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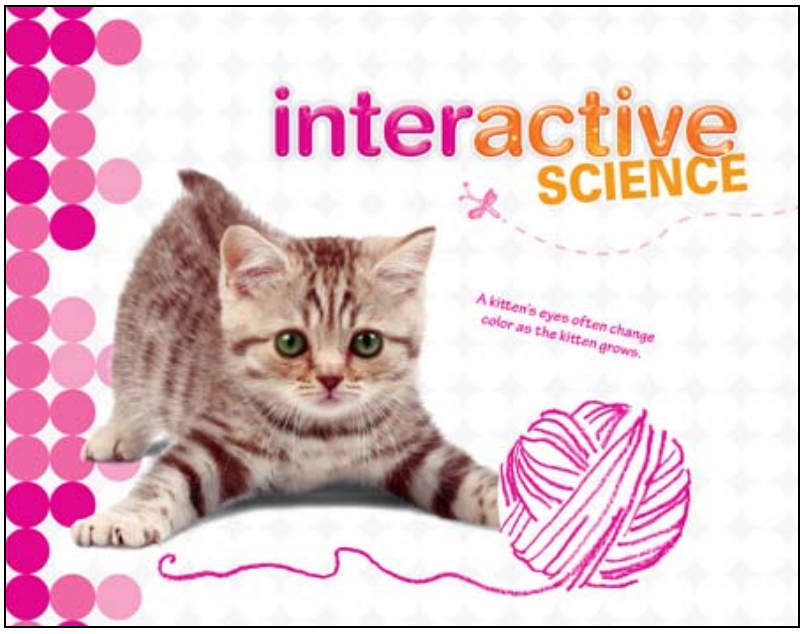

To the

Iowa Core Science Standards
Foundation Boxes and Evidence Statements
Kindergarten

Pearson

Introduction

The following document demonstrates how the ***Interactive Science*, *©2016*** program aligns to the Iowa Core Science Standards for grades K-5. Correlation references are to the Student Edition and Teacher Edition. Please note that the Kindergarten Student Edition text pages are two-sided; each singular page contains a corresponding Activity Page on the reverse side.

Interactive Science is an elementary science program that makes learning personal, engaging, and relevant for today's student. The program features an innovative Write-in Student Edition that enables students to become active participants in their learning and truly connect the Big Ideas of science to their world.

The 2016 editions of ***Interactive Science*** were developed to support the Next Generation Science Standards (NGSS) for Grades K-5 in several ways. In the Student Edition, lessons provide interactive opportunities for students to acquire the Disciplinary Core Ideas that are the building blocks of the NGSS Performance Expectations at each grade level. STEM Activities, Apply It! activities, Design It! Activities, and Performance-Based Assessments enable students to research, investigate, and apply Science and Engineering Practices to real-world problems in a meaningful way. In the Teacher's Edition, the NGSS Cross-Cutting Concepts that link across grade levels and across disciplines within grade levels are noted at the chapter level, and a detailed and focused Performance Expectation Activity is provided for each NGSS standard.

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Iowa Core Science Standards, Foundation Boxes, Evidence Statements	Interactive Science, ©2016 Kindergarten

Kindergarten

K-PS2-1 Motion and Stability: Forces and Interactions

Students who demonstrate understanding can:

K-PS2-1. 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.] [*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.*]

Chapter 1 Performance Expectation Activity, 33a

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
Planning and Carrying Out Investigations 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. (K-PS2-1) **SE Only:** 2, Try It!; 4-13, STEM Activity; 18, Investigate It!; 77, Lesson 3; 99, Investigate It! **TE Only:** 9, SEP: Planning and Carrying Out Investigations; 10, Inquiry; 12-13, STEM Activity; 24, Investigate It!; 28-29, Activity Card Support; 33a, Performance Expectation Activity; 33b, Performance Expectation Activity; 128-129; 166, Investigate It! ----------	**PS2.A: Forces and Motion** • Pushes and pulls can have different strengths and directions. (K-PS2-1),(K-PS2-2) **SE Only:** 3, Let's Read Science!; 10-11, STEM Activity; 15, Lesson 2; 16, Lesson 3; 17, Lesson 4; 18, Investigate It! **TE Only:** 7A-7B, Leveled Content Reader Support; 11, Let's Read Science!; 18-23; 24, Investigate It!; 33, Write About Pushes and Pulls; 33a, Performance Expectation Activity • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2) **SE Only:** 2, Try It!; 3, Let's Read Science!; 4-13, STEM Activity; 15, Lesson 2; 16, Lesson 3; 17, Lesson 4; 18, Investigate It! **TE Only:** 4, Reading; 5, Writing; 5, Teacher Background; 7A-7B, Leveled	**Cause and Effect** • Simple tests can be designed to gather evidence to support or refute student ideas about causes. (K-PS2-1),(K-PS2-2) **SE Only:** 2, Try It!; Activity 3, Home Activity; 4-13, STEM Activity; 18, Investigate It! **TE Only:** 8, CCC: Cause and Effect; 10, Try It!; 12-13, STEM Activity; 22, Differentiated Instruction; 24, Investigate It!; 28-29, Activity Card Support; 33a Performance Expectation Activity

Iowa Core Science Standards, Foundation Boxes, Evidence Statements	Interactive Science, ©2016 Kindergarten	
Connections to the Nature of Science **Scientific Investigations Use a Variety of Methods** Scientists use different ways to study the world. (K-PS2-1) **SE Only:** 63, Try It!;75, Lesson 1; 76, Lesson 2; 77, Lesson 3 **TE Only:** 33b, ELA/Literacy; 115A-115B, Leveled Content Reader Support; 118, Try It!; 124-127	Content Reader Support; 12-13, STEM Activity; 18, Envision It!; 18-23; 24, Investigate It!; 28-29, Activity Card Support; 33, Write About Pushes and Pulls; 33b, Performance Expectation Activity **PS2.B: Types of Interactions** • When objects touch or collide, they push on one another and can change motion. (K-PS2-1) **SE Only:** 15, Lesson 2; 17, Lesson 4 **TE Only:** 7A-7B, Leveled Content Reader Support; 18-19; 22-23; 31, Chapter 1 Test, Question 6 **PS3.C: Relationship Between Energy and Forces** • A bigger push or pull makes things speed up or slow down more quickly.*(secondary to K-PS2-1)* **SE Only:** 4-13, STEM Activity; 16, Lesson 3; 17, Lesson 4; 18, Investigate It! **TE Only:** 7A-7B, Leveled Content Reader Support; 8-9; 12-13, STEM Activity; 20-23; 24, Investigate It!; 33, Write About Pushes and Pulls	

Observable features of the student performance by the end of the grade:		
1	Identifying the phenomenon to be investigated	
	a	With guidance, students collaboratively identify the phenomenon under investigation, which includes the following idea: the effect caused by different strengths and directions of pushes and pulls on the motion of an object.
	b	With guidance, students collaboratively identify the purpose of the investigation, which includes gathering evidence to support or refute student ideas about causes of the phenomenon by comparing the effects of different strengths of pushes and pulls on the motion of an object.
2	Identifying the evidence to address this purpose of the investigation	
	a	With guidance, students collaboratively develop an investigation plan to investigate the relationship between the strength and direction of pushes and pulls and the motion of an object (i.e., qualitative measures or expressions of strength and direction; e.g., harder, softer, descriptions* of "which way").
	b	Students describe* how the observations they make connect to the purpose of the investigation, including how the observations of the effects on object motion allow causal relationships between pushes and pulls and object motion to be determined
	c	Students predict the effect of the push of pull on the motion of the object, based on prior experiences.
3	Planning the investigation	
	a	In the collaboratively developed investigation plan, students describe*:
		i. The object whose motion will be investigated.
		ii. What will be in contact with the object to cause the push or pull.
		iii. The relative strengths of the push or pull that will be applied to the object to start or stop its motion or change its speed.
		iv. The relative directions of the push or pull that will be applied to the object.
		v. How the motion of the object will be observed and recorded.
		vi. How the push or pull will be applied to vary strength or direction.
4	Collecting the data	
	a	According to the investigation plan they developed, and with guidance, students collaboratively make observations that would allow them to compare the effect on the motion of the object caused by changes in the strength or direction of the pushes and pulls and record their data.

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K-PS2-2 Motion and Stability: Forces and Interactions

Students who demonstrate understanding can:

K-PS2-2. 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.] [*Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.*]
Chapter 1 Performance Expectation Activity, 33b

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
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. (K-PS2-2) **SE Only:** 10-13, STEM Activity; 18, Investigate It!; 99, Investigate It! **TE Only:** 9, SEP: Planning and Carrying Out Investigations; 10, Inquiry; 12-13, STEM Activity; 24, Investigate It!; 33b, Performance Expectation Activity; 166, Investigate It!	**PS2.A: Forces and Motion** • Pushes and pulls can have different strengths and directions. (K-PS2-1),(K-PS2-2) **SE Only:** 3, Let's Read Science!; 10-11, STEM Activity; 15, Lesson 2; 16, Lesson 3; 17, Lesson 4; 18, Investigate It! **TE Only:** 7A-7B, Leveled Content Reader Support; 11, Let's Read Science!; 18-23; 24, Investigate It!; 33, Write About Pushes and Pulls; 33a, Performance Expectation Activity • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2) **SE Only:** 2, Try It!; 3, Let's Read Science!; 4-13, STEM Activity; 15, Lesson 2; 16, Lesson 3; 17, Lesson 4; 18, Investigate It! **TE Only:** 4, Reading; 5, Writing; 5, Teacher Background; 7A-7B, Leveled Content Reader Support; 12-13, STEM Activity; 18, Envision It!; 18-23; 24,	**Cause and Effect** • Simple tests can be designed to gather evidence to support or refute student ideas about causes. (K-PS2-1),(K-PS2-2) **SE Only:** 2, Try It!; Activity 3, Home Activity; 4-13, STEM Activity; 18, Investigate It! **TE Only:** 8, CCC: Cause and Effect; 10, Try It!; 12-13, STEM Activity; 22, Differentiated Instruction; 24, Investigate It!; 28-29, Activity Card Support; 33a Performance Expectation Activity

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	Investigate It!; 28-29, Activity Card Support; 33, Write About Pushes and Pulls; 33b, Performance Expectation Activity **ETS1.A: Defining Engineering Problems** • 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. *(secondary to K-PS2-2)* **SE Only:** 4-13, STEM Activity; 19, Slide Engineer **TE Only:** 12-13, STEM Activity; 25, STEM	

Observable features of the student performance by the end of the grade:		
1	Organizing data	
	a	With guidance, students organize given information using graphical or visual displays (e.g., pictures, pictographs, drawings, written observations, tables, charts). The given information students organize includes:
		i. The relative speed or direction of the object before a push or pull is applied (i.e., qualitative measures and expressions of speed and direction; e.g., faster, slower, descriptions* of "which way").
		ii. The relative speed or direction of the object after a push or pull is applied.
		iii. How the relative strength of a push or pull affects the speed or direction of an object (i.e., qualitative measures or expressions of strength; e.g., harder, softer).
2	Identifying relationships	
	a	Using their organization of the given information, students describe* relative changes in the speed or direction of the object caused by pushes or pulls from the design solution.
3	Interpreting data	
	a	Students describe* the goal of the design solution.
	b	Students describe* their ideas about how the push or pull from the design solution causes the change in the object's motion.
	c	Based on the relationships they observed in the data, students describe* whether the push or pull from the design solution causes the intended change in speed or direction of motion of the object.

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K-PS3-1 Energy

Students who demonstrate understanding can:

K-PS3-1. 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.] [*Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.*]
Chapter 3 Performance Expectation Activity, 109c

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
Planning and Carrying Out Investigations 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 can be used to make comparisons. (K-PS3-1) **SE Only:** 44-53, STEM Activity; 60, Investigate It! **TE Only:** 82-83, STEM Activity; 98, Investigate It!; 109c, Performance Expectation Activity ***Connections to Nature of Science*** **Scientific Investigations Use a Variety of Methods** Scientists use different ways to study the world. K-PS3-1 **SE Only:** 61, Ready for the Weather; 75, Lesson 1; 76; Lesson 2; 77, Lesson 3; 78, Lesson 4; 79, Lesson 5 **TE Only:** 99, Teach with Visuals; 124-125; 126-127, 128; 130-131; 132-133; 142, Part 1 Text- Questions 1-4; 143, Part 1 Test- #5	**PS3.B: Conservation of Energy and Energy Transfer** • Sunlight warms Earth's surface. (K-PS3-1),(K-PS3-2) **SE Only:** 44, STEM Activity; 56, Lesson 3; 60, Investigate It! **TE Only:** 82, STEM Activity; 90-91; 98, Investigate It!; 102-103, Activity Card Support; 109c, Performance Expectation Activity; 109c, ELA/Literacy	**Cause and Effect** • Events have causes that generate observable patterns. (K-PS3-1), (K-PS3-2), (K-ESS3-2) **SE Only:** 55, Lesson 2; 60, Investigate It!; **TE Only:** 78, CCC Patterns; 88, Envision It!; 88-89; 98, Investigate It!; 102-103, Activity Card Support •

Observable features of the student performance by the end of the grade:		
1	Identifying the phenomenon to be investigated	
	a	From the given investigation plan, students describe* (with guidance) the phenomenon under investigation, which includes the following idea: sunlight warms the Earth's surface.
	b	Students describe* (with guidance) the purpose of the investigation, which includes determining the effect of sunlight on Earth materials by identifying patterns of relative warmth of materials in sunlight and shade (e.g., sand, soil, rocks, water).
2	Identifying the evidence to address the purpose of the investigation	
	a	Based on the given investigation plan, students describe* (with guidance) the evidence that will result from the investigation, including observations of the relative warmth of materials in the presence and absence of sunlight (i.e., qualitative measures of temperature; e.g., hotter, warmer, colder).
	b	Students describe* how the observations they make connect to the purpose of the investigation.
3	Planning the investigation	
	a	Based on the given investigation plan, students describe* (with guidance):
		i. The materials on the Earth's surface to be investigated (e.g., dirt, sand, rocks, water, grass).
		ii. How the relative warmth of the materials will be observed and recorded.
4	Collecting the data	
	a	According to the given investigation plan and with guidance, students collect and record data that will allow them to:
		i. Compare the warmth of Earth materials placed in sunlight and the same Earth materials placed in shade.
		ii. Identify patterns of relative warmth of materials in sunlight and in shade (i.e., qualitative measures of temperature; e.g., hotter, warmer, colder).
		iii. Describe* that sunlight warms the Earth's surface.

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K-PS3-2 Energy

Students who demonstrate understanding can:

K-PS3-2. 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.]

Chapter 3 Performance Expectation Activity, 109d

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
Constructing Explanations and Designing Solutions 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. (K-PS3-2) **SE Only:** 44-53, STEM Activity **TE Only:** 82-83, STEM Activity; 109d, Performance Expectation Activity; 175, Write About Solving a Need	**PS3.B: Conservation of Energy and Energy Transfer** • Sunlight warms Earth's surface. (K-PS3-1),(K-PS3-2) **SE Only:** 44, STEM Activity; 56, Lesson 3; 60, Investigate It! **TE Only:** 82, STEM Activity; 90-91; 98, Investigate It!; 102-103, Activity Card Support; 109c, Performance Expectation Activity; 109c, ELA/Literacy	**Cause and Effect** • Events have causes that generate observable patterns. (K-PS3-1), (K-PS3-2), (K-ESS3-2) **SE Only:** 55, Lesson 2; 60, Investigate It!; **TE Only:** 78, CCC Patterns; 88, Envision It!; 88-89; 98, Investigate It!; 102-103, Activity Card Support

Observable features of the student performance by the end of the grade:		
1	Using scientific knowledge to generate design solutions	
	a	Students use given scientific information about sunlight's warming effect on the Earth's surface to collaboratively design and build a structure that reduces warming caused by the sun.
	b	With support, students individually describe*:
		i. The problem.
		ii. The design solution.
		iii. In what way the design solution uses the given scientific information.
2	Describing* specific features of the design solution, including quantification when appropriate	
	a	Students describe* that the structure is expected to reduce warming for a designated area by providing shade.
	b	Students use only the given materials and tools when building the structure.
3	Evaluating potential solutions	
	a	Students describe* whether the structure meets the expectations in terms of cause (structure blocks sunlight) and effect (less warming of the surface).

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K-LS1-1From Molecules to Organisms: Structures and Processes

Students who demonstrate understanding can:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

[Clarification Statement: Examples of patterns could include that animals need to take in food but plants 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.]

Chapter 2 Performance Expectation Activity, 71a

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
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. (K-LS1-1) **SE Only:** 21, Try It!; 35, Lesson 3; 36, Lesson 4; 37, Lesson 5 **TE Only:** 41, SEP: Analyzing and Interpreting Data; 42, Try It!; 52-57; 71a, Performance Expectation Activity; 71a, ELA/Literacy ***Connections to Nature of Science*** **Science Knowledge Is Based on Empirical Evidence** • Scientists look for patterns and order when making observations about the world. K-LS1-1 **SE Only:** 21, Try It!; Lesson 3; 36, Lesson 4; 37, Les. 5 **TE Only:** 42, Try It!; 52-57; 71a, Performance Activity	**LS1.C: Organization for Matter and Energy Flow in Organisms** • All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1) **SE Only:** 21, Try It!; 34, Lesson 2; 35, Lesson 3; 36, Lesson 4; 37, Lesson 5 **TE Only:** 36, Social Studies; 37, Rhyme; 39A-39B, Leveled Content Reader Support; 42, Try It!; 50-57; 58, 21st Century Learning; 66, Chapter 2 Test-Questions 3, 4; 67, Chapter 2 Test- Question 5; 69, Write Plant Sentences; 71a, Performance Expectation Activity; 71a, ELA/Literacy; 71c, Performance Expectation	**Patterns** • Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1) **SE Only:** 21, Try It!; 35, Lesson 3; 36, Lesson 4; 37, Lesson 5 **TE Only:** 40, CCC: Patterns; 42, Try It!; 52-57; 69, Write Plant Sentences; 71a, Performance Expectation Activity

Observable features of the student performance by the end of the grade:		
1	Organizing data	
	a	With guidance, students organize the given data from observations (firsthand or from media) using graphical displays (e.g., pictures, charts), including:
		i. Different types of animals (including humans).
		ii. Data about the foods different animals eat.
		iii. Data about animals' drinking water.
		iv. Data about plants' need for water (e.g., observations of the effects on plants in a classroom or school when they are not watered, observations of natural areas that are very dry).
		v. Data about plants' need for light (e.g., observations of the effect on plants in a classroom when they are kept in the dark for a long time; observations about the presence or absence of plants in very dark places, such as under rocks or porches).
2	Identifying relationships	
	a	Students identify patterns in the organized data, including that:
		i. All animals eat food.
		1. Some animals eat plants.
		2. Some animals eat other animals.
		3. Some animals eat both plants and animals.
		4. No animals do not eat food.
		ii. All animals drink water.
		iii. Plants cannot live or grow if there is no water.
		iv. Plants cannot live or grow if there is no light.
3	Interpreting data	
	a	Students describe* that the patterns they identified in the data provide evidence that:
		i. Plants need light and water to live and grow.
		ii. Animals need food and water to live and grow.
		iii. Animals get their food from plants, other animals, or both.

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K-ESS2-1 Earth's Systems

Students who demonstrate understanding can:

K-ESS2-1. 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.*]

Chapter 3 Performance Expectation Activity, 109a

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
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. (K-ESS2-1) **SE Only:** 42, Try It!; 55, Lesson 2; 56, Lesson 3 **TE Only:** xxxvi-xxxvii, QUEST; 77A-77B, Leveled Content Reader Support; 79, SEP: Analyzing and Interpreting Data; 88-91; 107, Make a Weather Calendar; 109a, Performance Expectation Activity; 109a, ELA/Literacy	**ESS2.D: 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. (K-ESS2-1) **SE Only:** 42, Try It!; 57, Lesson 4 **TE Only:** xxxvi-xxxvii, QUEST; 80, Try It!; 92-93; 104, Chapter 3 Test-Questions 3, 4; 105, Chapter 3 Test-Question 6; 107, Make a Weather Calendar; 109a, Performance Expectation Activity; 109a, ELA/Literacy	**Patterns** • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1) **SE Only:** 42, Try It!; 55, Lesson 2; 56, Lesson 3 **TE Only:** 78, CCC: Patterns; 80, Try It!; 77A-77B, Leveled Content Reader Support; 88-91; 107, Make a Weather Calendar; 109a, Performance Expectation Activity; 109a, ELA/Literacy

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Connections to Nature of Science **Science Knowledge Is Based on Empirical Evidence** • Scientists look for patterns and order when making observations about the world. (K-ESS2-1) **SE Only:** 42, Try It!; 55, Lesson 2; 56, Lesson 3 **TE Only:** 77A-77B, Leveled Content Reader Support; 79, SEP: Analyzing and Interpreting Data; 80, Try It!; 88-91; 107, Make a Weather Calendar; 109a, Performance Expectation Activity; 109a, ELA/Literacy		

Observable features of the student performance by the end of the grade:		
1	Organizing data	
	a	With guidance, students organize data from given observations (firsthand or from media) about local weather conditions using graphical displays (e.g., pictures, charts). The weather condition data include:
		i. The number of sunny, cloudy, rainy, windy, cool, or warm days.
		ii. The relative temperature at various times of the day (e.g., cooler in the morning, warmer during the day, cooler at night).
2	Identifying relationships	
	a	Students identify and describe* patterns in the organized data, including:
		i. The relative number of days of different types of weather conditions in a month.
		ii. The change in the relative temperature over the course of a day.
3	Interpreting data	
	a	Students describe* and share that:
		i. Certain months have more days of some kinds of weather than do other months (e.g., some months have more hot days, some have more rainy days).
		ii. The differences in relative temperature over the course of a day (e.g., between early morning and the afternoon, between one day and another) are directly related to the time of day.

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K-ESS2-2 Earth's Systems

Students who demonstrate understanding can:

K-ESS2-2. 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.]

Chapter 2 Performance Expectation Activity, 71b

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
Engaging in Argument from Evidence 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. (K-ESS2-2) **SE Only:** 38, Lesson 6 **TE Only:** 36, Social Studies; 58-59; 71b, Performance Expectation Activity	**ESS2.E: Biogeology** • Plants and animals can change their environment. (K-ESS2-2) **SE Only:** 38, Lesson 6; 39 Investigate It! **TE Only:** 58-59; 60, Investigate It!; 67, Chapter 2 Test-Question 6 **ESS3.C: 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. (K-ESS3-3) **SE Only:** 38, Lesson 6; 59, Lesson 6 **TE Only:** 58-59; 96-97; 104, Chapter 3 Test–Question 2; 148, Social Studies; 109e, Performance Expectation Activity	**Systems and System Models** • Systems in the natural and designed world have parts that work together. (K-ESS2-2),(K-ESS3-1) **SE Only:** 38, Lesson 6 **TE Only:** 58-59; 69, Make an Animal World; 71b, Performance Expectation Activity; 71c, Performance Expectation Activity

Observable features of the student performance by the end of the grade:		
1	Supported claims	
	a	Students make a claim to be supported about a phenomenon. In their claim, students include the idea that plants and animals (including humans) can change the environment to meet their needs.
2	Identifying scientific evidence	
	a	Students identify and describe* the given evidence to support the claim, including:
		i. Examples of plants changing their environments (e.g., plant roots lifting sidewalks).
		ii. Examples of animals (including humans) changing their environments (e.g., ants building an ant hill, humans clearing land to build houses, birds building a nest, squirrels digging holes to hide food).
		iii. Examples of plant and animal needs (e.g., shelter, food, room to grow).
3	Evaluating and critiquing evidence	
	a	Students describe* how the examples do or do not support the claim.
4	Reasoning and synthesis	
	a	Students support the claim and present an argument by logically connecting various needs of plants and animals to evidence about how plants/animals change their environments to meet their needs. Students include:
		i. Examples of how plants affect other parts of their systems by changing their environments to meet their needs (e.g., roots push soil aside as they grow to better absorb water).
		ii. Examples of how animals affect other parts of their systems by changing their environments to meet their needs (e.g., ants, birds, rabbits, and humans use natural materials to build shelter; some animals store food for winter).

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K-ESS3-1 Earth and Human Activity

Students who demonstrate understanding can:

K-ESS3-1. Use a model to represent the relationship between the needs of different plants and 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.

Chapter 2 Performance Expectation Activity, 71c

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
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. (K-ESS3-1) **SE Only:** 23-32, STEM Activity; 39, Investigate It! **TE Only:** 44-45, STEM Activity; 60, Investigate It!; 64-65, Activity Card Support; 69, Make an Animal World; 71c, Performance Expectation	**ESS3.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. (K-ESS3-1) **SE Only:** 21, Try It!; 34, Lesson 2; 35, Lesson 3; 36, Lesson 4; 37, Lesson 5; 58, Lesson 5 **TE Only:** 36, Social Studies; 37, Rhyme; 39A-39B, Leveled Content Reader Support; 42, Try It!; 50-57; 71a, ELA/Literacy; 71c, Performance Expectation Activity; 94-95	**Systems and System Models** • Systems in the natural and designed world have parts that work together. (K-ESS2-2),(K-ESS3-1) **SE Only:** 38, Lesson 6 **TE Only:** 58-59; 69, Make an Animal World; 71b, Performance Expectation Activity; 71c, Performance Expectation Activity

Observable features of the student performance by the end of the grade:		
1	Components of the model	
	a	From the given model (e.g., representation, diagram, drawing, physical replica, diorama, dramatization, storyboard) of a phenomenon involving the needs of living things and their environments, students identify and describe* the components that are relevant to their representations, including:
		i. Different plants and animals (including humans).
		ii. The places where the different plants and animals live.
		iii. The things that plants and animals need (e.g., water, air, and land resources such as wood, soil, and rocks).
2	Relationships	
	a	Students use the given model to represent and describe* relationships between the components, including:
		i. The relationships between the different plants and animals and the materials they need to survive (e.g., fish need water to swim, deer need buds and leaves to eat, plants need water and sunlight to grow).
		ii. The relationships between places where different plants and animals live and the resources those places provide.
		iii. The relationships between specific plants and animals and where they live (e.g., fish live in water environments, deer live in forests where there are buds and leaves, rabbits live in fields and woods where there is grass to eat and space for burrows for homes, plants live in sunny and moist areas, humans get resources from nature [e.g., building materials from trees to help them live where they want to live]).
3	Connections	
	a	Students use the given model to represent and describe*, including:
		i. Students use the given model to describe* the pattern of how the needs of different plants and animals are met by the various places in which they live (e.g., plants need sunlight so they are found in places that have sunlight; fish swim in water so they live in lakes, rivers, ponds, and oceans; deer eat buds and leaves so they live in the forest).
		ii. Students use the given model to describe* that plants and animals, the places in which they live, and the resources found in those places are each part of a system, and that these parts of systems work together and allow living things to meet their needs.

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K-ESS3-2 Earth and Human Activity

Students who demonstrate understanding can:

K-ESS3-2. 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.]

Chapter 3 Performance Expectation Activity, 109b

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
Asking Questions and Defining Problems 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. (K- ESS3-2) **SE Only:** 44-53, STEM Activity; 75, Lesson 1; 65-74, STEM Activity **TE Only:** 82-83, STEM Activity; 109b, Performance Expectation Activity; 117, SEP: Asking Questions and Defining Problems; 124-125 **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/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2) **SE Only:** 61, Ready for the Weather **TE Only:** xxxvi-xxxvii, QUEST; 74, Reading; 77A-	**ESS3.B: 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. (K-ESS3-2) **SE Only:** 61, Ready for the Weather **TE Only:** xxxvi-xxxvii, QUEST; 92, 21st Century Learning; 99, Activate Prior Knowledge; 99, Teach with Visuals; 109b, Performance Expectation Activity; 109b, ELA Literacy **ETS1.A: Defining and Delimiting an Engineering Problem** • Asking questions, making observations, and gathering information are helpful in thinking about problems. *(secondary to K-ESS3-2)* **SE Only:** 42, Try It!; 44-53, STEM Activity; 60, Investigate It!; 75, Lesson 1; 76, Lesson 2; 79, Lesson 5 **TE Only:** xxxvi-xxxvii, QUEST; 80, Try It!; 82-83, STEM Activity; 98, Investigate It!; 107, Make a Weather Calendar; 109a, Performance Expectation	**Cause and Effect** • Events have causes that generate observable patterns. (K-PS3-1), (K-PS3-2), (K-ESS3-2) **SE Only:** 55, Lesson 2; 60, Investigate It!; **TE Only:** 78, CCC Patterns; 88, Envision It!; 88-89; 98, Investigate It!; 102-103, Activity Card Support --- ***Connections to Engineering, Technology, and Applications of Science*** **Interdependence of Science, Engineering, and Technology** • People encounter questions about the natural world every day. (K-ESS3-2) **SE Only:** 41, Chapter 3, Earth and Sky; 42, Try It!; 43, Draw Conclusions; 44-53, STEM Activity; 75, Lesson 1; **TE Only:** 77B, Leveled Content Reader Support; 78, Read Aloud: Is it night or day?; 80, Try It!; 82-83, STEM Activity; 109b, Performance Expectation Activity; 109b, ELA/Literacy; 124-125

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77B, Leveled Content Reader Support; 81, 21st Century Learning; 92, 21st Century Learning; 96, 21st Century Learning; 99, Teach with Visuals; 109b, Performance Activity; 109c, ELA Literacy	Activity; 109b, Performance Expectation Activity; 109b, ELA/Literacy; 109c, Performance Expectation Activity; 124-127; 132-133	**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. (K-ESS3-2) **SE Only:** 61, Ready for the Weather **TE Only:** 81, 21st Century Learning; 92, 21st Century Learning; 99, Teach with Visuals

Observable features of the student performance by the end of the grade:		
1	Addressing phenomena of the natural world	
	a	Students formulate questions about local severe weather, the answers to which would clarify how weather forecasting can help people avoid the most serious impacts of severe weather events.
2	Identifying the scientific nature of the question	
	a	Students' questions are based on their observations..
3	Obtaining information	
	a	Students collect information (e.g., from questions, grade appropriate texts, media) about local severe weather warnings (e.g., tornado alerts, hurricane warnings, major thunderstorm warnings, winter storm warnings, severe drought alerts, heat wave alerts), including that:.
		i. There are patterns related to local severe weather that can be observed (e.g., certain types of severe weather happen more in certain places).
		ii. Weather patterns (e.g., some events are more likely in certain regions) help scientists predict severe weather before it happens.
		iii. Severe weather warnings are used to communicate predictions about severe weather.
		iv. Weather forecasting can help people plan for, and respond to, specific types of local weather (e.g., responses: stay indoors during severe weather, go to cooling centers during heat waves; preparations: evacuate coastal areas before a hurricane, cover windows before storms).

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K-ESS3-3 Earth and Human Activity

Students who demonstrate understanding can:

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*

[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.]

Chapter 3 Performance Expectation Activity, 109e

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
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. (K-ESS3-3) **SE Only:** 21, Try It!; 23-32, STEM Activity; **TE Only:** 42, Try It!; 44-45, STEM Activity; 69, Make an Animal World; 71c, Performance Expectation Activity; 71c, ELA/Literacy	**ESS3.C: 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. (K-ESS3-3) **SE Only:** 38, Lesson 6; 59, Lesson 6 **TE Only:** 58-59; 96-97; 104, Chapter 3 Test–Question 2; 148, Social Studies; 109e, Performance Expectation Activity **ETS1.B: 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.*(secondary to K-ESS3-3)* **SE Only:** 21, Try It!; 23-32, STEM Activity; 39, Investigate It! **TE Only:** 42, Try It! 43, Extend the Lesson; 44-45, STEM Activity; 60, Investigate It!; 67, Chapter	**Cause and Effect** • Events have causes that generate observable patterns. (K-ESS3-3) **SE Only:** 21, Try It! 35, Lesson 3; 36, Lesson 4; 37, Lesson 5 **TE Only:** 40, Try It!; 49, Cause and Effect; 53, Explain; 53, Elaborate; 55, Elaborate; 57 Elaborate; 71b, Performance Expectation Activity

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	2 Test-Question 6; 69, Make an Animal World; 71a, ELA/Literacy; 109e, Performance Expectation Activity	

Observable features of the student performance by the end of the grade:		
1	Communicating information	
	a	Students use prior experiences and observations to describe* information about:
		i. How people affect the land, water, air, and/or other living things in the local environment in positive and negative ways.
		ii. Solutions that reduce the negative effects of humans on the local environment.
	b	Students communicate information about solutions that reduce the negative effects of humans on the local environment, including:
		i. Examples of things that people do to live comfortably and how those things can cause changes to the land, water, air, and/or living things in the local environment.
		ii. Examples of choices that people can make to reduce negative impacts and the effect those choices have on the local environment.
	b	Students communicate the information about solutions with others in oral and/or written form (which include using models and/or drawings.

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K-2-ETS1-1 Engineering Design

Students who demonstrate understanding can:

K-2-ETS1-1. 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.

Grade K: Chapter 3 Performance Expectation Activity, 109d

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
Asking Questions and Defining Problems Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions. • Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1) **Grade K SE only:** 24-25, STEM Activity; 45-47, STEM Activity; 75, Lesson 1 **Grade K TE Only:** 117, SEP: Asking Questions and Defining Problems; 153, SEP: Asking Questions and Defining Problems; 124, Activate Prior Knowledge; 125, ELL Support; 125, Formative Assessment • Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) **Grade K SE only:** 4, Find a Problem; 23, Find a Problem; 44, Find a Problem; 65, Find a Problem; 86, Find a Problem; 96, Lesson 1 **Grade K TE Only:** 12, STEM	**ETS1.A: Defining and Delimiting Engineering Problems** • A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) **Grade K SE only:** 4-13, STEM Activity; 23-32, STEM Activity; 44-53, STEM Activity; 65-74, STEM Activity; 86-95, STEM Activity; 96, Lesson 1; 99, Investigate It! **Grade K TE Only:** 12-13, STEM Activity; 44-45, STEM Activity; 82-83, STEM Activity; 109d, Performance Expectation Activity; 120-121, STEM Activity; 156-157, STEM Activity, 166, Investigate It! • Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) **Grade K SE only:** 4-13, STEM Activity; 23-32, STEM Activity; 44-53, STEM Activity; 65-74, STEM Activity; 86-95, STEM Activity; 96, Lesson 1 **Grade K TE Only:** 12-13, STEM Activity; 44-45, STEM Activity; 82-83, STEM	

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Activity; 44, STEM Activity; 82, STEM Activity; 109d, Performance Expectation Activity; 120, STEM Activity; 156, STEM Activity; 160, Envision It!; 160, Activate Prior Knowledge; 160, For Interactive Whiteboard Classrooms; 160, Differentiated Instruction; 161, ELL Support; 161, Explain; 161, Elaborate; 161, Formative Assessment; 164, Differentiated Instruction	Activity; 109d, Performance Expectation Activity; 120-121, STEM Activity; 156-157, STEM Activity • Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) **Grade K SE only:** 4, STEM Activity; 23, STEM Activity; 44, STEM Activity; 65, STEM Activity; 86, STEM Activity; 96, Lesson 1; 97, Lesson 2 **Grade K TE Only:** 12, STEM Activity; 44, STEM Activity; 82, STEM Activity; 109d, Performance Expectation Activity; 120, STEM Activity; 156, STEM Activity; 160, Envision It!; 160, Activate Prior Knowledge; 160, For Interactive Whiteboard Classrooms; 160, Differentiated Instruction; 161, ELL Support; 161, Explain; 161, Elaborate; 161, Formative Assess; 164, Differentiated Instruction	

Observable features of the student performance by the end of the grade:		
1	Addressing phenomena of the natural or designed world	
	a	Students ask questions and make observations to gather information about a situation that people want to change. Students' questions, observations, and information gathering are
		i. A given situation that people wish to change.
		ii. Why people want the situation to change.
		iii. The desired outcome of changing the situation.
2	Identifying the scientific nature of the question	
	a	Students' questions are based on observations and information gathered about scientific phenomena that are important to the situation.
3	Identifying the problem to be solved	
	a	Students use the information they have gathered, including the answers to their questions, observations they have made, and scientific information, to describe* the situation people want to change in terms of a simple problem that can be solved with the development of a new or improved object or tool.
4	Defining the features of the solution	
	a	With guidance, students describe* the desired features of the tool or object that would solve the problem, based on scientific information, materials available, and potential related benefits to people and other living things.

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K-2-ETS1-2 Engineering Design

Students who demonstrate understanding can:

K-2-ETS1-2. 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.

Grade K: Chapter 2 Performance Expectation Activity, 71c

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
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, or storyboard) that represent concrete events or design solutions. • Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2) **Grade K SE only:** 23-32, STEM Activity; 44-53, STEM Activity **Grade K TE Only:** 44-45, STEM Activity; 71c, Performance Expectation Activity; 82-83, STEM Activity	**ETS1.B: 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.K-2 ETS1-2 **Grade K SE only:** 8-9, Make and Test; 23-32, STEM Activity; 44-53, STEM Activity; 68, Draw; 71, Make and Test; 89, Draw; 92, Make and Test; 97, Lesson 2; 98, Lesson 3 **Grade K TE Only:** 12-13, STEM Activity; 44-45, STEM Activity; 82-83, STEM Activity; 109d, Performance Expectation Activity; 120-121, STEM Activity; 156-157, STEM Activity; 162, Envision It!; 162, Activate Prior Knowledge; 162, For Interactive Whiteboard Classrooms; 163, ELL Support; 161, Explain; 163, Elaborate; 163, Formative Assessment; 164, Envision It!; 164, Activate Prior Knowledge; 164, For Interactive Whiteboard Classrooms; 164, Differentiated Instruction; 165, ELL Support; 165, Explain; 165, Elaborate; 165, Formative Assessment	**Structure and Function** • The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2) **Grade K SE only:** 44-53, STEM Activity; 86-93, STEM Activity **Grade K TE Only:** 82-83, STEM Activity; 116, CCC: Structure and Function and Effect; 152, CCC: Structure and Function; 156-157, STEM Activity

Observable features of the student performance by the end of the grade:		
1	Components of the model	
	a	Students develop a representation of an object and the problem it is intended to solve. In their representation, students include the following components:
		i. The object.
		ii. The relevant shape(s) of the object.
		iii. The function of the object.
	b	Students use sketches, drawings, or physical models to convey their representations.
2	Relationships	
	a	Students identify relationships between the components in their representation, including:
		i. The shape(s) of the object and the object's function.
		ii. The object and the problem is it designed to solve.
3	Connections	
	a	Students use their representation (simple sketch, drawing, or physical model) to communicate the connections between the shape(s) of an object, and how the object could solve the problem.

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K-2-ETS1-3 Engineering Design

Students who demonstrate understanding can:

K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Grade K: Chapter 1 Performance Expectation Activity, 33b

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
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. (K-2-ETS1-3) **Grade K SE only:** 10-11, Record and Share; 30, Make and Test; 31, Record and Share; 51, Make and Test; 52, Record and Share; 72, Make and Test; 73, Record and Share; 93, Make and Test; 94, Record and Share **Grade K TE Only:** 12-13, STEM Activity; 33b, Performance Expectation Activity; 44-45, STEM Activity; 82-83, STEM Activity; 109a, Performance Expectation Activity; 120-121, STEM Activity; 156-157, STEM Activity	**ETS1.C: Optimizing the Design Solution** • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3) **Grade K SE only:** 10-11, Record and Share; 31, Record and Share; 52, Record and Share; 73, Record and Share; 94, Record and Share; 98, Lesson 3 **Grade K TE Only:** 12-13, STEM Activity; 44-45, STEM Activity; 82-83, STEM Activity; 109d, Performance Expectation Activity; 120-121, STEM Activity; 156-157, STEM Activity; 164, Differentiated Instruction; 165, Compare and Contrast	

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Observable features of the student performance by the end of the grade:		
1	Organizing data	
	a	With guidance, students use graphical displays (e.g., tables, pictographs, line plots) to organize given data from tests of two objects, including data about the features and relative performance of each solution.
2	Identifying relationships	
	a	Students use their organization of the data to find patterns in the data, including:
		i. How each of the objects performed, relative to:
		1. The other object.
		2. The intended performance.
		ii. How various features (e.g., shape, thickness) of the objects relate to their performance (e.g., speed, strength).
3	Interpreting data	
	a	Students use the patterns they found in object performance to describe*:
		i. The way (e.g., physical process, qualities of the solution) each object solves the problem.
		ii. The strengths and weaknesses of each design.
		iii. Which object is better suited to the desired function, if both solve the problem.