

**Grade 1 Learning Progression by Topic**

Grade 1		
PHYSICAL SCIENCES	LIFE SCIENCES	EARTH and SPACE SCIENCES
Waves: Light and Sound	Structure, Function, and Information Processing	Space Systems: Patterns and Cycles
1-PS4-1	1-LS1-1	1-ESS1-1
1-PS4-2	1-LS1-2	1-ESS1-2
1-PS4-3	1-LS3-1	
1-PS4-4		
ENGINEERING, TECHNOLOGY, and APPLICATIONS of SCIENCE Engineering Design 1-ETS1-1, 1-ETS1-2, 1-ETS1-3		

**Grade 1 Learning Progression by Disciplinary Core Idea**

Grade 1			
PHYSICAL SCIENCES	LIFE SCIENCES		EARTH and SPACE SCIENCES
Waves and Their Applications in Technologies for Information Transfer	From Molecules to Organisms: Structure and Processes	Heredity: Inheritance and Variation of Traits	Earth's Place in the Universe
1-PS4-1	1-LS1-1	1-LS3-1	1-ESS1-1
1-PS4-2	1-LS1-2		1-ESS1-2
1-PS4-3			
1-PS4-4			
ENGINEERING, TECHNOLOGY, and APPLICATIONS of SCIENCE Engineering Design 1-ETS1-1, 1-ETS1-2, 1-ETS1-3			

## **First Grade Standards Overview**

The Arkansas K-12 Science Standards are based on *A Framework for K-12 Science Education* (NRC 2012) and are meant to reflect a new vision for science education. The following conceptual shifts reflect what is new about these science standards. The Arkansas K-12 Science Standards

- reflect science as it is practiced and experienced in the real world,
- build logically from Kindergarten through Grade 12,
- focus on deeper understanding as well as application of content,
- integrate practices, crosscutting concepts, and core ideas, and
- make explicit connections to literacy and math.

### **Science and Engineering Practices**

Students are expected to demonstrate grade-appropriate proficiency in

- planning and carrying out investigations,
- analyzing and interpreting data,
- constructing explanations and designing solutions, and
- obtaining, evaluating, and communicating information.

Students are expected to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

### **Crosscutting Concepts**

Students are expected to demonstrate grade-appropriate understanding of

- patterns,
- cause and effect,
- structure and function, and
- influence of engineering, technology, and science on society and the natural world as organizing concepts for the disciplinary core ideas.

### **Disciplinary Core Ideas**

Students are expected to continually build on and revise their knowledge of

- PS4 - Waves and their Applications in Technologies for Information Transfer,
- LS1 - Molecules to Organisms: Structures and Processes,
- LS3 - Heredity: Inheritance and Variation of Traits
- ESS1 - Earth's Place in the Universe, and
- ETS1 - Engineering Design in a K-2 developmental learning progression.

### **Physical Sciences (PS)**

The (PS) performance expectations in first grade help students formulate answers to the questions, “What happens when materials vibrate?” and “What happens when there is no light?” Students develop understanding of the relationship between sound and vibrating materials as well as between the availability of light and ability to see objects. The idea that light travels from place to place can be understood by students at this level through determining the effect of placing objects made with different materials in the path of a beam of light.

### **Life Sciences (LS)**

The (LS) performance expectations in first grade help students explore the questions, “What are some ways plants and animals meet their needs so that they can survive and grow?” and “How are parents and their children similar and different?” Students develop understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs as well as how behaviors of parents and offspring help the offspring survive. The understanding is developed that young plants and animals are alike, but not exactly the same as, their parents.

### **Earth and Space Sciences (ESS)**

The (ESS) performance expectations in first grade help students investigate the question, “What objects are in the sky and how do they seem to move?” Students observe, describe, and predict some patterns of the movement of objects in the sky.

### **Engineering, Technology, and Applications of Science (ETS)**

Engineering design performance expectations in the primary grades help students recognize that creative energy can be a means to solve problems and achieve goals through a systematic process. Children are born with a creative urge to design and build things and it is the task of the teacher to channel this natural tendency. Connections with the other science disciplines help students develop these capabilities in various contexts. The engineering design process involves three stages:

- **Defining engineering problems** begins in Kindergarten as students learn that a situation people want to change can be thought of as a problem that can be solved. By the time they leave second grade students should be able to ask questions and make observations to gather information about the problem so they can envision an object or a tool that would solve it.
- **Designing possible solutions to engineering problems** progresses from the problem definition stage. One of the most challenging aspects of this stage is to keep students from immediately implementing the first solution they think of and to think it through before acting. Students should sketch their ideas or make a physical model to help shape their ideas to meet the requirements of the problem.
- **Comparing different solutions** involves testing each one to see how well it solves a problem or achieves a goal. Consumer product testing is a good model of this capability. Although students in this grade range should not be held accountable for designing controlled experiments, they should be able to think of ways to compare two products to determine which is better for a given purpose.

Students in the first grade are still developing the ability to achieve all three performance expectations (1-ETS1-1, 1-ETS1-2, 1-ETS1-3) related to a single problem in order to understand the interrelated processes of engineering design. Students can use tools and materials to solve simple problems, use visual or physical representations to convey solutions, and compare different solutions to a problem, test them, and determine which is best. These component ideas do not always follow in order. At any stage, a problem-solver can redefine the problem or generate new solutions to replace an idea that is not working.

**GRADE ONE**

<b>Waves: Light and Sound</b>	
Students who demonstrate understanding can:	
<b>1-PS4-1</b>	<b>Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</b> [Clarification Statement: Examples of vibrating materials that make sound could include striking a tuning fork 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.]
<b>1-PS4-2</b>	<b>Make observations to construct an evidence-based account that objects can be seen only when illuminated.</b> [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.]
<b>1-PS4-3</b>	<b>Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.</b> [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), or reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]
<b>1-PS4-4</b>	<b>Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.*</b> [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones”, and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]
The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i> :	

<b>Science and Engineering Practices</b>	<b>Disciplinary Core Ideas</b>	<b>Crosscutting Concepts</b>
<p><b>Planning and Carrying Out Investigations</b>                      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.</p> <ul style="list-style-type: none"> <li>Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. (1-PS4-1, 1-PS4-3)</li> </ul> <p><b>Constructing Explanations and Designing Solutions</b>                      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.</p> <ul style="list-style-type: none"> <li>Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena (1-PS4-2)</li> <li>Use tools and materials provided to design a device that solves a specific problem. (1-PS4-4)</li> </ul>	<p><b>PS4.A: Wave Properties</b></p> <ul style="list-style-type: none"> <li>Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)</li> </ul> <p><b>PS4.B: Electromagnetic Radiation</b></p> <ul style="list-style-type: none"> <li>Objects can be seen if light is available to illuminate them or if they give off their own light. (1-PS4-2)</li> <li>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.) (1-PS4-3)</li> </ul> <p><b>PS4.C: Information Technologies and Instrumentation</b></p> <ul style="list-style-type: none"> <li>People also use a variety of devices to communicate (send and receive information) over long distances. (1-PS4-4)</li> </ul>	<p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>Simple tests can be designed to gather evidence to support or refute student ideas about causes. (1-PS4-1, 1-PS4-2, 1-PS4-3)</li> </ul> <hr/> <p align="center"><b>Connections to Engineering, Technology, and Applications of Science</b></p> <p><b>Influence of Engineering, Technology, and Science, on Society and the Natural World</b></p> <ul style="list-style-type: none"> <li>People depend on various technologies in their lives; human life would be very different without technology. (1-PS4-4)</li> </ul>

<p style="text-align: center;">-----</p> <p style="text-align: center;"><b>Connections to Nature of Science</b></p> <p><b>Scientific Investigations Use a Variety of Methods</b></p> <ul style="list-style-type: none"> <li>▪ Science investigations begin with a question. (1-PS4-1)</li> <li>▪ Scientists use different ways to study the world. (1-PS4-1)</li> </ul>		
<p><i>Connections to other DCIs in first grade: N/A</i></p>		
<p><i>Connections to other DCIs across grade levels: <b>K-2.ETS1.A</b> (1-PS4-4); <b>2.PS1.A</b> (1-PS4-3); <b>K-2.ETS1.B</b> (1-PS4-4); <b>4.PS4.B</b> (1-PS4-4); <b>4.PS4.C</b> (1-PS4-4); <b>3-5.ETS1.A</b> (1-PS4-4)</i></p>		
<p><i>Connections to the Arkansas English Language Arts Standards –</i></p> <p><b>W.1.2</b> Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)</p> <p><b>W.1.7</b> Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1, 1-PS4-2, 1-PS4-3, 1-PS4-4)</p> <p><b>W.1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1, 1-PS4-2, 1-PS4-3)</p> <p><b>SL.1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1, 1-PS4-2, 1-PS4-3)</p> <p><i>Connections to the Arkansas Mathematics Standards –</i></p> <p><b>MP.5</b> Use appropriate tools strategically. (1-PS4-4)</p> <p><b>1.MD.A.1</b> Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)</p> <p><b>1.MD.A.2</b> Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)</p>		

## GRADE ONE

### Structure, Function, and Information Processing

Students who demonstrate understanding can:

- 1-LS1-1 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 or ears.]
- 1-LS1-2 Read texts 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) or the responses of the parents (such as feeding, comforting, and protecting the offspring).]
- 1-LS3-1 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.] [Assessment Boundary: Assessment does not include inheritance, animals that undergo metamorphosis or hybrids.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><b>Constructing Explanations and Designing Solutions</b> 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.</p> <ul style="list-style-type: none"> <li>Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-LS3-1)</li> <li>Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)</li> </ul> <p><b>Obtaining, Evaluating, and Communicating Information</b> Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.</p> <ul style="list-style-type: none"> <li>Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2)</li> </ul>	<p><b>LS1.A: Structure and Function</b></p> <ul style="list-style-type: none"> <li>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. (1-LS1-1)</li> </ul> <p><b>LS1.B: Growth and Development of Organisms</b></p> <ul style="list-style-type: none"> <li>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. (1-LS1-2)</li> </ul> <p><b>LS1.D: Information Processing</b></p> <ul style="list-style-type: none"> <li>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. (1-LS1-1)</li> </ul> <p><b>LS3.A: Inheritance of Traits</b></p> <ul style="list-style-type: none"> <li>Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents. (1-LS3-1)</li> </ul> <p><b>LS3.B: Variation of Traits</b></p> <ul style="list-style-type: none"> <li>Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)</li> </ul>	<p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2, 1-LS3-1)</li> </ul> <p><b>Structure and Function</b></p> <ul style="list-style-type: none"> <li>The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)</li> </ul> <p>-----</p> <p><b>Connections to Engineering, Technology, and Applications of Science</b></p> <p><b>Influence of Engineering, Technology, and Science on Society and the Natural World</b></p> <ul style="list-style-type: none"> <li>Every human-made product is designed by applying some knowledge of the natural world and is built by built using materials derived from the natural world. (1-LS1-1)</li> </ul>

<p><b>Connections to Nature of Science</b></p> <p><b>Scientific Knowledge is Based on Empirical Evidence</b></p> <ul style="list-style-type: none"> <li>Scientists look for patterns and order when making observations about the world. (1-LS1-2)</li> </ul>		
<p><i>Connections to other DCIs in first grade: N/A</i></p>		
<p><i>Connections to other DCIs across grade levels: <b>K-2.ETS1.A</b> (1-LS1-1); <b>3.LS2.D</b> (1-LS1-2) <b>3.LS3.A</b> (1-LS3-1); <b>3.LS3.B</b> (1-LS3-1); <b>4.LS1.A</b> (1-LS1-1); <b>4.LS1.D</b> (1-LS1-1); <b>3-5.ETS1.A</b> (1-LS1-1)</i></p>		
<p><i>Connections to the Arkansas English Language Arts Standards –</i></p> <p><b>RI.1.1</b> Ask and answer questions about key details in a text. (1-LS1-2, 1-LS3-1)</p> <p><b>RI.1.2</b> Identify the main topic and retell key details of a text. (1-LS1-2)</p> <p><b>RI.1.10</b> With prompting and support, read informational texts appropriately complex for grade 1. (1-LS1-2)</p> <p><b>W.1.7</b> Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS1-1, 1-LS3-1)</p> <p><b>W.1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)</p> <p><i>Connections to the Arkansas Mathematics Standards –</i></p> <p><b>MP.2</b> Reason abstractly and quantitatively. (1-LS3-1)</p> <p><b>MP.5</b> Use appropriate tools strategically. (1-LS3-1)</p> <p><b>1.NBT.B.3</b> Compare two two-digit numbers based on the meanings of the tens and one digits, recording the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, and <math>&lt;</math>. (1-LS1-2)</p> <p><b>1.NBT.C.4</b> Add within 100 using concrete models or drawings, relate the strategy used to written expression or equation, and be able to explain the reasoning. Strategies should be based on place-value, properties of operations, and/or the relationship between addition and subtraction. (1-LS1-2)</p> <p><b>1.NBT.C.5</b> Mentally find 10 more or 10 less than a given two-digit number, without having to count. Students should be able to Explain the reasoning used. (1-LS1-2)</p> <p><b>1.NBT.C.6</b> Subtract multiples of 10 from multiples of 10 (both in the range of 10-90) using concrete models or drawings, relate the strategy to a written method, and explain the reasoning used. Strategies should be based on place value, properties of operations, and/or relationship between addition and subtraction. (1-LS1-2)</p> <p><b>1.MD.A.1</b> Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)</p>		

**GRADE ONE**

**Space Systems: Patterns and Cycles**

Students who demonstrate understanding can:

- 1-ESS1-1 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.]
- 1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year.** [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><b>Planning and Carrying Out Investigations</b> 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.</p> <ul style="list-style-type: none"> <li>Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1-2)</li> </ul> <p><b>Analyzing and Interpreting Data</b> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> <li>Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1)</li> </ul>	<p><b>ESS1.A: The Universe and its Stars</b></p> <ul style="list-style-type: none"> <li>Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1-ESS1-1)</li> </ul> <p><b>ESS1.B: Earth and the Solar System</b></p> <ul style="list-style-type: none"> <li>Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2)</li> </ul>	<p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-ESS1-1, 1-ESS1-2)</li> </ul> <hr/> <p align="center"><b>Connections to Nature of Science</b></p> <p><b>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</b></p> <ul style="list-style-type: none"> <li>Science assumes natural events happen today as they happened in the past. (1-ESS1-1)</li> <li>Many events are repeated. (1-ESS1-1)</li> </ul>

*Connections to other DCIs in first grade:* N/A

*Connections to other DCIs across grade levels:* **3.PS2.A** (1-ESS1-1); **5.PS2.B** (1-ESS1-1, 1-ESS1-2)  
**5-ESS1.B** (1-ESS1-1, 1-ESS1-2)

*Connections to the Arkansas English Language Arts Standards –*

- W.1.7** Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1, 1-ESS1-2)
- W.1.8** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1, 1-ESS1-2)

*Connections to the Arkansas Mathematics Standards –*

- MP.2** Reason abstractly and quantitatively. (1-ESS1-2)
- MP.4** Model with mathematics. (1-ESS1-2)
- MP.5** Use appropriate tools strategically. (1-ESS1-2)
- 1.OA.A.1** Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem). (1-ESS1-2)
- 1.MD.C.6** Organize, represent, and interpret data with up to three categories; using tally tables, pictures graphs and bar graphs. Ask and answer questions about the total number represented, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2)

**GRADE ONE**

<b>Engineering, Technology, and Applications of Science</b>	
Students who demonstrate understanding can:	
<b>1-ETS1-1</b>	<b>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</b>
<b>1-ETS1-2</b>	<b>Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</b>
<b>1-ETS1-3</b>	<b>Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</b>

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

<b>Science and Engineering Practices</b>	<b>Disciplinary Core Ideas</b>	<b>Crosscutting Concepts</b>
<p><b>Asking Questions and Defining Problems</b> Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.</p> <ul style="list-style-type: none"> <li>Ask questions based on observations to find more information about the natural and/or designed world. (1-ETS1-1)</li> <li>Define a simple problem that can be solved through the development of a new or improved object or tool. (1-ETS1-1)</li> </ul> <p><b>Developing and Using Models</b> Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.</p> <ul style="list-style-type: none"> <li>Develop a simple model based on evidence to represent a proposed object or tool. (1-ETS1-2)</li> </ul> <p><b>Analyzing and Interpreting Data</b> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> <li>Analyze data from tests of an object or tool to determine if it works as intended. (1-ETS1-3)</li> </ul>	<p><b>ETS1.A: Defining and Delimiting Engineering Problems</b></p> <ul style="list-style-type: none"> <li>A situation that people want to change or create can be approached as a problem to be solved through engineering. (1-ETS1-1)</li> <li>Asking questions, making observations, and gathering information are helpful in thinking about problems. (1-ETS1-1)</li> <li>Before beginning to design a solution, it is important to clearly understand the problem. (1-ETS1-1)</li> </ul> <p><b>ETS1.B: Developing Possible Solutions</b></p> <ul style="list-style-type: none"> <li>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. (1-ETS1-2)</li> </ul> <p><b>ETS1.C: Optimizing the Design Solution</b></p> <ul style="list-style-type: none"> <li>Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (1-ETS1-3)</li> </ul>	<p><b>Structure and Function</b></p> <ul style="list-style-type: none"> <li>The shape and stability of structures of natural and designed objects are related to their function(s). (1-ETS1-2)</li> </ul>
<p><i>Connections to K-2-ETS1.A: Defining and Delimiting Engineering Problems include: Kindergarten: (K-PS2-2, K-ESS3-2)</i>  <i>Connections to K-2-ETS1.B: Developing Possible Solutions to Problems include: Kindergarten: (K-ESS3-3);</i>  <b>First Grade: (1-PS4-4); Second Grade: (2-LS2-2)</b>  <i>Connections to K-2-ETS1.C: Optimizing the Design Solution include: Second Grade: (2-ESS2-1)</i></p>		
<p><i>Connections to other DCIs across grade levels: 3-5.ETS1.A (1-ETS1-1, 1-ETS1-2, 1-ETS1-3); 3-5.ETS1.B (1-ETS1-2, 1-ETS1-3); 3-5.ETS1.C (1-ETS1-1, 1-ETS1-2, 1-ETS1-3)</i></p>		

*Connections to the Arkansas English Language Arts Standards –*

- RI.1.1** Ask and answer questions about key details in a text. (1-ETS1-1)
- W.1.6** With guidance and support from adults, use a variety of digital tools to produce and publish some writing, including in collaboration with peers. (1-ETS1-1, 1-ETS1-3)
- W.1.8** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ETS1-1,1-ETS1-3)
- SL.1.5** Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. (1-ETS1-2)

*Connections to the Arkansas Mathematics Standards –*

- MP.2** Reason abstractly and quantitatively. (1-ETS1-1, 1-ETS1-3)
- MP.4** Model with mathematics. (1-ETS1-1, 1-ETS1-3)
- MP.5** Use appropriate tools strategically. (1-ETS1-1, 1-ETS1-3)