

Structure and Properties of Matter

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>Structure and Properties of Matter</p> <ul style="list-style-type: none"> Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. 	<p>Lessons: 1.1, 1.2, 1.3, 1.4, 1.5</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p> <p>Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.</p> <p>Assessment Boundary: N/A</p>

Crosscutting Concepts: Patterns

- Patterns in the natural and human designed world can be observed.

Chapter 1

Science and Engineering Practices: Planning and Carrying Out Investigations

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). Recall information from experiences or gather information from provided sources to answer a question. 	<ul style="list-style-type: none"> Model with mathematics. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

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 61a. 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.

Structure and Properties of Matter

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>Structure and Properties of Matter:</p> <ul style="list-style-type: none"> Different properties are suited to different purposes. 	<p>Lesson: 1.5</p> <p>Chapter 1 STEM Activity</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*</p> <p>Clarification Statement: Examples of properties could include strength, flexibility, hardness, texture, and absorbency.</p> <p>Assessment Boundary: Assessment of quantitative measurements is limited to length.</p>

Crosscutting Concepts: Cause and Effect

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

Chapter 1

Connections to Engineering, Technology, and Applications of Science

Influence of Engineering, Technology, and Science on Society and the Natural World

- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.

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
<ul style="list-style-type: none"> Describe how reasons support specific points the author makes in a text. Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). Recall information from experiences or gather information from provided sources to answer a question. 	<ul style="list-style-type: none"> Reason abstractly and quantitatively. Model with mathematics. Use appropriate tools strategically. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

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 61b. These activities may be used with Chapter 1.

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Structure and Properties of Matter

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>Structures and Properties of Matter:</p> <ul style="list-style-type: none"> • Different properties are suited to different purposes. • A great variety of objects can be built up from a small set of pieces. 	<p>Lesson: 1.5 Chapter 1 STEM Activity Lesson: 1.5</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</p> <p>Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.</p> <p>Assessment Boundary: N/A</p>

Crosscutting Concepts: Energy and Matter

- Objects may break into smaller pieces and be put together into larger pieces, or change shapes.

Chapter 1

Science and Engineering Practices: Constructing Explanations and Designing Solutions

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> • Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). • Recall information from experiences or gather information from provided sources to answer a question. 	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 61c. These activities may be used with Chapter 1.

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Structure and Properties of Matter

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>Chemical Reactions:</p> <ul style="list-style-type: none"> Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. 	<p>Lessons: 1.3, 1.4</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</p> <p>Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.</p> <p>Assessment Boundary: N/A</p>

Crosscutting Concepts: Cause and Effect

- Events have causes that generate observable patterns.

Chapter 1

Science and Engineering Practices: Engaging in Argument from Evidence

- Construct an argument with evidence to support a claim.

Connections to Nature of Science

Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena

- Scientists search for cause and effect relationships to explain natural events.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> Ask and answer such questions as <i>who</i>, <i>what</i>, <i>where</i>, <i>when</i>, <i>why</i>, and <i>how</i> to demonstrate understanding of key details in a text. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. Describe how reasons support specific points the author makes in a text. Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., <i>because</i>, <i>and</i>, <i>also</i>) to connect opinion and reasons, and provide a concluding statement or section. 	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 61d. These activities may be used with Chapter 1.

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Interdependent Relationships in Ecosystems

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
Interdependent Relationships in Ecosystems: <ul style="list-style-type: none"> Plants depend on water and light to grow. 	Lessons: 2.1, 2.5	<i>Students who demonstrate understanding can:</i> Plan and conduct an investigation to determine if plants need sunlight and water to grow. Clarification Statement: N/A Assessment Boundary: Assessment is limited to testing one variable at a time.

Crosscutting Concepts: Cause and Effect

- Events have causes that generate observable patterns.

Chapter 2

Science and Engineering Practices: Planning and Carrying Out Investigations

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). Recall information from experiences or gather information from provided sources to answer a question. 	<ul style="list-style-type: none"> Reason abstractly and quantitatively. Model with mathematics. Use appropriate tools strategically.

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 117a. These activities may be used with Chapter 2.

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Interdependent Relationships in Ecosystems

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
Interdependent Relationships in Ecosystems: <ul style="list-style-type: none"> Plants depend on animals for pollination or to move their seeds around. 	Lessons: 2.1, 2.3	<i>Students who demonstrate understanding can:</i> Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*
Developing Possible Solutions: <ul style="list-style-type: none"> 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. 	Lesson: 2.3	Clarification Statement: N/A Assessment Boundary: N/A

Crosscutting Concepts: Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s).

Chapter 2

Science and Engineering Practices: Developing and Using Models

- Develop a simple model based on evidence to represent a proposed object or tool.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. 	<ul style="list-style-type: none"> Model with mathematics. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems.

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 117b. These activities may be used with Chapter 2.

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Interdependent Relationships in Ecosystems

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>Biodiversity and Humans:</p> <ul style="list-style-type: none"> There are many different kinds of living things in any area, and they exist in different places on land and in water. 	<p>Lessons: 2.2, 2.3, 2.4</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Make observations of plants and animals to compare the diversity of life in different habitats.</p> <p>Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.</p> <p>Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.</p>

Crosscutting Concepts: N/A

Science and Engineering Practices: Planning and Carrying Out Investigations

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

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
<ul style="list-style-type: none"> Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). Recall information from experiences or gather information from provided sources to answer a question. 	<ul style="list-style-type: none"> Reason abstractly and quantitatively. Model with mathematics. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems.

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 117c. These activities may be used with Chapter 2.

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Earth's Systems: Processes that Shape the Earth

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>The History of Planet Earth:</p> <ul style="list-style-type: none"> Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. 	<p>Lessons: 3.2, 3.3</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</p> <p>Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly, and erosion of rocks, which occurs slowly.</p> <p>Assessment Boundary: Assessment does not include quantitative measurements of timescales.</p>

Crosscutting Concepts: Stability and Change

Chapter 3

- Things may change slowly or rapidly.

Science and Engineering Practices: Constructing Explanations and Designing Solutions

- Make observations from several sources to construct an evidence-based account for natural phenomena.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> Ask and answer such questions as <i>who</i>, <i>what</i>, <i>where</i>, <i>when</i>, <i>why</i>, and <i>how</i> to demonstrate understanding of key details in a text. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). Recall information from experiences or gather information from provided sources to answer a question. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media. 	<ul style="list-style-type: none"> Model with mathematics. Understand place value.

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 159a. These activities may be used with Chapter 3.

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Earth's Systems: Processes that Shape the Earth

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
Earth Materials and Systems: <ul style="list-style-type: none"> • Wind and water can change the shape of the land. 	Lesson: 3.2	<i>Students who demonstrate understanding can:</i> Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.* Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land. Assessment Boundary: N/A
Optimizing the Design Solution: <ul style="list-style-type: none"> • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. 	Chapter 3 STEM Activity	

Crosscutting Concepts: Stability and Change

- Things may change slowly or rapidly.

Chapter 3

Connections to Engineering, Technology, and Applications of Science

Influence of Engineering, Technology, and Science on Society and the Natural World

- Developing and using technology has impacts on the natural world.

Connections to Nature of Science

Science Addresses Questions About the Natural and Material World

- Scientists study the natural and material world.

Science and Engineering Practices: Constructing Explanations and Designing Solutions

- Compare multiple solutions to a problem.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> • Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. • Compare and contrast the most important points presented by two texts on the same topic. 	<ul style="list-style-type: none"> • Reason abstractly and quantitatively. • Model with mathematics. • Use appropriate tools strategically. • Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

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 159b. These activities may be used with Chapter 3.

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Earth's Systems: Processes that Shape the Earth

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>Plate Tectonics and Large-Scale System Interactions:</p> <ul style="list-style-type: none"> • Maps show where things are located. One can map the shapes and kinds of land and water in any area. 	<p>Lesson: 3.1</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Develop a model to represent the shapes and kinds of land and bodies of water in an area.</p> <p>Clarification Statement: N/A</p> <p>Assessment Boundary: Assessment does not include quantitative scaling in models.</p>

Crosscutting Concepts: Patterns

- Patterns in the natural world can be observed.

Chapter 3

Science and Engineering Practices: Developing and Using Models

- Develop a model to represent patterns in the natural world.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> • Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. 	<ul style="list-style-type: none"> • Reason abstractly and quantitatively. • Model with mathematics. • Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

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 159c. These activities may be used with Chapter 3.

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Earth's Systems: Processes that Shape the Earth

Disciplinary Core Ideas	Where You Will Find It	Performance Expectations
<p>The Roles of Water in Earth's Surface Processes:</p> <ul style="list-style-type: none"> Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. 	<p>Lessons: 1.4, 3.1</p>	<p><i>Students who demonstrate understanding can:</i></p> <p>Obtain information to identify where water is found on Earth and that it can be solid or liquid.</p> <p>Clarification Statement: N/A</p> <p>Assessment Boundary: N/A</p>

Crosscutting Concepts: Patterns

- Patterns in the natural world can be observed.

Chapter 3

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

- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question.

ELA/Literacy	Mathematics
<ul style="list-style-type: none"> With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. Recall information from experiences or gather information from provided sources to answer a question. 	<p>N/A</p>

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 159d. These activities may be used with Chapter 3.

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