of predators. Models could include simulations, and representations, etc.) Assessment Boundaries: Assessment does not include molecular explanations.	**Interdependent Relationships in Ecosystems:** • Organisms can survive only in environments in which their particular needs are met. • A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. • Newly introduced species can damage the balance of an ecosystem.	FOSS 3E Living Systems Investigations Guide Investigation 4, Part 5, pp. 241-246 FOSS 3E Living Systems Science Resources Book, "Monarch Migration" pp.64-66, "North Atlantic Ocean Ecosystem" pp. 67-73 Investigations Guide, pp. 236, 24
	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Use models to describe phenomena.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing and using models: FOSS 3E Living Systems Investigations Guide Investigation 1, Part 3, pp. 82-88; Investigation 2, Part 2,3 pp. 116-122, 127-128, 131-135 FOSS 3E Living Systems Teacher Resources, Notebook Masters 3, 5-9
	Crosscutting Concepts: Systems and System Models • A system can be described in terms of its components and their interactions.		FOSS 3E Living Systems Investigations Guide Investigation 1, Parts 1-3, pp. 63-67, 70-76, 82-88; Investigation 2, Parts 2-3, pp. 116-122, 127-128, 131-135; Investigation 3, Parts 1-3, pp. 155-162, 165, 168-173, 177-178, 180-182, 184-185; Investigation 4, Part 5, pp. 241-246 FOSS 3E Living Systems Teacher Resources, Notebook Masters 1-3, 5-15
	5-ESS1-1 Earth's Place in the Universe		

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	5-ESS1-1 Students who demonstrate understanding can: Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).	**The Universe and Its Stars:** • The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth.	FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 2, Parts 1-2, pp. 110, 113-117; Investigation 4, Part 1, pp. 177-179, 184, 197 FOSS 3E Sun, Moon, and Planets Teacher Resources, Notebook Masters 11-12 FOSS 3E Sun, Moon, and Planets Science Resources Book: "The Night Sky, pp 14-18; "Stargazing, pp. 58-59, "Exploring the Solar System," 40-41
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) **7. Engaging in argument from evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** **• Support an argument with evidence, data, or a model.** 8. Obtaining, evaluating, and communicating information		Engaging in argument from evidence: FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 2: Part 1 p. 110 FOSS 3E Sun, Moon, and Planets Teacher Resources, Notebook Masters, 11-12 FOSS 3E Sun, Moon and Planets Science Resources Book : "The Night Sky, pp 14-18
	Crosscutting Concepts: Scale, Proportion and Quantity • Natural objects exist from the very small to the immensely large.		FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 2: Parts 1-2, pp. 110, 113-117; Investigation 4, Part 1 pp. 177-179, 184, 197 FOSS 3E Sun, Moon, and Planets Teacher Resources, Notebook Masters, 11-12 FOSS 3E Sun, Moon, and Planets Science Resources Book : "The Night Sky, pp 14-18; "Stargazing, pp. 58-59
	5-ESS1-2 Earth's Place in the Universe		

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5	5-ESS1-2 Students who demonstrate understanding can: Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. (Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.) Assessment Boundary: Assessment does not include causes of seasons.	**Earth and the Solar System:** • The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year.	FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 1: Part 1 pp. 58-63, Part 2, pp. 67-74, Part 3, p. 87 ; Investigation 2: Part 1, pp. 105-111; Part 3, pp. 123-130; Investigation 4: Part 1, pp. 185 FOSS 3E Sun, Moon, and Planets Teacher Resources, Notebook Masters, 2-5, 7-8, 11 FOSS 3E Sun, Moon and Planets Science Resources Book, " Changing Shadows," pp. 3-7; " Sunrise and Sunset," pp. 8-13; "The Night Sky," pp. 14-18 "Changing Moon," pp. 25-29; "Lunar Cycle," pp. 34; "Eclipses," pp. 35-38; "Stargazing," pp. 58-62
	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations **4. Analyzing and interpreting data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** **• Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.** 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Analyzing and interpreting data: FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 1, Part 1, pp. 60-63 Part 2, pp. 67-74; Investigation 2, Part 1, pp. 105-111; Part 3, pp. 123-130 FOSS 3E Sun, Moon, and Planets Teacher Resources, Notebook Masters 2-3, 11 FOSS 3E Sun, Moon and Planets Science Resources Book, "Changing Shadows," pp. 3-7; Sunrise and Sunset, "pp. 8-13

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	Crosscutting Concepts: Patterns • Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.		FOSS 3E Sun, Moon, and Planets Investigations Guide, Investigation 1, Part 1 pp. 60-63 Part 2, pp. 67-74; Investigation 2: Part 1, pp. 105-111; Part 3, pp. 123-130; FOSS 3E Sun, Moon, and Planets Teacher Resources, Notebook Masters 2-3, 11 FOSS 3E Sun, Moon and Planets, Science Resources Book, "Changing Shadows," pp. 3-7; Sunrise and Sunset," pp. 8-13
	5-ESS2-1 Earth's Systems		
5	5-ESS2-1 Students who demonstrate understanding can: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. (Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.) Assessment Boundary: Assessment is limited to the interactions of two systems at a time.	**Earth Materials and System:** • Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. • The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. • Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather.	FOSS 3E Weather on Earth Investigations Guide, Investigation 1, Parts 2-3, pp. 77-80, 82 , 91-96-99; Investigation 3, Part 3 pp. 193-195-202, 204 FOSS 3E Weather on Earth Teacher Resources, Notebook Masters 2-3 FOSS 3E Weather on Earth Science Resources Book, "What is Air" pp. 3-6, "Earth's Atmosphere" pp. 7-13, "Wind and Convection" pp. 27-31, "Where is the Earth's Water" p.47, "The Water Cycle" p. 48-52 Investigations Guide, pp. 61, 73, 81, 149, 203

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	1. Asking questions (for science) and defining problems (for engineering) **2. Developing and using models Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** **• Develop a model using an example to describe phenomena.** 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Developing and using models: FOSS 3E Weather on Earth Investigations Guide, Investigation 2, Part 3, pp. 143-148, 150; Part 4, pp. 154-160 FOSS 3E Weather on Earth Teacher Resources, Notebook Masters 9-10, 12-14, 23
	Crosscutting Concepts: System and System Models • A system can be described in terms of its components and their interactions.		FOSS 3E Weather on Earth Investigations Guide, Investigation 1, Parts 2-3, pp. 77-80, 82 , 91-99 FOSS 3E Weather on Earth Teacher Resources, Notebook Masters 2-3
	5-ESS2-2 Earth's Systems		
	5-ESS2-2 Students who demonstrate understanding can: Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere. Only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.	**The Roles of Water in Earth's Surface Processes:** • Nearly all of Earth's available water is in the ocean. • Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.	FOSS 3E Weather on Earth Investigations Guide Investigation 3, Part 3 pp. 193-195-202, 204 FOSS 3E Weather on Earth Science Resources Book, Where is Earth's Water", p. 47, "The Water Cycle" pp. 48-51 "Severe Weather" pp. 61 Investigations Guide, pp. 203, 226

OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE			
Grade Level	**Performance Expectations**	**Disciplinary Core Ideas**	**Covered in Full Option Science System (FOSS)**
5	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data **5. Using mathematics and computational thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.** **• Describe and graph quantities such as area and volume to address scientific questions.** 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information		Using mathematics and computatonal thinking: FOSS 3E Weather on Earth Investigations Guide, Investigation 1, Part 1, pp. 122-127; Part 4 pp. 154-160, 162; Investigation 3, Interdisciplinary Extension "Make a rain gauge" p. 207 FOSS 3E Weather on Earth Teacher Resources, Notebook Masters 4-5, 12-14
	Crosscutting Concepts: Scale, Proportion, and Quantity • Standard units are used to measure and describe physical quantities such as weight and volume.		FOSS 3E Weather on Earth Investigations Guide Investigation 1, Part 3, pp. 91-96, 98-99; Interdisciplinary Extension, "Weigh the air in a sports ball" p. 102
	5-ESS3-1 Earth and Human Activity		
	5-ESS3-1 Students who demonstrate understanding can: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (Clarification Statement: Examples of information might include the use of natural fertilizers or biological pest control by farmers, replanting trees after cutting them by the logging industry, and the institution of recycling programs in cities.) Assessment Boundary: N/A	**Human Impacts on Earth Systems:** • Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.	FOSS 3E Weather on Earth Science Resources Book, "Wind Power" pp. 32-3, "Solar Technology" pp. 34-42; "Global Climate Change" pp. 76-83 FOSS 3E Weather on Earth Investigations Guide, pp. 149, 161, 243

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5	1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence **8. Obtaining, evaluating, and communicating information Obtaining, evaluating, and communicating information in 3– 5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.** **• Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.**		Obtaining, evaluating and communicatimg information: FOSS 3E Weather on Earth Science Resources Book, "Wind Power" pp. 32-33, "Solar Technology" pp. 34-42 " Global Climate Change" FOSS 3E Weather on Earth Investigations Guide, pp. 149, 161, 243
	Crosscutting Concepts: System and System Models • A system can be described in terms of its components and their interactions.		FOSS 3E Weather on Earth Investigations Guide, Investigation 1, Parts 2-3, pp. 77-80, 82 , 91-96, 98-99 FOSS 3E Weather on Earth Teacher Resources, Notebook Masters 2-3