SAVVAS

Next Generation Science Standards* Correlation

Engineering Design	Where You Will Find It
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.	**Skills Handbook:** P1.1, P1.2, P1.5, P1.6, P2.1, P2.2 **STEM Activities:** Chapter 1 STEM Activity Chapter 2 STEM Activity Chapter 3 STEM Activity Part 1 STEM Activity Part 2 STEM Activity **Inquiry Labs:** Chapter 2 Try It! Chapter 3 Try It! Part 1 Try It! Chapter 2 Investigate It! Chapter 3 Investigate It!
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.	**Skills Handbook:** P1.4, P 2.3 **STEM Activities:** Chapter 1 STEM Activity Chapter 2 STEM Activity Chapter 3 STEM Activity Part 1 STEM Activity Part 2 STEM Activity **Inquiry Labs:** Part 1 Investigate It! Part 2 Try It! Part 2 Investigate It!
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**Skills Handbook:** P1.3 **STEM Activities:** Chapter 1 STEM Activity Chapter 2 STEM Activity Chapter 3 STEM Activity Part 1 STEM Activity Part 2 STEM Activity

Forces and Interactions: Pushes and Pulls

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
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.	**Lesson:** 1.2 **Lessons:** 1.2, 1.4 **Chapter 1** Investigate It!	*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. **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.
Types of Interactions: • When objects touch or collide, they push on one another and can change motion.	**Lessons:** 1.2, 1.4	
Relationship Between Energy and Forces: • A bigger push or pull makes things speed up or slow down more quickly.	**Lesson:** 1.3 **Chapter 1** STEM Activity **Chapter 1** Investigate It!	

Crosscutting Concepts: Cause and Effect

Chapter 1

- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Science and Engineering Practices: Planning and Carrying Out Investigations

- With guidance, plan and conduct an investigation in collaboration with peers.

Connections to Nature of Science

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world.

ELA/Literacy	Mathematics
• Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	• Reason abstractly and quantitatively. • Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. • Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 33a. These activities may be used with Chapter 1.

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Forces and Interactions: Pushes and Pulls

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
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.	**Lesson:** 1.2 **Lessons:** 1.2, 1.4 **Chapter 1** Investigate It!	*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. **Assessment Boundary:** Assessment does not include friction as a mechanism for change in speed.
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.	**Lesson:** 1.2 **Chapter 1** STEM Activity	

Crosscutting Concepts: Cause and Effect — **Chapter 1**
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Science and Engineering Practices: Analyzing and Interpreting Data
- Analyze data from tests of an object or tool to determine if it works as intended.

ELA/Literacy	Mathematics
• With prompting and support, ask and answer questions about key details in a text. • Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	N/A

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 33b. These activities may be used with Chapter 1.

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Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
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.	**Lessons:** 2.3, 2.4, 3.3	*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 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. **Assessment Boundary:** N/A

Crosscutting Concepts: Patterns

Chapters 2 and 3

• Patterns in the natural and human designed world can be observed and used as evidence.

Science and Engineering Practices: Analyzing and Interpreting Data

• Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

• Scientists look for patterns and order when making observations about the world.

ELA/Literacy	Mathematics
• Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	• Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 71a. These activities may be used with Chapter 2.

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
Biogeology: • Plants and animals can change their environment.	**Lesson:** 2.6	*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. **Assessment Boundary:** N/A
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.	**Lessons:** 2.5, 3.6	

Crosscutting Concepts: Systems and System Models — **Chapters 2 and 3**

• Systems in the natural and designed world have parts that work together.

Science and Engineering Practices: Engaging in Argument from Evidence

• Construct an argument with evidence to support a claim.

ELA/Literacy	Mathematics
• With prompting and support, ask and answer questions about key details in a text. • Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. • Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	N/A

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 71b. These activities may be used with Chapter 2.

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
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.	**Lessons:** 2.3, 2.4, 2.5, 3.5	*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

Crosscutting Concepts: Systems and System Models

Chapters 2 and 3

• Systems in the natural and designed world have parts that work together.

Science and Engineering Practices: Developing and Using Models

• Use a model to represent relationships in the natural world.

ELA/Literacy	Mathematics
• Add drawings or other visual displays to descriptions as desired to provide additional detail.	• Reason abstractly and quantitatively. • Model with mathematics. • Counting and Cardinality

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 71c. These activities may be used with Chapter 2.

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Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
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.	**Lessons:** 2.5, 3.6	*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.*** **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.	**Chapter 2** STEM Activity **Chapter 3** STEM Activity **Skills Handbook:** P1.4, P2 Try It, P2.3	

Crosscutting Concepts: Cause and Effect

Chapters 2 and 3

• Events have causes that generate observable patterns.

Science and Engineering Practices: Obtaining, Evaluating, and Communicating Information

• Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas.

ELA/Literacy	Mathematics
• Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	N/A

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 109a. These activities may be used with Chapter 3.

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Weather and Climate

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
Conservation of Energy and Energy Transfer: • Sunlight warms Earth's surface.	**Lessons:** 3.3, C3 Investigate It	*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. **Assessment Boundary:** Assessment of temperature is limited to relative measures such as warmer/cooler.

Crosscutting Concepts: Cause and Effect

Chapter 3

• Events have causes that generate observable patterns.

Science and Engineering Practices: Planning and Carrying Out Investigations

• Make observations (firsthand or from media) to collect data that can be used to make comparisons.

Connections to Nature of Science

Scientific Investigations Use a Variety of Methods

• Scientists use different ways to study the world.

ELA/Literacy	Mathematics
• Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	• Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 109c. These activities may be used with Chapter 3.

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Weather and Climate

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
Conservation of Energy and Energy Transfer: • Sunlight warms Earth's surface.	**Lesson:** 3.3 **Chapter 3** Investigate It!	*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

Crosscutting Concepts: Cause and Effect

Chapter 3

• Events have causes that generate observable patterns.

Science and Engineering Practices: Constructing Explanations 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.

ELA/Literacy	Mathematics
• Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	• Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 109d. These activities may be used with Chapter 3.

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Weather and Climate

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
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.	**Lesson:** 3.4	*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.

Crosscutting Concepts: Patterns

Chapter 3

• Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Science and Engineering Practices: Analyzing and Interpreting Data

• Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

Connections to Nature of Science

Knowledge is Based on Empirical Evidence

• Scientists look for patterns and order when making observations about the world.

ELA/Literacy	Mathematics
• Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	• Reason abstractly and quantitatively. • Model with mathematics. • Know number names and the count sequence. • Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. • Classify objects into given categories; count the number of objects in each category and sort the categories by count.

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 109c. These activities may be used with Chapter 3.

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Weather and Climate

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
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.	**Chapter 3 Feature** Big World, My World	*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. **Assessment Boundary:** N/A
Defining and Delimiting an Engineering Problem: • Asking questions, making observations, and gathering information are helpful in thinking about problems.	**Chapter 3** Try It! **Chapter 3** Investigate It! **Skills Handbook:** P1 Try It, P1.1, P1.2, P1.5, P1.6	

Crosscutting Concepts: Cause and Effect

Chapter 3 and Skills Handbook Pt 1

• Events have causes that generate observable patterns.

Connections to Engineering, Technology, and Applications of Science

Interdependence of Science, Engineering, and Technology

• People encounter questions about the natural world every day.

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.

Science and Engineering Practices: Obtaining, Evaluating, and Communicating Information

• Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.

ELA/Literacy	Mathematics
• With prompting and support, ask and answer questions about key details in a text. • Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	• Model with mathematics. • Counting and Cardinality

Activities for the Performance Expectation as well as the ELA/Literacy and/or Mathematics connections can be found in the *Teacher's Edition* on page 109b. These activities may be used with Chapter 3.

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.