2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

Forces and Interactions: Pushes and Pulls

PE	Correlations
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.	KEY: M = Module DQ = Driving Question L = Lesson TE = Teacher Edition TB = Twig Book (Student Edition) Grade K Module 2: Marble Run Engineer M2_DQ1 TE p.1 M2_DQ2 TE p.78 M2_DQ3 TE p.127
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 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.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Forces and Motion Pushes and pulls can have different strengths and directions.	Grade K Module 2: Marble Run Engineer M2_DQ1 TE p.1 **Key Resources** DQ1_L2 Let's Move! Prior-Knowledge Read-Aloud text DQ1_L3 The Push and Pull Song video DQ1_L3 What Makes Things Move? video DQ1_L4 Exploring Forces video DQ1_L6 Pushes and Pulls—Odd One Out video Leveled Reader: Pushes and Pulls	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.	Grade K Module 2: Marble Run Engineer **Key Resources** DQ1_L2 Let's Move! Prior-Knowledge Read-Aloud text DQ1_L3 The Push and Pull Song video DQ1_L3 What Makes Things Move? video DQ1_L4 Exploring Forces video DQ1_L6 Change Direction visual DQ2_L2 Engineering: Jetpack video DQ2_L2 Follow the Marble game	**Planning and carrying out investigations** Planning and carrying out investigations to answer questions (science) or test solutions (engineering) 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.	Grade K Module 2: Marble Run Engineer M2_DQ1 TE p.1 M2_DQ2 TE p.78 M2_DQ3 TE p.127
Forces and Motion Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.					
Types of Interactions	Grade K Module 2: Marble Run Engineer M2_DQ2 TE p.78				

When objects touch or collide, they push on one another and can change motion.	M2_DQ3 TE p.127		DQ3_L6 Marble Run: Engineering Design Challenge Rubric Leveled Reader: Pushes and Pulls		
Relationship Between Energy and Forces A bigger push or pull makes things speed up or slow down more quickly.	Grade K Module 2: Marble Run Engineer M2_DQ1 TE p.1 M2_DQ2 TE p.78 M2_DQ3 TE p.127 Leveled Reader: Pushes and Pulls				

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CONTENT AND PERFORMANCE STANDARDS

Forces and Interactions: Pushes and Pulls

PE	Correlations
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.	Grade K Module 2: Marble Run Engineer M2_DQ2 TE p.78 M2_DQ3 TE p.127 Leveled Reader: Pushes and Pulls
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. *State Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Forces and Motion Pushes and pulls can have different strengths and directions. **Forces and Motion** Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.	Grade K Module 2: Marble Run Engineer M2_DQ1 TE p.1 M2_DQ2 TE p.78 M2_DQ3 TE p.127 **Key Resources** DQ1_L3 The Push and Pull Song video DQ1_L3 What Makes Things Move? video DQ1_L4Exploring Forces video DQ1_L3 Score 10 Tool visual DQ2_L2 Engineering: Jetpack video DQ2_L4 Speed video Leveled Reader: Pushes and Pulls	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.	Grade K Module 2: Marble Run Engineer M2_DQ2 TE p.78 M2_DQ3 TE p.127	**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.	Grade K Module 2: Marble Run Engineer M2_DQ1 TE p.1 M2_DQ2 TE p.78 M2_DQ3 TE p.127

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.	Grade K Module 2: Marble Run Engineer M2_DQ3 **Key Resources** Make Your Marble Move video				

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CONTENT AND PERFORMANCE STANDARDS

Weather and Climate

PE	Correlations
K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1
Examples of Earth's surface could include sand, soil, rocks, and water. *State Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Conservation of Energy and Energy Transfer Sunlight warms Earth's surface.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1	**Cause and Effect** Events have causes that generate observable patterns.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1	**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) and/or measurements of a proposed object or tool or solution to determine if it solves a problem or meets a goal.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 DQ1_L4 Thermometer handout DQ1_L4 Hot or Cold visual DQ1_L4 Where Does Rain Come From? video DQ1_L8 Sun's Rays video DQ1_L10 Under My Umbrella Read-Aloud text

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CONTENT AND PERFORMANCE STANDARDS

Weather and Climate

PE	Correlations
K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1
Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Conservation of Energy and Energy Transfer Sunlight warms Earth's surface.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1	**Cause and Effect** Events have causes that generate observable patterns.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1	**Constructing explanations and designing solutions** Constructing explanations (science) and designing solutions (engineering) 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/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 **Key Resources** DQ1_L3 Umbrella Top Template handout DQ1_L4 Thermometer handout DQ1_L4 Hot or Cold visual DQ1_L4 Where Does Rain Come From? video DQ1_L8 Sun's Rays video

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

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

PE	Correlations
K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.	Grade K Module 1: My Big Nature Adventure M1_DQ2 TE p.31 M1_DQ3 TE p.103 M1_DQ4 TE p.147 M1_DQ5 TE p.179 Leveled Reader: The Friendly Kakapo
Examples of patterns could include that animals need to take in food but plants make their own food; 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.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Organization for Matter and Energy Flow in Organisms All animals need food in order to live and grow. Animals obtain their food from plants or from other animals. Plants need water and light to live and grow.	Grade K Module 1: My Big Nature Adventure M1_DQ2 TE p.31 M1_DQ3 TE p.103 M1_DQ4 TE p.147 M1_DQ5 TE p.179 **Key Resources** DQ2_L3 Rain audio clip DQ2_L3 Looking for Plants: Rain video DQ2_L4 Looking for Plants: River video DQ2_L5 Watering Plants video DQ2_L7 Looking for Plants: Cave video DQ3_L3 What Do Animals Eat? video DQ3_L5 Sharing Water video DQ3_L5 What Do Animals Need? quiz	**Energy and Matter** Matter is transported into, out of, and within systems.	Grade K Module 1: My Big Nature Adventure M1_DQ3 TE p.103 **Key Resources** DQ3_L3 What Do Animals Eat? Video DQ3_L5 Sharing Water video Leveled Reader: The Friendly Kakapo	**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.	Grade K Module 1: My Big Nature Adventure M1_DQ2 TE p.31 M1_DQ3 TE p.103 M1_DQ4 TE p.147 M1_DQ5 TE p.179 **Key Resources** DQ2_L3 Rain audio clip DQ2_L3 Looking for Plants: Rain video DQ2_L4 Looking for Plants: River video DQ2_L5 Watering Plants video DQ2_L7 Looking for Plants: Cave video DQ3_L3 What Do Animals Eat? video DQ3_L5 Sharing Water video DQ3_L5 What Do Animals Need? quiz DQ4_L2 Life Under a Rock video DQ4_L2 Where Do Animals Live? quiz DQ5_L1 Dung Beetle video DQ5_L1 Adventure in the Desert video DQ5_L4 Adventure in a Grassland video DQ5_L5 Who Lives Here? Read-Aloud text

	DQ4_L2 Life Under a Rock video DQ4_L2 Where Do Animals Live? quiz DQ5_L1 Dung Beetle video DQ5_L1 Adventure in the Desert video DQ5_L4 Adventure in a Grassland video DQ5_L5 Who Lives Here? Read-Aloud text DQ5_L6 Peregrine Falcon video Leveled Reader: The Friendly Kakapo				DQ5_L6 Peregrine Falcon video Leveled Reader: The Friendly Kakapo

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CONTENT AND PERFORMANCE STANDARDS

Weather and Climate

PE	Correlations
K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 M3_DQ2 TE p.67 M3_DQ3 TE p.109 M3_DQ4 TE p.149
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. *State Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.*	

DCI	Citations	CCC	Citations	SEP	Citations
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.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 M3_DQ2 TE p.67 M3_DQ3 TE p.109 M3_DQ4 TE p.149 **Key Resources** DQ1_L2 My Favorite Weather Prior-Knowledge Read-Aloud text DQ1_L2 Weather Forecast video DQ2_L1 What Is the Weather Like? video DQ2_L2 Kinds of Weather Read-Aloud text DQ3_L5 Meteorologists video Leveled Reader: What's the Weather?	**Patterns** Patterns in the natural and human designed world can be observed and used as evidence.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 M3_DQ2 TE p.67 M3_DQ3 TE p.109 M3_DQ4 TE p.149 **Key Resources** DQ1_L2 My Favorite Weather Prior-Knowledge Read-Aloud text DQ1_L2 Weather Forecast video DQ2_L1 What Is the Weather Like? video DQ2_L2 Kinds of Weather Read-Aloud text	**Analyzing and interpreting data** Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Use observations to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 M3_DQ2 TE p.67 M3_DQ3 TE p.109 M3_DQ4 TE p.149 **Key Resources** DQ1_L2 My Favorite Weather Prior-Knowledge Read-Aloud text DQ1_L2 Weather Forecast video DQ1_L2 Weather Symbols visual Snow—Big Reveal video DQ2_L2 Kinds of Weather Read-Aloud text DQ3_L3 Weather Data visual DQ3_L5 Meteorologists video DQ4_L2 Severe Weather video DQ4_L3 Severe Weather Symbols visual Leveled Reader: What's the Weather?

			DQ3_L5 Meteorologists video		

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

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

PE	Correlations
K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	Grade K Module 4: I Can M4_DQ1 TE p.1 M4_DQ2 TE p.67 M4_DQ3 TE p.107 M4_DQ4 TE p.151 M4_DQ5 TE p.179 Leveled Reader: Animal Builders
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.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Biogeology Plants and animals can change their environment.	Grade K Module 4: I Can M4_DQ1 TE p.1 M4_DQ2 TE p.67 M4_DQ3 TE p.107 **Key Resources** DQ1_L4 Earthworm Tunneling video DQ1_L5 A Day in the Life of an Earthworm video DQ1_L7 Beaver—Jigsaw Puzzle video DQ1_L9 It's a Beaver! video DQ1_L7 Beaver Builders video DQ1_L9 Beaver Claims Read-Aloud text DQ1_L10 Animals Can Change their Environment video DQ2_L4 Leaf Litter video DQ2_L4 Leaf System visual DQ2_L5 Roots—Big Reveal video DQ2_L5 Tree Roots visual	**Systems and System Models** Systems in the natural and designed world have parts that work together.	Grade K Module 4: I Can M4_DQ4 **Key Resources** Irrigation video Leveled Reader: Animal Builders	**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.	Grade K Module 4: I Can M4_DQ1 TE p.1 M4_DQ2 TE p.67 M4_DQ3 TE p.107 M4_DQ4 TE p.151 M4_DQ5 TE p.179 **Key Resources** DQ1_L4 Earthworm Tunneling video DQ1_L5 A Day in the Life of an Earthworm video DQ1_L7 Beaver—Jigsaw Puzzle video DQ1_L9 It's a Beaver! video DQ1_L7 Beaver Builders video DQ1_L9 Beaver Claims Read-Aloud text DQ1_L10 Animals Can Change their Environment video DQ2_L4 Leaf Litter video DQ2_L4 Leaf System visual DQ2_L5 Roots—Big Reveal video DQ2_L5 Tree Roots visual

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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.	Grade K Module 4: I Can M4_DQ3 TE p.107 M4_DQ4 TE p.151 M4_DQ4 TE p.151 M4_DQ5 TE p.179 **Key Resources** How Is Paper Made? video DQ3_L3 Deforestation visual DQ3_L3 Disappearing Forests video DQ3_L5 Irrigation video DQ4_L2 Recycled Object visual DQ4_L2 Reduce, Reuse, Recycle video DQ4_L2 Reduce, Reuse, Recycle Snap game				DQ3_L2 How Is Paper Made? video DQ3_L3 Deforestation visual DQ3_L3 Disappearing Forests video DQ3_L5 Irrigation video DQ4_L2 Recycled Object visual DQ4_L2 Reduce, Reuse, Recycle video DQ4_L2 Reduce, Reuse, Recycle Snap game

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

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

PE	Correlations
K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.	Grade K Module 1: My Big Nature Adventure M1_DQ4 TE p.147 M1_DQ5 TE p.179
Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested and rangeland areas; and, grasses need sunlight so they often grow in meadows and prairies. Plants, animals, and their surroundings make up a system.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
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.	Grade K Module 1: My Big Nature Adventure M1_DQ4 TE p.147 M1_DQ5 TE p.179 **Key Resources** DQ4_L2 Life Under a Rock video DQ4_L3 Damselfly video DQ5_L1 Dung Beetle video DQ5_L1 Adventure in the Desert video DQ5_L3 Adventure in a Grassland video DQ5_L3 Agama Lizard video DQ5_L5 Who Lives Here? Read-Aloud text DQ5_L6 Peregrine Falcon video Leveled Reader: The Friendly Kakapo	**Systems and System Models** Systems in the natural and designed world have parts that work together.	Grade K Module 1: My Big Nature Adventure M1_DQ4 TE p.147 M1_DQ5 TE p.179	**Developing and using models** Modeling in K–2 builds on prior experiences and progresses to include using and developing models (e.g., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Use a model to represent relationships in the natural world.	Grade K Module 1: My Big Nature Adventure M1_DQ4 TE p.147 M1_DQ5 TE p.179 **Key Resources** DQ4_L2 Life Under a Rock video DQ5_L5 Who Lives Here? Read-Aloud text DQ5_L6 Peregrine Falcon video

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Weather and Climate

PE	Citations
K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. *Emphasis is on local forms of severe weather.*	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 M3_DQ3 TE p.67 M3_DQ4 TE p.109 Leveled Reader: What's the Weather?

DCI	Correlations	CCC	Correlations	SEP	Correlations
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.	Grade K Module 3: Be Prepared M3_DQ4 TE p.109 **Key Resources** DQ4_L2 Severe Weather video DQ4_L2 Severe Weather Symbols visual DQ4_L3 Predicting the Weather Read-Aloud text Leveled Reader: What's the Weather?	**Cause and Effect** Events have causes that generate observable patterns.	Grade K Module 3: Be Prepared M3_DQ3 TE p.67 Leveled Reader: What's the Weather?	**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. **Obtaining, Evaluating, and Communicating Information** Obtaining, Evaluating, and Communicating Information in K-2 builds on prior experiences and uses observations and	Grade K Module 3: Be Prepared M3_DQ1 TE p.1 M3_DQ4 TE p.109 **Key Resources** DQ4_L1 Minneapolis Weather Forecast visual DQ4_L3 Blizzard visual DQ1_L1 Weather visual DQ1_L1 Weather Song video DQ1_L2 Weather Forecast video

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

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

PE	Correlations
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.	Grade K Module 4: I Can M4_DQ3 TE p.107 M4_DQ4 TE p.151
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.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
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.	Grade K Module 4: I Can M4_DQ3 TE p.107 M4_DQ4 TE p.151 **Key Resources** DQ3_L5 Irrigation video DQ4_L2 Recycled Object visual DQ4_L2 Reduce, Reuse, Recycle video DQ4_L2 Reduce, Reuse, Recycle Snap game Leveled Reader: What's the Weather?	**Cause and Effect** Events have causes that generate observable patterns.	Grade K Module 4: I Can M4_DQ4 TE p.151 **Key Resources** DQ3_L5 Irrigation video DQ4_L2 Recycled Object visual DQ4_L2 Reduce, Reuse, Recycle video DQ4_L2 Reduce, Reuse, Recycle Snap game Leveled Reader: What's the Weather?	**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.	Grade K Module 4: I Can M4_DQ4 TE p.151 **Key Resources** DQ3_L5 Irrigation video DQ4_L2 Recycled Object visual DQ4_L2 Reduce, Reuse, Recycle video DQ4_L2 Reduce, Reuse, Recycle Snap game Leveled Reader: What's the Weather?
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.					

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Waves: Light and Sound

PE	Correlations
1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	KEY: M = Module DQ = Driving Question L = Lesson TE = Teacher Edition TB = Twig Book (Student Edition) Grade 1 Module 2: Animal Reporters M2_DQ4 TE p.133 M2_DQ5 TE p.193 Grade1 Module 3: Shadow Town M3_DQ1 TE p.1
Examples of vibrating materials that make sound could include tuning forks or plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound or holding an object near a vibrating tuning fork.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Wave Properties Sound can make matter vibrate, and vibrating matter can make sound.	Grade 1 Module 2: Animal Reporters M2_DQ4 TE p.133 M2_DQ5 TE p.193	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.	Grade 1 Module 2: Animal Reporters M2_DQ4 TE p.133	**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. Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.	Grade 1 Module 2: Animal Reporters M2_DQ4 TE p.133 Grade1 Module 3: Shadow Town M3_DQ1 TE p.1

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Waves: Light and Sound

PE	Correlations
1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated.	Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ2 TE p.73 M3_DQ3 TE p.115
Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Electromagnetic Radiation Objects can be seen if light is available to illuminate them or if they give off their own light.	Grade 1 Module 3: Shadow Town M3_DQ2 TE p.73 M3_DQ3 TE p.115	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.	Grade 1 Module 3: Shadow Town M3_DQ2 TE p.73 Leveled Reader: Skyscrapers	**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. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.	Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ2 TE p.73 M3_DQ3 TE p.115 **Key Resources** DQ1_L2 What Is a Shadow? video DQ1_L4 Cat and Mouse Shadows video DQ2_L4 Lighting Up Our World video

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Waves: Light and Sound

PE	Correlations
1-PS4-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. *Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).* *State Assessment Boundary: Assessment does not include the speed of light.*	Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ3 TE p.115 Grade 1 Module 4: Patterns in the Sky M4_DQ3 TE p.83

DCI	Correlations	CCC	Correlations	SEP	Correlations
Electromagnetic Radiation Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.)	Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ3 TE p.115 **Key Resources** DQ3_L2 Spot the Opaque Objects video Grade 1 Module 4: Patterns in the Sky M4_DQ3 TE p.83	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.	Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ3 TE p.115 Grade 1 Module 4: Patterns in the Sky M4_DQ3 TE p.83	**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. Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.	Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ3 TE p.115 Grade 1 Module 4: Patterns in the Sky M4_DQ3 TE p.83

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WAVES AND THEIR APPLICATIONS

PE	Correlations
1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	Grade 1 Module 1: Museum of Leafology M1_DQ3 TE p.69 M1_DQ6 TE p. 179 Grade 1 Module 2: Animal Reporters M2_DQ3 TE p.99 M2_DQ4 TE p.133 M2_DQ5 TE p.193
Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats. *State Assessment Boundary: Assessment does not include technological details for how communication devices work.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Information Technologies and Instrumentation People also use a variety of devices to communicate (send and receive information) over long distances.	Grade 1 Module 2 Animal Reporters M2_DQ4 TE p.133 M2_DQ5 TE p.193 **Key Resources** DQ5_L4 Trial and Error—Lion Lights video	***Connections to Engineering, Technology, and Applications of Science*** **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.	Grade 1 Module 2: Animal Reporters M2_DQ5 TE p.193 Grade 1 Module 1: Museum of Leafology M1_DQ3 TE p.69 M1_DQ6 TE p. 179 **Key Resources** DQ6_L2 Biomimicry: Hook and Loop Fasteners video DQ6_L3 Biomimicry: Lotus Leaf video	**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 a device that solves a specific problem.	Grade 1 Module 1: Museum of Leafology M1_DQ3 TE p.69 M1_DQ6 TE p. 179 **Key Resources** DQ6_L3 Biomimicry: Lotus Leaf video DQ3_L2 How Seeds Move video D3_L4 Seed Dispersal video
Defining and Delimiting Engineering Problems Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions	Grade 1 Module 1: Museum of Leafology M1_DQ6 TE p. 179 Grade 1 Module 2: Animal Reporters M2_DQ5 TE p.193				

can be prepared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.					
Developing Possible Solutions Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	Grade 1 Module 1: Museum of Leafology M1_DQ3 TE p. 69 Grade 1 Module 1: Museum of Leafology M1_DQ6 TE p. 179 Grade 1 Module 2: Animal Reporters M2_DQ5 TE p.193 Grade 1 Module 3: Shadow Town M3_DQ3 TE p.115				

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

Structure, Function, and Information Processing

PE	Correlations
1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. *Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, pine cone scales, and animal scales; stabilizing structures by mimicking animal tails or roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and detecting intruders by mimicking eyes or ears.*	Grade 1 Module 1: Museum of Leafology M1_DQ1 TE p.1 M1_DQ2 TE p.35 M1_DQ3 TE p.69 M1_DQ5 TE p.155 M1_DQ6 TE p. 179 Grade 1 Module 2: Animal Reporters M2_DQ4 TE p.133

Structure and Function All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.	Grade 1 Module 1: Museum of Leafology M1_DQ2 TE p.35 M1_DQ5 TE p.155 **Key Resources** DQ1_L1 What Do Plants Need? video DQ2_L2 Plant Parts Song video DQ2_L2 Parts of a Plant visual DQ2_L3 Plant Factory interactive DQ5_L1 Extremely Clever Plants video DQ5_L2 Cactus—Pixelate video DQ5_L2 Extremely Dangerous Plants video Leveled Reader: Our Leafy Friends Grade 1 Module 2: Animal Reporters M2_DQ4 TE p.133 **Key Resources** DQ4_L4 Animal Vibrations video DQ4_L6 Peacock Spider video	**Structure and Function** The shape and stability of structures of natural and designed objects are related to their function(s).	Grade 1 Module 1: Museum of Leafology M1_DQ5 TE p.155 Grade 1 Module 2: Animal Reporters M2_DQ1 TE p.1	**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 to design a device that solves a specific problem or a solution to a specific problem.	Grade 1 Module 1: Museum of Leafology M1_DQ3 TE p.69 M1_DQ6 TE p. 179 **Key Resources** DQ6_L3 Biomimicry: Lotus Leaf video DQ3_L2 How Seeds Move video DQ3_L4 Seed Dispersal video

	DQ4_L8 Humpback Whales video DQ1_L4 Just Keep Moving! Read-Aloud				
Information Processing Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.	Grade 1 Module 2: Animal Reporters M2_DQ4 TE p.133 M2_DQ5 TE p.193 **Key Resources** DQ4_L1 Prairie Dogs video DQ4_L4 Animal Vibrations video DQ4_L8 Humpback Whales video Grade 1 Module 1: Museum of Leafology M1_DQ5 TE p.155 **Key Resources** DQ5_L1 Extremely Clever Plants video DQ5_L2 Extremely Dangerous Plants video				
Defining and Delimiting Engineering Problems Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be prepared on the basis of how well each one meets the specified criteria for success or	Grade 1 Module 1: Museum of Leafology M1_DQ6 TE p. 179 Grade 1 Module 2: Animal Reporters M2_DQ5 TE p.193				

how well each takes the constraints into account.					
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.	Grade 1 Module 2: Animal Reporters M2_DQ5 TE p.193				

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

Structure, Function, and Information Processing

PE	Correlations
1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. *Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).*	Grade 1 Module 2: Animal Reporters M2_DQ1 TE p.1 M2_DQ2 TE p.75 M2_DQ3 TE p.99 M2_DQ4 TE p.133 Leveled Reader: Animal Talk

DCI	Correlations	CCC	Correlations	SEP	Correlations
Growth and Development of Organisms Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.	Grade 1 Module 1: Museum of Leafology M1_DQ1 TE p.1 M1_DQ2 TE p.35 M1_DQ3 TE p.69 M1_DQ4 TE p.125 M1_DQ5 TE p.155 M1_DQ6 TE p. 179 M1_DQ7 TE p.219 **Key Resources** DQ1_L1 What Do Plants Need? video DQ3_L2 How Seeds Move video DQ4_L4 Seedlings and Their Parent Plants video Grade 1 Module 2: Animal Reporters M2_DQ3 TE p.99 **Key Resources**	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.	Grade 1 Module 2: Animal Reporters M2_DQ1 TE p.1 M2_DQ2 TE p.75 M2_DQ3 TE p.99 M2_DQ4 TE p.133 **Key Resources** DQ1_L4 Just Keep Moving! Read-Aloud Leveled	**Obtaining, evaluating, and communicating information** Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information. Read grade-appropriate texts and use media to obtain scientific and/or technical information to determine patterns in the natural world.	Grade 1 Module 2: Animal Reporters M2_DQ3 TE p.99 **Key Resources** DQ3_L1 Elephant Report: Caring for Their Young video DQ3_L2 Spectacled Caiman Family video DQ3_L2 Fiordland Crested Penguin Family video DQ3_L3 Elephant Report: Young Elephants Communicating with Parents video DQ1_L4 Just Keep Moving!

	DQ3_L1 Elephant Report: Caring for Their Young video DQ3_L2 Spectacled Caiman Family video DQ3_L2 Fiordland Crested Penguin Family video DQ3_L3 Elephant Report: Young Elephants Communicating with Parents video DQ1_L4 Just Keep Moving! Read-Aloud		Reader: Our Leafy Friends		Read-Aloud Leveled Reader: Animal Talk

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CONTENT AND PERFORMANCE STANDARDS

Structure, Function, and Information Processing

PE	Correlations
1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Grade 1 Module 1 Museum of Leafology M1_DQ1 TE p.1 M1_DQ2 TE p.35 M1_DQ3 TE p.69 M1_DQ4 TE p.125 M1_DQ5 TE p.155 M1_DQ7 TE p.219 Leveled Reader: Our Leafy Friends Grade 1 Module 2: Animal Reporters M2_DQ2 TE p.75 Leveled Reader: Animal Talk
Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same. *State Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Inheritance of Traits Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly like, their parents.	Grade 1 Module 1: Museum of Leafology M1_DQ2 TE p.35 M1_DQ4 TE p.125 M1_DQ7 TE p.219 M1_DQ5 TE p.155 **Key Resources** DQ4_L4 Seedlings and Their Parent Plants video DQ1_L1 What Do Plants Need? video DQ2_L2 Plant Parts Song video DQ2_L2 Parts of a Plant visual DQ2_L3 Plant Factory interactive	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.	Grade 1 Module 1: Museum of Leafology M1_DQ1 TE p.1 M1_DQ2 TE p.35 M1_DQ3 TE p.69 M1_DQ4 TE p.125 **Key Resources** DQ1_L2 Is It Living? Prior-Knowledge Read-Aloud DQ2_L2 Plant Parts Song video DQ2_L2 Parts of a Plant visual DQ2_L3 Plant Factory interactive	**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. Make observations (firsthand or from media) to construct an	Grade 1 Module 1: Museum of Leafology M1_DQ4 TE p.125 M1_DQ5 TE p.155 M1_DQ7 TE p.219 **Key Resources** DQ4_L3 Time-Lapse of a Plant video DQ4_L4 Seedlings and Their Parent Plants video Leveled Reader: Our Leafy Friends Grade 1 Module 2: Animal Reporters M2_DQ2 TE p.75

	Grade 1 Module 2: Animal Reporters M2_DQ2 TE p.75 **Key Resources** DQ3_L3 Elephant Report: Young Elephants Communicating with Parents video		Leveled Reader: Our Leafy Friends DQ3_L2 How Seeds Move video DQ4_L3 Time-Lapse of a Plant video DQ4_L4 Seedlings and Their Parent Plants video Grade 1 Module 2: Animal Reporters M2_DQ1 TE p.1 M2_DQ2 TE p.75 M2_DQ3 TE p.99 **Key Resources** DQ1_L1 Big AI video DQ2_L1 Young Animals video DQ3_L3 Elephant Report: Young Elephants Communicating with Parents video DQ1_L4 Just Keep Moving! Read-Aloud	evidence-based account for natural phenomena.	**Key Resources** DQ2_L1 Young Animals video DQ3_L3 Elephant Report: Young Elephants Communicating with Parents video DQ2_L2 Animal Parents and Their Young visual DQ2_L3 Mother Pig and Its Young visual DQ2_L3 Emus video
Variation of Traits Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.	Grade 1 Module 1: Museum of Leafology M1_DQ4 TE p.125 M1_DQ7 TE p.219 **Key Resources** DQ4_L3 Bean Plants and Trees visual DQ4_L3 Time-Lapse of a Plant video DQ4_L4 Seedlings and Their Parent Plants video DQ4_L4 Answer Key for Parent and Adult Plants visual Grade 1 Module 2: Animal Reporters M2_DQ2 TE p.75 **Key Resources** DQ3_L3 Elephant Report: Young Elephants Communicating with Parents video DQ2_L3 Mother Pig and Its Young visual DQ2_L3 Emus video				

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

Space Systems: Patterns and Cycles

PE	Correlations
1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted. *Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.* *State Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.*	Grade 1 Module 1: Museum of Leafology M1_DQ2 TE p.35 M1_DQ6 TE p. 179 Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ2 TE p.73 M3_DQ3 TE p.115 Grade 1 Module 4: Patterns in the Sky M4_DQ1 TE p.1 M4_DQ2 TE p.49 M4_DQ3 TE p.83 Leveled Reader: Day and Night

DCI	Correlations	CCC	Correlations	SEP	Correlations
The Universe and its Stars Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.	Grade 1 Module 4: Patterns in the Sky M4_DQ1 TE p.1 M4_DQ3 TE p.83 **Key Resources** DQ1_L1 Patterns in the Sky Trailer video DQ3_L2 Sky Report: Moon video DQ3_L4 Phases of the Moon video	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.	Grade 1 Module 1: Museum of Leafology M1_DQ2 TE p.35 M1_DQ6 TE p. 179 Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ2 TE p.73 M3_DQ3 TE p.115 Grade 1 Module 4: Patterns in the Sky M4_DQ1 TE p.1 M4_DQ2 TE p.49 M4_DQ3 TE p.83	**Analyzing and interpreting data** Analyzing and interpreting 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	Grade 1 Module 4: Patterns in the Sky M4_DQ1 TE p.1 M4_DQ3 TE p.83 **Key Resources** DQ1_L2 Sky Report: Sun video DQ1_L4 Patterns in the Sky Song video DQ1_L5 Position of the Sun Model visual DQ1_L1 Patterns in the Sky Trailer video DQ3_L2 Sky Report:

	DQ3_L8 Sky Report: Moon in the Sky video Leveled Reader: Day and Night		**Key Resources** DQ1_L2 Sky Report: Sun video DQ1_L4 Patterns in the Sky Song video DQ1_L5 Position of the Sun Model visual	world in order to answer scientific questions.	Moon video DQ3_L4 Phases of the Moon video DQ3_L8 Sky Report: Moon in the Sky video Leveled Reader: Day and Night

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

Space Systems: Patterns and Cycles

PE	Correlations
1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year. *Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.* *State Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.*	Grade 1 Module 1: Museum of Leafology M1_DQ2 TE p.35 M1_DQ6 TE p. 179 Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ2 TE p.73 M3_DQ3 TE p.115 Grade 1 Module 4: Patterns in the Sky M4_DQ1 TE p.1 M4_DQ2 TE p.49 M4_DQ3 TE p.83

DCI	Correlations	CCC	Correlations	SEP	Correlations
Earth and the Solar System Seasonal patterns of sunrise and sunset can be observed, described, and predicted.	Grade 1 Module 1: Museum of Leafology M1_DQ2 TE p.35 M1_DQ6 TE p. 179 Grade 1 Module 4: Patterns in the Sky M4_DQ2 TE p.49	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.	Grade 1 Module 1: Museum of Leafology M1_DQ2 TE p.35 M1_DQ6 TE p. 179 Grade 1 Module 3: Shadow Town M3_DQ1 TE p.1 M3_DQ2 TE p.73 M3_DQ3 TE p.115 Grade 1 Module 4: Patterns in the Sky M4_DQ1 TE p.1 M4_DQ2 TE p.49 M4_DQ3 TE p.83 **Key Resources** DQ1_L1 Patterns in the Sky Trailer video DQ3_L2 Sky Report: Moon video	**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.	Grade 1 Module 4: Patterns in the Sky M4_DQ1 TE p.1 M4_DQ2 TE p.49 M4_DQ3 TE p.83

			DQ3_L4 Phases of the Moon video DQ3_L8 Sky Report: Moon in the Sky video Leveled Reader: Day and Night		

2016 WYOMING SCIENCE
CONTENT AND PERFORMANCE STANDARDS

Structure and Properties of Matter

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. *Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.*	KEY: M = Module DQ = Driving Question L = Lesson TE = Teacher Edition Grade 2 Module 2: Master of Materials M2_DQ1 TE p.1 M2_DQ2 TE p.39

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Properties of Matter Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. Different properties are suited to different purposes.	Grade 2 Module 2: Master of Materials M2_DQ1 TE p.1 M2_DQ2 TE p.39 M2_DQ5 TE p.169 Leveled Reader: What is it Made Of? **Key Resources** DQ2_L5 Choosing Suitable Materials video DQ5_L4 Building Bridges video Leveled Reader: What is it Made Of?	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.	Grade 2 Module 2: Master of Materials M2_DQ1 TE p.1 M2_DQ2 TE p.39	**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. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.	Grade 2 Module 2: Master of Materials M2_DQ2 TE p.39

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CONTENT AND PERFORMANCE STANDARDS

Structure and Properties of Matter

2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	Grade 2 Module 2: Master of Materials M2_DQ2 TE p.39 M2_DQ3 TE p.79 M2_DQ5 TE p.169
Examples of properties could include, strength, flexibility, hardness, texture, and absorbency. *State Assessment Boundary: Assessment of quantitative measurements is limited to length.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Properties of Matter Different properties are suited to different purposes.	Grade 2 Module 2: Master of Materials M2_DQ2 TE p.39 M2_DQ5 TE p.169 **Key Resources** DQ2_L5 Choosing Suitable Materials video DQ5_L4 Building Bridges video Leveled Reader: What is it Made Of?	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.	Grade 2 Module 2: Master of Materials M2_DQ5 TE p.169	**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.	Grade 2 Module 2: Master of Materials M2_DQ2 TE p.39 M2_DQ5 TE p.169 M2_DQ3 TE p.79

Optimizing the Design Solution Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	Grade 2 Module 2: Master of Materials M2_DQ3 TE p.79 M2_DQ5 TE p.169				

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CONTENT AND PERFORMANCE STANDARDS

Structure and Properties of Matter

2-PS1-3. 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.	Grade 2 Module 2: Master of Materials M2_DQ5 TE p.169
Examples of pieces could include blocks, building bricks, or other assorted small objects.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Properties of Matter Different properties are suited to different purposes.	Grade 2 Module 2: Master of Materials M2_DQ5 TE p.169	**Energy and Matter** Objects may break into smaller pieces and be put together into larger pieces, or change shapes.	Grade 2 Module 2: Master of Materials M2_DQ5 TE p.169	**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. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.	Grade 2 Module 2: Master of Materials M2_DQ5 TE p.169
Structure and Properties of Matter A great variety of objects can be built up from a small set of pieces.					
Defining and Delimiting Engineering Problems Possible solutions to a problem are limited by available materials and resources (constraints). The	Grade 2 Module 3: Save Our Island! M3_DQ2 TE p.89 M3_DQ3 TE p.129 Grade 2 Module 4: A Garden for Life M4_DQ3 TE p.127 M4_DQ4 TE p.211				

success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be prepared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.					

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CONTENT AND PERFORMANCE STANDARDS

Structure and Properties of Matter

2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	Grade 2 Module 2: Master of Materials M2_DQ4 TE p.119
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.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Chemical Reactions Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.	Grade 2 Module 2: Master of Materials M2_DQ4 TE p.119 **Key Resources** DQ4_L4 Crayon Making video DQ4_L4 Making Crayons text (TB) TB p.63 DQ_L6 Reversible and Irreversible Changes video gallery	**Cause and Effect** Events have causes that generate observable patterns.	Grade 2 Module 2: Master of Materials M2_DQ4 TE p.119 **Key Resources** DQ_L6 Reversible and Irreversible Changes video gallery	**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.	Grade 2 Module 2: Master of Materials M2_DQ4 TE p.119 **Key Resources** DQ_L6 Reversible and Irreversible Changes video gallery

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CONTENT AND PERFORMANCE STANDARDS

Interdependent Relationships in Ecosystems

2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.	Grade 2 Module 4: A Garden for Life M4_DQ2 TE p.87
State Assessment Boundary: Assessment is limited to testing one variable at a time.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Interdependent Relationships in Ecosystems Plants depend on water and light to grow.	Grade 2 Module 4: A Garden for Life M4_DQ2 TE p.87 **Key Resources** DQ2_L1 The Plant Problem text TB p.29	**Cause and Effect** Events have causes that generate observable patterns.	Grade 2 Module 4: A Garden for Life M4_DQ2 TE p.87 **Key Resources** DQ2_L1 The Plant Problem text TB p.29	**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. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.	Grade 2 Module 4: A Garden for Life M4_DQ2 TE p.87 **Key Resources** DQ2_L1 The Plant Problem text TB p.29

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Interdependent Relationships in Ecosystems

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. *Examples could include the natural structure of an animal that helps it disperse seeds (e.g., hair that snares seeds, squirrel cheek pouches that transport seeds) or that helps it pollinate plants (e.g., bees have fuzzy bodies to which pollen sticks, hummingbirds' bodies transport pollen).*	Grade 2 Module 4: A Garden for Life M4_DQ3 TE p.127 M4_DQ4 TE p.211

DCI	Correlations	CCC	Correlations	SEP	Correlations
Interdependent Relationships in Ecosystems Plants depend on animals for pollination or to move their seeds around.	Grade 2 Module 4: A Garden for Life M4_DQ3 TE p.127 M4_DQ4 TE p.211 **Key Resources** DQ3_L1 The Nutcracker video Pollination video DQ3_L3 Specific Pollination video DQ3_L5 Pollen Power text TB p.55 DQ3_L6 Tracking Honey Bees video DQ3_L10 Artificial Pollination video Leveled Reader: Where are the Bees?	**Structure and Function** The shape and stability of structures of natural and designed objects are related to their function(s).	Grade 2 Module 4: A Garden for Life M4_DQ3 TE p.127 M4_DQ4 TE p.211 **Key Resources** DQ3_L1 The Nutcracker video Pollination video DQ3_L3 Specific Pollination video DQ3_L5 Pollen Power text TB p.55 DQ3_L6 Tracking Honey Bees video DQ3_L10 Artificial Pollination video Leveled Reader: Where are the Bees?	**Developing and Using Models** Developing and Using models in K–2 builds on prior experiences and progresses to include using and developing models (e.g., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions. Develop a simple model based on evidence to represent a proposed object or tool.	Grade 2 Module 4: A Garden for Life M4_DQ3 TE p.127

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.					

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Interdependent Relationships in Ecosystems

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	Grade 2 Module 4: A Garden for Life M4_DQ1 TE p.1
Emphasis is on the diversity of living things in each of a variety of different habitats. *State Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Biodiversity and Humans There are many kinds of living things in any area, and they exist in different places on land and in water.	Grade 2 Module 4: A Garden for Life M4_DQ1 TE p.1 **Key Resources** DQ1_L1 My Favorite Place Prior-Knowledge Read-Aloud DQ1_L2 Habitat Explorer Field Guide interactive DQ1_L2 Desert Habitat video DQ1_L6 Rain Forest Short video DQ1_L8 Schoolyard Sampling video Leveled Reader: Where are the Bees?			**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.	Grade 2 Module 4: A Garden for Life M4_DQ1 TE p.1 **Key Resources** Q1_L2 Habitat Explorer Field Guide interactive DQ1_L2 Desert Habitat video

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CONTENT AND PERFORMANCE STANDARDS

Earth's Systems: Processes that Shape the Earth

2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	Grade 2 Module 3: Save Our Island! M3_DQ1 TE p.1 Grade 2 Module 4: A Garden for Life M4_DQ3 TE p.127
Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly, and erosion of rocks, which occurs slowly. *State Assessment Boundary: Assessment does not include quantitative measurements of timescales.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
The History of Planet Earth Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.	Grade 2 Module 3: Save Our Island! M3_DQ1 TE p.1 **Key Resources** DQ1_L1 Land Shapes and Forms Prior-Knowledge Read-Aloud DQ1_L2 Mount St. Helens video DQ1_L3 Expanding Islands Read-Aloud DQ1_L9 Earth Changes media gallery DQ1_L10 A Day on Tangier Island text TB pp.29–34	**Stability and Change** Things may change slowly or rapidly.	Grade 2 Module 3: Save Our Island! M3_DQ1 TE p.1 **Key Resources** Leveled Reader: Incredible Erosion	**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. Make observations from several sources to construct an evidence-based account for natural phenomena.	Grade 2 Module 3: Save Our Island! M3_DQ1 TE p.1 M3_DQ3 TE p.129 M3_DQ4 TE p.171 **Key Resources** DQ1_L9 Earth Changes media gallery DQ1_L10 Tangier Island video

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Earth's Systems: Processes that Shape the Earth

2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	Grade 2 Module 3: Save Our Island! M3_DQ2 TE p.89 M3_DQ3 TE p.129 M3_DQ4 TE p.171
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.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
ESS2.A: Earth Materials and Systems Wind and water can change the shape of the land.	Grade 2 Module 3: Save Our Island! M3_DQ2 TE p.89 M3_DQ3 TE p.129 M3_DQ4 TE p.171	**Stability and Change** Things may change slowly or rapidly.	Grade 2 Module 3: Save Our Island! M3_DQ3 TE p.129 M3_DQ4 TE p.171	**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.	Grade 2 Module 3: Save Our Island! M3_DQ3 TE p.129 M3_DQ4 TE p.171
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.	**Key Resources** DQ2_L2 Wave Erosion video DQ2_L3 Wind Erosion in China video DQ2_L2 Earth Changes media gallery Leveled Reader: Incredible Erosion	***Connections to Engineering, Technology, and Applications of Science*** **Influence of Engineering, Technology, and Science on Society and the Natural World** Developing and using technology	**Key Resource** Leveled Reader: Incredible Erosion	Compare multiple solutions to a problem.	

		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.			

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CONTENT AND PERFORMANCE STANDARDS

Earth's Systems: Processes that Shape the Earth

2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Grade 2 Module 1: My Journey West M1_DQ1 TE p.1 M1_DQ2 TE p.125 M1_DQ4 TE p.231

DCI	Correlations	CCC	Correlations	SEP	Correlations
ESS2.B: Plate Tectonics and Large-Scale System Interactions Maps show where things are located. One can map the shapes and kinds of land and water in any area.	Grade 2 Module 1: My Journey West M1_DQ1 TE p.1 M1_DQ2 TE p.125 M1_DQ4 TE p.231 **Key Resources** DQ1_L6 Ways of Seeing the World video DQ1_L6 Mapping Rio de Janeiro interactive DQ1_L7 What are Maps? Read-Aloud Leveled Reader: What is a Map?	**Patterns** Patterns in the natural and human designed world can be observed.	Grade 2 Module 1: My Journey West M1_DQ1 TE p.1 M1_DQ2 TE p.125 M1_DQ4 TE p.231	**Developing and Using Models** Developing and using models in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions. Develop a model to represent patterns in the natural world.	Grade 2 Module 1: My Journey West M1_DQ1 TE p.1 M1_DQ2 TE p.125 M1_DQ4 TE p.231

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Earth's Systems: Processes that Shape the Earth

2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid, liquid, or gas.	Grade 2 Module 1: My Journey West M1_DQ2 TE p.125 M1_DQ3 TE p.201

DCI	Correlations	CCC	Correlations	SEP	Correlations
ESS2.C: The Role of Water in Earth's Surface Processes Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.	Grade 2 Module 1: My Journey West M1_DQ2 TE p.125 M1_DQ3 TE p.201 **Key Resources** DQ2_L1 Continental Divide video DQ2_L2 Journey of a River video DQ2_L6 Snow Science text TB pp.55–60 DQ2_L10 Almost There video DQ2_L8 Water Patterns interactive DQ2_L10 Water and Ice Patterns interactive DQ3_L2 Water on Earth video Leveled Reader: What is a Map?	**Patterns** Patterns in the natural and human designed world can be observed.	Grade 2 Module 1: My Journey West M1_DQ2 TE p.125 M1_DQ3 TE p.201 **Key Resources** DQ2_L8 Water Patterns interactive DQ2_L10 Water and Ice Patterns interactive DQ3_L2 Water on Earth video	**Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information. Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question.	Grade 2 Module 1: My Journey West M1_DQ2 TE p.125 M1_DQ3 TE p.201 **Key Resources** DQ2_L8 Water Patterns interactive DQ2_L10 Water and Ice Patterns interactive DQ3_L2 Water on Earth video Leveled Reader: What is a Map?

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CONTENT AND PERFORMANCE STANDARDS

Forces and Interactions

3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	KEY: M = Module DQ = Driving Question L = Lesson TE = Teacher Edition TB = Twig Book (Student Edition)
Examples could include an unbalanced force on one side of a ball can make it start moving, and balanced forces pushing on a box from both sides will not produce any motion at all. *State Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.*	Grade 3 Module 1: The Ultimate Playground M1_DQ1 TE p.47 M1_DQ2 TE p.109

DCI	Correlations	CCC	Correlations	SEP	Correlations
Forces and Motion Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) **Types of Interactions** Objects in contact exert forces on each other.	Grade 3 Module 1: The Ultimate Playground M1_DQ1 TE p.47 M1_DQ2 TE p.109 M1_DQ3 TE p.151 M1_DQ4 TE p.195. M1_DQ5 TE p.231 **Key Resources** DQ1_L4 What Is a Force? video DQ1_L4 Gravity video Leveled Reader: Roller Coaster Ride	**Cause and Effect** Cause and effect relationships are routinely identified.	Grade 3 Module 1: The Ultimate Playground M1_DQ1 TE p.47 M1_DQ2 TE p.109 **Key Resources** Leveled Reader: Roller Coaster Ride	**Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	Grade 3 Module 1: The Ultimate Playground M1_DQ1 TE p.47 M1_DQ2 TE p.109

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Forces and Interactions

3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	Grade 3 Module 1: The Ultimate Playground M1_DQ3 TE p.151 M1_DQ5 TE p.231 Leveled Reader: Roller Coaster Ride
Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw. *State Assessment Boundary: Assessment does not include technical terms such as period and frequency.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Forces and Motion The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)	Grade 3 Module 1: The Ultimate Playground M1_DQ3 TE p.151 M1_DQ5 TE p.231 Leveled Reader: Roller Coaster Ride	**Patterns** Patterns of change can be used to make predictions.	Grade 3 Module 1: The Ultimate Playground M1_DQ3 TE p.151 M1_DQ5 TE p.231 Leveled Reader: Roller Coaster Ride	**Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations and/or measurements to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	Grade 3 Module 1: The Ultimate Playground M1_DQ3 TE p.151

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Forces and Interactions

3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	Grade 3 Module 1: The Ultimate Playground M1_DQ4 TE p.195 Benchmark Assessment: What are Magnetic Forces?
Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force. *State Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Types of Interactions Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.	Grade 3 Module 1: The Ultimate Playground M1_DQ4 TE p.195 Benchmark Assessment: What are Magnetic Forces? **Key Resources** DQ5_Benchmark Assessment Magnetite Film Leveled Reader: Roller Coaster Ride	**Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change.	Grade 3 Module 1: The Ultimate Playground M1_DQ4 TE p.195 Benchmark Assessment: What are Magnetic Forces? **Key Resources** DQ5_Benchmark Assessment Magnetite Film Leveled Reader: Roller Coaster Ride	**Asking Questions and Defining Problems** Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated based on patterns such as cause and effect relationships.	Grade 3 Module 1: The Ultimate Playground M1_DQ4 TE p.195 Benchmark Assessment: What are Magnetic Forces? **Key Resources** DQ5_Benchmark Assessment Magnetite Film Leveled Reader: Roller Coaster Ride

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CONTENT AND PERFORMANCE STANDARDS

MOTION AND STABILITY: FORCES AND INTERACTIONS

3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets. *Examples of problems could include constructing a latch to keep a door shut or creating a device to keep two moving objects from touching each other.*	Grade 3 Module 1: The Ultimate Playground M1_DQ5 TE p.231

DCI	Correlations	CCC	Correlations	SEP	Correlations
Types of Interactions Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, their orientation relative to each other. **Interdependence of Science, Engineering, and Technology** Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.	Grade 3 Module 1: The Ultimate Playground M1_DQ5 TE p.231 Leveled Reader: Roller Coaster Ride Grade 3 Module 1: The Ultimate Playground M1_DQ5 TE p.231 **Key Resources** DQ5_L1 Maglev Train video Leveled Reader: Roller Coaster Ride	***Connections to Engineering, Technology, and Applications of Science*** **Interdependence of Science, Engineering, and Technology** Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.	Grade 3 Module 1: The Ultimate Playground M1_DQ4 TE p.195 M1_DQ5 TE p.231	**Asking Questions and Defining Problems** Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Define a simple problem that can be solved through the development of a new or improved object or tool.	Grade 3 Module 1: The Ultimate Playground M1_DQ5 TE p.231

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CONTENT AND PERFORMANCE STANDARDS

Inheritance and Variation of Traits: Life Cycles and Trait

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Grade 3 Module 2: Welcome to the Biodome M2_DQ1 TE p.1 M2_DQ2 TE p.83 M2_DQ3 TE p.135
Changes organisms go through during their life form a pattern. *State Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Growth and Development of Organisms Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.	Grade 3 Module 2: Welcome to the Biodome M2_DQ1 TE p.1 M2_DQ2 TE p.83 M2_DQ3 TE p.135 **Key Resources** DQ1_L5 Germination video DQ1_L6 Life Cycle of an Oak Tree video DQ1_L8 Splash Tetra video DQ1_L9 Frog Life Cycle Read-Aloud DQ1_L9 What Is a Life Cycle? video DQ1_L10 Tufted Capuchin video	**Patterns** Patterns of change can be used to make predictions.	Grade 3 Module 2: Welcome to the Biodome M2_DQ1 TE p.1 M2_DQ3 TE p.135 Leveled Reader: Life Cycles	**Developing and Using Models** Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop models to describe phenomena.	Grade 3 Module 2: Welcome to the Biodome M2_DQ1 TE p.1 **Key Resources** DQ1_L4 Life Cycles interactive (birds) DQ1_L7 Life Cycles interactive (reptiles) DQ1_L9 Life Cycles interactive (amphibians)

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Interdependent Relationships in an Ecosystem

3-LS2-1. Construct an argument that some animals form groups that help members survive State Assessment Boundary: Use WY animals as examples..	Grade 3 Module 2: Welcome to the Biodome M2_DQ4 TE p.187

DCI	Correlations	CCC	Correlations	SEP	Correlations
Social Interactions and Group Behavior Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.	Grade 3 Module 2: Welcome to the Biodome M2_DQ4 TE p.187 **Key Resources** DQ4_L4 Birds of a Feather video DQ4_L3 Bison Herd video Leveled Reader: Life Cycles	**Cause and Effect** Cause and effect relationships are routinely identified and used to explain change.	Grade 3 Module 2: Welcome to the Biodome M2_DQ4 TE p.187 Leveled Reader: Life Cycles	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds. Construct an argument with evidence, data, and/or a model.	Grade 3 Module 2: Welcome to the Biodome M2_DQ4 TE p.187

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CONTENT AND PERFORMANCE STANDARDS

Inheritance and Variation of Traits: Life Cycles and Traits

3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	Grade 3 Module 2: Welcome to the Biodome M2_DQ2 TE p.83 M2_DQ3 TE p.135
Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans. *State Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Inheritance of Traits Many characteristics of organisms are inherited from their parents. **Variation of Traits** Different organisms vary in how they look and function because they have different inherited information.	Grade 3 Module 2: Welcome to the Biodome M2_DQ2 TE p.83 M2_DQ3 TE p.135 **Key Resources** DQ2_L1 Matching Young with Parents interactive DQ2_L3 Savanna video DQ2_L6 Reproduction video Benchmark Assessment: Life cycles and Traits	**Patterns** Similarities and differences in patterns can be used to sort and classify natural phenomena.	Grade 3 Module 2: Welcome to the Biodome M2_DQ2 TE p.83 M2_DQ3 TE p.135 Leveled Reader: Life Cycles	**Analyzing and interpreting data** Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena using logical reasoning.	Grade 3 Module 2: Welcome to the Biodome M2_DQ2 TE p.83 M2_DQ3 TE p.135 **Key Resources** DQ2_L1 Matching Young with Parents interactive

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Inheritance and Variation of Traits: Life Cycles and Traits

3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ1 TE p.1 M3_DQ2 TE p.49 M3_DQ3 TE p.109
Environmental factors that vary for organisms of the same type (e.g., amount of food, amount of water, and amount of exercise an animal gets, chemicals in the water) may influence organisms' observable traits.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Inheritance of Traits Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ1 TE p.1 M3_DQ2 TE p.49 M3_DQ3 TE p.109 **Key Resources** DQ1_L3 Traits—Odd One Out video DQ1_L4 Why Are Flamingos Pink? Video DQ1_l4 Young Caimans video	**Cause and Effect** Cause and effect relationships are routinely identified and used to explain change.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ1 TE p.1 M3_DQ2 TE p.49 M3_DQ3 TE p.109 Leveled Reader: Surviving in Different Environments	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., observations, patterns) to support an explanation.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ1 TE p.1 M3_DQ2 TE p.49 M3_DQ3 TE p.109 Leveled Reader: Surviving in Different Environments
Variation of Traits The environment also affects the traits that an organism develops.					

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Interdependent Relationships in Ecosystems

3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ2 TE p.49 M3_DQ3 TE p.109
Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms. *State Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Evidence of Common Ancestry and Diversity Some kinds of plants and animals that once lived on Earth are no longer found anywhere.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ2 TE p.49 M3_DQ3 TE p.109 **Key Resources** DQ2_L3 Paleontologists video	**Scale, Proportion, and Quantity** Observable phenomena exist from very short to very long time periods.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ3 TE p.109 **Key Resources** DQ3_L3 Ice Age Survival interactive DQ3_L3 End of the Ice Age video	**Analyzing and Interpreting Data** Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena, using logical reasoning.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ2 TE p.49 M3_DQ3 TE p.109 **Key Resources** DQ2_L3 Paleontologists video
Evidence of Common Ancestry and Diversity Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environment.					

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CONTENT AND PERFORMANCE STANDARDS

Inheritance and Variation of Traits: Life Cycles and Traits

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	Grade 3 Module 2: Welcome to the Biodome M2_DQ3 TE p.135
Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Natural Selection Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.	Grade 3 Module 2: Welcome to the Biodome M2_DQ3 TE p.135	**Cause and Effect** Cause and effect relationships are routinely identified and used to explain change.	Grade 3 Module 2: Welcome to the Biodome M2_DQ3 TE p.135 Leveled Reader: Life Cycles	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., observations, patterns) to construct an explanation.	Grade 3 Module 2: Welcome to the Biodome M2_DQ3 TE p.135

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Interdependent Relationships in Ecosystems

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ2 TE p.49 M3_DQ4 TE p.155
Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Adaptation For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ2 TE p.49 M3_DQ4 TE p.155 **Key Resources** DQ2_L4 The Arctic Tundra Environment video Burmese Python video DQ4_L2 California's Field Mustard text TB pp.78–80 Leveled Reader: Surviving in Different Environments	**Cause and Effect** Cause and effect relationships are routinely identified and used to explain change.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ2 TE p.49 M3_DQ4 TE p.155 Leveled Reader: Surviving in Different Environments	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Construct an argument with evidence.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ2 TE p.49 M3_DQ4 TE p.155 Leveled Reader: Surviving in Different Environments

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Interdependent Relationships in Ecosystems

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ3 TE p.109 M3_DQ4 TE p.155
Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms. *State Assessment Boundary: Assessment is limited to a single environmental change.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Ecosystem Dynamics, Functioning, and Resilience When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ3 TE p.109 M3_DQ4 TE p.155 Leveled Reader: Surviving in Different Environments	**Systems and System Models** A system can be described in terms of its components and their interactions.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ3 TE p.109 M3_DQ4 TE p.155 Leveled Reader: Surviving in Different Environments	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds. Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of a problem.	Grade 3 Module 3: How To Survive an Ice Age M3_DQ4 TE p.155 Leveled Reader: Surviving in Different Environments Benchmark Assessment: A Year Without Summer Eruption of Mount Tambora visual
Biodiversity and Humans Populations live in a variety of habitats, and change in those habitats affects the organisms living there.					

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Weather and Climate

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Grade 3 Module 4: Weather Warning HQ M4_DQ1 TE p.1 M4_DQ2 TE p.69 Leveled Reader: Weather Hazards Benchmark Assessment: How Does Weather Impact My Community?
Examples of data could include average temperature, precipitation, and wind direction. *State Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Weather and Climate Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.	Grade 3 Module 4: Weather Warning HQ M4_DQ1 TE p.1 M4_DQ2 TE p.69 Leveled Reader: Weather Hazards	**Patterns** Patterns of change can be used to make predictions.	Grade 3 Module 4: Weather Warning HQ M4_DQ1 TE p.1 M4_DQ2 TE p.69 Leveled Reader: Weather Hazards	**Analyzing and Interpreting Data** Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.	Grade 3 Module 4: Weather Warning HQ M4_DQ1 TE p.1 M4_DQ2 TE p.69 **Key Resources** DQ2_L2 Weather Data Bar Graphs interactive DQ2_L2 Weather Warning HQ—On the Move, Part 1 video DQ2_L3 Weather Warning HQ—On the Move, Part 2 video DQ2_L4 Weather Warning HQ—On the Move, Part 3 video Benchmark Assessment: How Does Weather Impact My Community?

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Weather and Climate

3-ESS2-2. Obtain and combine information to describe climates in different regions around the world.	Grade 3 Module 4: Weather Warning HQ M4_DQ2 TE p.69 M4_DQ3 TE p.114 Leveled Reader: Weather Hazards

DCI	Correlations	CCC	Correlations	SEP	Correlations
Weather and Climate Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	Grade 3 Module 4: Weather M4_DQ2 TE p.69 M4_DQ3 TE p.114 **Key Resources** DQ3_L1 Climate video DQ3_L2 Weather Warning HQ—Ice Fishing video DQ3_L2 Climate in the Polar Zones text TB pp.54–58 DQ3_L3 The Temperate Zones TB pp.60–62 DQ3_L4 The Equator video Leveled Reader: Weather Hazards	**Patterns** Patterns of change can be used to make predictions.	Grade 3 Module 4: M4_DQ2 TE p.69 M4_DQ3 TE p.114 Leveled Reader: Weather Hazards	**Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. Obtain and combine information from books and other reliable media to explain phenomena.	Grade 3 Module 4: Weather Warning HQ M4_DQ3 TE p.114 **Key Resources** DQ3_L2 Weather Warning HQ—Ice Fishing video DQ3_L2 Climate in the Polar Zones text TB pp.54–58 DQ3_L3 The Temperate Zones TB pp.60–62 DQ3_L4 The Equator video

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CONTENT AND PERFORMANCE STANDARDS

Weather and Climate

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	Grade 3 Module 4: Weather Warning HQ M4_DQ4 TE p.151 **Twig Science Tools** Activity: How effective are flood defenses?
Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Natural Hazards A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. **Influence of Engineering, Technology, and Science on Society and the Natural World** Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).	Grade 3 Module 4: Weather Warning HQ M4_DQ4 TE p.151 Leveled Reader: Weather Hazards	**Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change.	Grade 3 Module 4 Weather Warning HQ M4_DQ4 TE p.151 Leveled Reader: Weather Hazards	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.	Grade 3 Module 4 Weather Warning HQ M4_DQ4 TE p.151

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Energy

4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object. *State Assessment Boundary: Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.*	KEY: M = Module DQ = Driving Question L = Lesson TE = Teacher Edition TB = Twig Book (Student Edition) Grade 4 Module 1: Egg Racers M1_DQ1 TE p.53 M1_DQ2 TE p.95 M1_DQ3 TE p.129

DCI	Correlations	CCC	Correlations	SEP	Correlations
Definitions of Energy The faster a given object is moving, the more energy it possesses.	Grade 4 Module 1: Egg Racers M1_DQ1 TE p.53 M1_DQ2 TE p.95 M1_DQ3 TE p.129	**Energy and Matter** Energy can be transferred in various ways and between objects.	Grade 4 Module 1: Egg Racers M1_DQ1 TE p.53 M1_DQ2 TE p.95 M1_DQ3 TE p.129 **Key Resources** DQ1_L3 Energy All Around text TB pp.21–24 DQ1_L4 Transferring Energy Investigation TB pp.27–28 DQ1_L5 Balloon Powered Car handout DQ2_L2 Rubber Band-Powered Car handout	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., measurements, observations, patterns) to construct an explanation.	Grade 4 Module 1: Egg Racers M1_DQ1 TE p.53 M1_DQ2 TE p.95 M1_DQ3 TE p.129

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Energy

4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. *State Assessment Boundary: Assessment does not include quantitative measurements of energy.*	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 M2_DQ1 TE p.1 M2_DQ2 TE p.51 Grade 4 Module 5: Super Survivors M5_DQ5 TE p.199

DCI	Correlations	CCC	Correlations	SEP	Correlations
Definitions of Energy Energy can be moved from place to place by moving objects or through sound, light, or electric currents.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51 Grade 4 Module 5: Super Survivors M5_DQ5 TE p.199 **Key Resources** DQ5_L1 Save Our Ship video	**Energy and Matter** Energy can be transferred in various ways and between objects.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51 Grade 4 Module 5: Super Survivors M5_DQ5 TE p.199	**Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K– 2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51 **Key Resources** DQ2_L6 Building Wind Turbine model TB pp.45–46 DQ2_L7 Improving Wind Turbine model Testing Wind Turbine model TB pp.47–48 Grade 4 Module 5: Super Survivors M5_DQ5 TE p.199 **Key Resources** DQ5_L1 Save Our Ship video
Conservation of Energy and Energy Transfer Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.					

Conservation of Energy and Energy Transfer Light also transfers energy from place to place.					
Conservation of Energy and Energy Transfer Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.					

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CONTENT AND PERFORMANCE STANDARDS

Energy

4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide. *Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.* *State Assessment Boundary: Assessment does not include quantitative measurements of energy.*	Grade 4 Module 1: Egg Racers M1_DQ3 TE p.129 M1_DQ4 TE p.171 Benchmark Assessment: Motion and Energy in Golf Balls Leveled Reader: The Science of Baseball

DCI	Correlations	CCC	Correlations	SEP	Correlations
Definitions of Energy Energy can be moved from place to place by moving objects or through sound, light, or electric currents.	Grade 4 Module 1: Egg Racers M1_DQ3 TE p.129 M1_DQ4 TE p.171	**Energy and Matter** Energy can be transferred in various ways and between objects.	Grade 4 Module 1: Egg Racers M1_DQ3 TE p.129 Benchmark Assessment: Motion and Energy in Golf Balls	**Asking Questions and Defining Problems** Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.	Grade 4 Module 1: Egg Racers M1_DQ3 TE p.129 M1_DQ4 TE p.171
Conservation of Energy and Energy Transfer Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the	Benchmark Assessment: Motion and Energy in Golf Balls Leveled Reader: The Science of Baseball				

surrounding air; as a result, the air gets heated and sound is produced.					
Relationship Between Energy and Forces When objects collide, the contact forces transfer energy so as to change the objects' motions.	Grade 4 Module 1: Egg Racers M1_DQ3 TE p.129 M1_DQ4 TE p.171 Benchmark Assessment: Motion and Energy in Golf Balls Leveled Reader: The Science of Baseball				

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Energy

4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51 M2_DQ3 TE p.121
Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device. *State Assessment Boundary: Devices should be limited to those that convert motion energy to electric energy or use stored energy to cause motion or produce light or sound.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Conservation of Energy and Energy Transfer Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51 M2_DQ3 TE p.121 **Key Resources** DQ1_L5 Solar Cookers Level 1 interactive	**Energy and Matter** Energy can be transferred in various ways and between objects.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Apply scientific ideas to solve design problems.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51
Energy in Chemical Processes and Everyday Life The expression “produce energy” typically refers to the conversion of stored energy into a desired form for practical use.	DQ2_L2 What Is Electricity? video DQ2_L5 Wind Turbines video DQ3 Benchmark Assessment: Nuclear Power				
Defining Engineering Problems					

(Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.					
Influence of Engineering, Technology, and Science on Society and the Natural World Engineers improve existing technologies or develop new ones.					

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Waves: Waves and Information

4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	Grade 4 Module 4: Earthquake Engineering M4_DQ1 TE p.1 Grade 4 Module 5: Super Survivors M5_DQ1 TE p.1 M5_DQ5 TE p.199 M5_DQ6 TE p.261
Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves. *State Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Wave Properties Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach.	Grade 4 Module 4: Earthquake Engineering M4_DQ1 TE p.1 **Key Resources** DQ1_L4 Making Waves Interactive DQ1_L5 How Big Was That Earthquake? TB pp.13–16 Grade 4 Module 5: Super Survivors M5_DQ5 TE p.199 **Key Resources** DQ5_L6 Wave Breakers interactive	**Patterns** Similarities and differences in patterns can be used to sort and classify natural phenomena.	Grade 4 Module 4: Earthquake Engineering M4_DQ1 TE p.1 Grade 4 Module 5: Super Survivors M5_DQ1 TE p.1 M5_DQ5 TE p.199	**Developing and Using Models** Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model using an analogy, example, or abstract representation to describe a scientific principle.	Grade 4 Module 4: Earthquake Engineering M4_DQ1 TE p.1 **Key Resources** DQ1_L4 Making Waves Interactive Grade 4 Module 5: Super Survivors M5_DQ5 TE p.199 **Key Resources** DQ5_L6 Wave Breakers interactive
Connections to Nature of Science	Grade 4 Module 4:				

Scientific Knowledge is Based on Empirical Evidence Science findings are based on recognizing patterns.	Earthquake Engineering DQ1 L3 TE pp.20–27, TB pp.7–9 DQ1 L4 TE pp.28–33, TB pp.10–12 DQ5 L2 TE pp.156–161, TB pp.81–82 DQ5 L3 TE pp.162–167, TB pp.83–89 Grade 4, Module 5: Super Survivors DQ2 L4 TE pp.88–96, TB pp.37–46 DQ4 L3 TE pp.222–229, TB pp.105–106				

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Structure, Function, and Information Processing

4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	Grade 4 Module 5: Super Survivors M5_DQ3 TE p.97 M5_DQ4 TE p.143 DQ3 Benchmark Assessment: Light Reflections
State Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Electromagnetic Radiation: An object can be seen when light reflected from its surface enters the eyes.	Grade 4 Module 5: Super Survivors M5_DQ3 TE p.97 M5_DQ4 TE p.143	**Cause and Effect** Cause and effect relationships are routinely identified.	Grade 4 Module 5: Super Survivors M5_DQ3 TE p.97	**Developing and Using Models** Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model to describe phenomena.	Grade 4 Module 5: Super Survivors M5_DQ3 TE p.97 M5_DQ4 TE p.143

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Structure, Function, and Information Processing

4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information.	Grade 4 Module 5: Super Survivors M5_DQ6 TE p.261
Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, and using Morse Code to send text.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Information Technologies and Instrumentation Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa. **Optimizing The Design Solution** Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	Grade 4 Module 5: Super Survivors M5_DQ6 TE p.261 G	**Patterns** Similarities and differences in patterns can be used to sort and classify designed products.	Grade 4 Module 5: Super Survivors M5_DQ5 TE p.199	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	Grade 4 Module 5 Super Survivors M5_DQ1 TE p.1 M5_DQ6 TE p.261

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Structure, Function, and Information Processing

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Grade 4 Module 5 Super Survivors M5_DQ1 TE p.1 M5_DQ2 TE p.59
Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin. *State Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.	Grade 4 Module 5 Super Survivors M5_DQ1 TE p.1 M5_DQ2 TE p.59 **Key Resources** DQ1_L1 Amazing Animals: Body Coverings video DQ1_L4 Parts of a Flower video DQ1_L5 Breathing video DQ1_L6 Eating and Drinking video DQ2_L1 Super Hearing video DQ2_L3 Super Sniffer video	**Systems and System Models** A system can be described in terms of its components and their interactions.	Grade 4 Module 5 Super Survivors M5_DQ1 TE p.1 M5_DQ2 TE p.59	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Construct an argument with evidence, data, and/or a model.	Grade 4 Module 5 Super Survivors M5_DQ1 TE p.1

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Structure, Function, and Information Processing

4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	Grade 4 Module 5: Super Survivors M5_DQ1 TE p.1 M5_DQ2 TE p.59 M5_DQ4 TE p.143 M5_DQ5 TE p.199 DQ4 Benchmark Assessment: Animal Senses Leveled Reader: Amazing Animal Senses
Emphasis is on systems of information transfer. *State Assessment Boundary: Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Information Processing Different sense receptors are specialized for particular kinds of information, which then may be processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.	Grade 4 Module 5: Super Survivors M5_DQ2 TE p.59 **Key Resources** DQ2_L1 Super Hearing video DQ2_L3 Super Sniffer video	**Systems and System Models** A system can be described in terms of its components and their interactions.	Grade 4 Grade 4 Module 5: Super Survivors M5_DQ1 TE p.1 M5_DQ2 TE p.59	**Developing and Using Models** Developing and using models in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Use a model to test interactions concerning the functioning of a natural system.	Grade 4 Module 5: Super Survivors M5_DQ2 TE p.59 M5_DQ4 TE p.143 M5_DQ5 TE p.199 Grade 4 Module 5: Super Survivors DQ2 L1 TE pp.64–71, TB pp.29–32 DQ2 L2 TE pp.110–117, TB pp.53–54 DQ2 L3 TE pp.118–123, TB pp.55–56

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CONTENT AND PERFORMANCE STANDARDS

Earth's Systems: Processes that Shape the Earth

4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in landforms over time.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ2 TE p.35
Examples of evidence from patterns (may include, but not limited to, Wyoming specific examples) could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
The History of Planet Earth Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ2 TE p.35 **Key Resources** DQ2_L2, DQ2_L3 Reading the Rocks TB pp.19–22, pp.25–28 Leveled Reader: Sculpting Landscapes	**Patterns** Patterns can be used as evidence to support an explanation.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ2 TE p.35 **Key Resources** DQ2_L2, DQ2_L3 Reading the Rocks TB pp.19–22, pp.25–28	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Identify the evidence that supports particular points in an explanation.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ2 TE p.35

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Earth's Systems: Processes that Shape the Earth

4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ1 TE p.1 M3_DQ3 TE p.69 M3_DQ4 TE p.103
Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Earth Materials and Systems Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ1 TE p.1 M3_DQ3 TE p.69 M3_DQ4 TE p.103 **Key Resources** DQ4_L5 Stream Tray Model handout DQ4_L5 The Power of Water video Leveled Reader: Sculpting Landscapes **Key Resources** DQ1_L2 Timelapse Tour Interactive DQ1_L2 Our Changing Planet Prior-Knowledge Read-Aloud text	**Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ1 TE p.1 M3_DQ3 TE p.69 M3_DQ4 TE p.103 DQ4 Benchmark Assessment: Sculpting Landscapes **Key Resources** DQ4 Erosion and Weathering video	**Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. With guidance, plan and conduct an investigation with peers.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ1 TE p.1 M3_DQ3 TE p.69 M3_DQ4 TE p.103 **Key Resources** DQ1_L2 Timelapse Tour Interactive DQ1_L2 Our Changing Planet Prior-Knowledge Read-Aloud text DQ4_L2 El Capitan video DQ4_L2 Glacial Erosion model DQ4 L3 Wind Erosion model DQ4_L3 Wind Erosion video DQ4 Benchmark Assessment: Sculpting Landscapes DQ4 Erosion and Weathering video

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					Leveled Reader: Sculpting Landscapes

Earth's Systems: Processes that Shape the Earth

4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.	Grade 4 Module 4: Earthquake Engineering M4_DQ1 TE p.1 M4_DQ2 TE p.43 Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ3 TE p.69
Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Plate Tectonics and Large-Scale System Interactions The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features of Earth.	Grade 4 Module 4: Earthquake Engineering M4_DQ2 TE p.43 **Key Resources** DQ2_L3 Earth Explorer interactive DQ2_L4 California Earthquakes text TB pp.33–37 DQ2 Benchmark Assessment: Earthquake Engineering: Analyzing Maps	**Patterns** Patterns can be used as evidence to support an explanation.	Grade 4 Module 4: Earthquake Engineering M4_DQ2 TE p.43 **Key Resources** DQ2_L3 Earth Explorer interactive DQ2_L4 California Earthquakes text TB pp.33–37 DQ2 Benchmark Assessment: Earthquake Engineering: Analyzing Maps	**Analyzing and Interpreting Data** Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena using logical reasoning.	Grade 4 Module 4: Earthquake Engineering M4_DQ1 TE p.1 M4_DQ2 TE p.43 **Key Resources** DQ2 Benchmark Assessment: Earthquake Engineering: Analyzing Maps Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ3 TE p.69

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Energy

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from renewable and non-renewable resources and how their uses affect the environment. *Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fissile materials.*	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ1 TE p.1 M2_DQ2 TE p.51 M2_DQ3 TE p.121

DCI	Correlations	CCC	Correlations	SEP	Correlations
Natural Resources Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ3 TE p.121 **Key Resources** DQ3_L1 Energy in The United States text pp.60–66 DQ3_L3 Fuels video DQ3_L3 Fossil Fuels text pp.73–75 DQ3 Benchmark Assessment: Nuclear Energy Leveled Reader: Renewable Energy	**Cause and Effect** Cause and effect relationships are routinely identified and used to explain change.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ3 TE p.121 DQ3 Benchmark Assessment: Nuclear Energy	**Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluate the merit and accuracy of ideas and methods. Obtain and combine information from books and other reliable media to explain phenomena.	Grade 4 Module 2: Sparks Energy, Inc. M2_DQ2 TE p.51 M2_DQ3 TE p.121 **Key Resources** DQ3_L1 Energy in The United States text pp.60–66 DQ3_L3 Fuels video DQ3_L3 Fossil Fuels text DQ2_L1 Solar Power video DQ2_L5 Wind Turbines video DQ2_L5 Wind Turbine Engineer text pp.40–43 DQ3 Benchmark Assessment: Nuclear Energy

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Earth's Systems: Processes that Shape the Earth

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ4 TE p.103 DQ4 Benchmark Assessment: Sculpting Landscapes Grade 4 Module 4: Earthquake Engineering M4_DQ4 TE p.123 M4_DQ5 TE p.145 M4_DQ6 TE p.179
Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity. *State Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, landslides, or volcanic eruptions.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Natural Hazards A variety of natural hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate natural hazards but can take steps to reduce their impacts.	Grade 4 Module 4: Earthquake Engineering M4_DQ5 TE p.145 Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ4 TE p.103 DQ4 Benchmark Assessment: Sculpting Landscapes	**Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ4 TE p.103 DQ4 Benchmark Assessment: Sculpting Landscapes **Key Resources** DQ4 Erosion and Weathering video DQ5 Benchmark Assessment: Earthquake Solutions	**Constructing Explanations and Designing Solutions** Constructing explanations (science) and designing solutions (engineering) in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	Grade 4 Module 4: Earthquake Engineering M4_DQ4 TE p.123 M4_DQ5 TE p.145 M4_DQ6 TE p.179 Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ4 TE p.103

Designing Solutions to Engineering Problems Testing a solution involves investigating how well it performs under a range of likely conditions.	Grade 4 Module 4: Earthquake Engineering M4_DQ4 TE p.123 M4_DQ5 TE p.145 M4_DQ6 TE p.179 **Key Resources** DQ5_L2 LAX Engineer video DQ5_L3 Made in Japan: Earthquake-Proof Homes text TB pp.83–88 Leveled Reader: Shake, Rattle, and Roll Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ4 TE p.103				
Influence of Engineering, Technology, and Science on Society and the Natural World Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands.	Grade 4 Module 3: Time-Traveling Tour Guide M3_DQ4 TE p.103 Grade 4 Module 4: Earthquake Engineering M4_DQ1 TE p.1 M4_DQ2 TE p.43 M4_DQ5 TE p.145 M4_DQ6 TE p.179				

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Structure and Properties of Matter

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ3 TE p.135 M1_DQ5 TE p.235 M1_DQ6 TE p.259
Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water. *State Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Properties of Matter Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ3 TE p.135 M1_DQ5 TE p.235 M1_DQ6 TE p.259	**Scale, Proportion, and Quantity** Natural objects exist from the very small to the immensely large.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ3 TE p.135 M1_DQ5 TE p.235 M1_DQ6 TE p.259	**Developing and Using Models** Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model to describe phenomena.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ3 TE p.135 M1_DQ5 TE p.235 M1_DQ6 TE p.259 Key Resources DQ6_L2 Particle Model video Leveled Reader: Absolute Zero

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Structure and Properties of Matter

5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ3 TE p.135 Benchmark Assessment: What is Matter Made of?
Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances. *State Assessment Boundary: Assessment does not include distinguishing mass and weight.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Properties of Matter The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ3 TE p.135 **Key Resources** DQ3_L1 Making Banana Bread activity TB pp.65–66 DQ3_L2 Making Lava Lamps activity TB pp.71–72 DQ3_L4 Investigating Changes activity TB pp.74–77 Benchmark Assessment: What is Matter Made of? Leveled Reader: Absolute Zero	**Scale, Proportion, and Quantity** Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ3 TE p.135 **Key Resources** DQ3_L1 Making Banana Bread activity TB pp.65–66 DQ3_L2 Making Lava Lamps activity TB pp.71–72 DQ3_L4 Investigating Changes activity TB pp.74–77 Benchmark Assessment: What is Matter Made of?	**Using Mathematics and Computational Thinking** Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. Measure and graph quantities such as weight to address scientific and engineering questions and problems.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ3 TE p.135 **Key Resources** DQ3_L1 Making Banana Bread activity TB pp.65–66 DQ3_L2 Making Lava Lamps activity TB pp.71–72 DQ3_L4 Investigating Changes activity TB pp.74–77 Benchmark Assessment: What is Matter Made of?
Chemical Reactions No matter what reaction or change in properties occurs, the total weight of the substances does not change.					

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CONTENT AND PERFORMANCE STANDARDS

Structure and Properties of Matter

5-PS1-3. Make observations and measurements to identify materials based on their properties.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ2 TE p.99 M1_DQ5 TE p.235 M1_DQ6 TE p.259 Key Resources DQ1_L1-L4 Investigating Mystery Materials activity TE pp.52–77 DQ1_L6-7 Design a Bag activity TE pp.86–97 Throughout DQ2 Investigating Mystery Substances and Mixtures activities TE pp.104–115
Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, luster, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property. *State Assessment Boundary: Assessment does not include density or distinguishing mass and weight.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Properties of Matter Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.)	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ2 TE p.99 Key Resources DQ1_L1-L4 Investigating Mystery Materials activity TE pp.52–77 DQ1_L6-7 Design a Bag activity TE pp.86–97 Throughout DQ2 Investigating Mystery Substances and Mixtures activities TE pp.104–115 Leveled Reader: Absolute Zero	**Scale, Proportion, and Quantity** Standard units are used to measure and describe physical quantities such as mass, time, temperature, and volume.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ2 TE p.99 Key Resources DQ1_L1-L4 Investigating Mystery Materials activity TE pp.52–77 DQ1_L6-7 Design a Bag activity TE pp.86–97 Throughout DQ2 Investigating Mystery Substances and Mixtures activities TE pp.104–115 Leveled Reader: Absolute Zero	**Planning and Carrying Out Investigations** Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ1 TE p.45 M1_DQ2 TE p.99 Key Resources DQ1_L1-L4 Investigating Mystery Materials activity TE pp.52–77 DQ1_L6-7 Design a Bag activity TE pp.86–97 Throughout DQ2 Investigating Mystery Substances and Mixtures activities TE pp.104–115 Leveled Reader: Absolute Zero

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CONTENT AND PERFORMANCE STANDARDS

Structure and Properties of Matter

5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances. *Determination of the new substance is based on the properties of the resulting substance, which could include quantitative (e.g. weight) and qualitative properties (e.g. state of matter, color, texture, and odor).* *State Assessment Boundary: Assessment does not include identification of the new substance.*	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ2 TE p.99 M1_DQ3 TE p.135 M1_DQ4 TE p.195 M1_DQ5 TE p.235

DCI	Correlations	CCC	Correlations	SEP	Correlations
Chemical Reactions When two or more different substances are mixed, a new substance with different properties may be formed.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ2 TE p.99 M1_DQ3 TE p.135 M1_DQ4 TE p.195 M1_DQ5 TE p.235 **Key Resources** DQ3_L1 Making Banana Bread activity TB pp.65–66 DQ3_L2 Making Lava Lamps activity TB pp.71–72 DQ3_L4 Investigating Changes activity TB pp.74–77 DQ3_L4 Chemical Reactions video DQ3_L6 Changing Properties video Leveled Reader: Absolute Zero	**Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ2 TE p.99 M1_DQ3 TE p.135 M1_DQ4 TE p.195 M1_DQ5 TE p.235 Leveled Reader: Absolute Zero	**Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	Grade 5 Module 1: Matter Mysteries Hotline M1_DQ2 TE p.99 M1_DQ3 TE p.135 M1_DQ4 TE p.195 M1_DQ5 TE p.235 Leveled Reader: Absolute Zero

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CONTENT AND PERFORMANCE STANDARDS

Space Systems: Stars and the Solar Systems

5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.	Grade 5 Module 4: Galactic Guidebook M4_DQ4 TE p.127
"Down" is a local description of the direction that points toward the center of the spherical Earth. *State Assessment Boundary: Assessment does not include mathematical representation of gravitational force.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Types of Interactions The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.	Grade 5 Module 4: Galactic Guidebook M4_DQ4 TE p.127 **Key Resources** DQ4_L2 Gravity investigation TE pp.140–147 DQ4_L3 Gravity video Leveled Reader: Looking to the Stars and Beyond	**Cause and Effect** Cause and effect relationships are routinely identified and used to explain change.	Grade 5 Module 4: Galactic Guidebook M4_DQ4 TE p.127 **Key Resources** DQ4_L2 Gravity investigation TE pp.140–147 DQ4_L3 Gravity video Leveled Reader: Looking to the Stars and Beyond	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Support an argument with evidence, data, or a model.	Grade 5 Module 4: Galactic Guidebook M4_DQ4 TE p.127 **Key Resources** DQ4_L2 Gravity investigation TE pp.140–147 DQ4_L3 Gravity video Leveled Reader: Looking to the Stars and Beyond

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CONTENT AND PERFORMANCE STANDARDS

Matter and Energy in Organisms and Ecosystems

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. *Examples of models could include diagrams, and flowcharts.*	Grade 5 Module 2: Yellowstone Uncovered M2_DQ2 TE p.29 M2_DQ3 TE p.87 M2_DQ4 TE p.119 M2_DQ5 TE p.151

DCI	Correlations	CCC	Correlations	SEP	Correlations
Energy in Chemical Processes and Everyday Life The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).	Grade 5 Module 2: Yellowstone Uncovered M2_DQ2 TE p.29 M2_DQ3 TE p.87 M2_DQ4 TE p.119 M2_DQ5 TE p.151 **Key Resources** DQ2_L5 Butterfly's Breakfast video DQ3_L3 How Plants Make Food video Classroom Matter Flowchart activity DQ3_L4 TE pp.112–118 DQ4_L3.L4 TE pp.138–149 DQ5_L3 TE pp.170–177 DQ4_L3 Food Chain video DQ4_L3 Food Chains interactive DQ5 Benchmark Assessment: From Matter to Organisms Leveled Reader: The Galápagos Islands	**Energy and Matter** Energy can be transferred in various ways and between objects.	Grade 5 Module 2: Yellowstone Uncovered M2_DQ2 TE p.29 M2_DQ3 TE p.87 M2_DQ4 TE p.119 M2_DQ5 TE p.151 **Key Resources** DQ2_L5 Butterfly's Breakfast video DQ3_L3 How Plants Make Food video Classroom Matter Flowchart activity DQ3_L4 TE pp.112–118 DQ4_L3.L4 TE pp.138–149 DQ5_L3 TE pp.170–177 DQ4_L3 Food Chain video DQ4_L3 Food Chains interactive DQ5 Benchmark Assessment: From Matter to Organisms Leveled Reader: The Galápagos Islands	**Developing and Using Models** Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Use models to describe phenomena.	Grade 5 Module 2: Yellowstone Uncovered M2_DQ2 TE p.29 M2_DQ3 TE p.87 M2_DQ4 TE p.119 M2_DQ5 TE p.151 **Key Resources** DQ2_L5 Butterfly's Breakfast video DQ3_L3 How Plants Make Food video Classroom Matter Flowchart activity DQ3_L4 TE pp.112–118 DQ4_L3.L4 TE pp.138–149 DQ5_L3 TE pp.170–177 DQ4_L3 Food Chain video DQ4_L3 Food Chains interactive DQ5 Benchmark Assessment: From Matter to Organisms

Organization for Matter and Energy Flow in Organisms Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.					Leveled Reader: The Galápagos Islands

Matter and Energy in Organisms and Ecosystems

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water. *Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.*	Grade 5 Module 2: Yellowstone Uncovered M2_DQ1 TE p.1 M2_DQ2 TE p.29 M2_DQ5 TE p.151

DCI	Correlations	CCC	Correlations	SEP	Correlations
Organization for Matter and Energy Flow in Organisms Plants acquire their material for growth chiefly from air and water.	Grade 5 Module 2: Yellowstone Uncovered M2_DQ1 TE p.1 M2_DQ2 TE p.29 M2_DQ5 TE p.151 **Key Resources** DQ1_L2 What Plants Need investigation TE pp.14–19 DQ3_L3 How Plants Make Food video	**Energy and Matter** Matter is transported into, out of, and within systems.	Grade 5 Module 2: Yellowstone Uncovered M2_DQ1 TE p.1 M2_DQ2 TE p.29 M2_DQ5 TE p.151 **Key Resources** DQ1_L2 What Plants Need investigation TE pp.14–19	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K– 2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).	Grade 5 Module 2: Yellowstone Uncovered M2_DQ1 TE p.1 M2_DQ2 TE p.29 M2_DQ5 TE p.151 **Key Resources** DQ1_L2 What Plants Need investigation TE pp.14–19 DQ3_L3 How Plants Make Food video

	DQ5_L3 Decomposition video Leveled Reader: The Galápagos Islands Grade 5 Module 1: Matter Mysteries Hotline M1_DQ3 TE p.135 **Key Resources** DQ3_L6 Van Helmont investigation set-up TE pp.176–181		DQ3_L3 How Plants Make Food video DQ5_L3 Decomposition video Leveled Reader: The Galápagos Islands Grade 5 Module 1: Matter Mysteries Hotline M1_DQ3 TE p.135 **Key Resources** DQ3_L6 Van Helmont investigation set-up TE pp.176–181	Support an argument with evidence, data, or a model.	DQ5_L3 Decomposition video Leveled Reader: The Galápagos Islands Grade 5 Module 1: Matter Mysteries Hotline M1_DQ3 TE p.135 **Key Resources** DQ3_L6 Van Helmont investigation set-up TE pp.176–181

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Matter and Energy in Organisms and Ecosystems

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Grade 5 Module 2: Yellowstone Uncovered M2_DQ2 TE p.29 M2_DQ3 TE p.87 M2_DQ4 TE p.119 M2_DQ5 TE p.151 M2_DQ6 TE p.189
Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth. *State Assessment Boundary: Assessment does not include molecular explanations.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Interdependent Relationships in Ecosystems The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively	**Key Resources** DQ2_L3 Carnivores video DQ2_L4 Herbivores of Yellowstone video DQ2_L5 Yellowstone Food Web video DQ2_L5 Butterfly's Breakfast video DQ3_L3 How Plants Make Food video Classroom Matter Flowchart activity DQ3_L4 TE pp.112–118 DQ4_L3.L4 TE pp.138–149 DQ5_L3 TE pp.170–177 DQ4_L3 Food Chain video DQ4_L3 Food Chains interactive DQ5 Benchmark Assessment: From Matter to Organisms DQ6_L1 Cane Toads video	**Systems and System Models** A system can be described in terms of its components and their interactions.	**Key Resources** DQ2_L3 Carnivores video DQ2_L4 Herbivores of Yellowstone video DQ2_L5 Yellowstone Food Web video DQ2_L5 Butterfly's Breakfast video DQ3_L3 How Plants Make Food video Classroom Matter Flowchart activity DQ3_L4 TE pp.112–118 DQ4_L3.L4 TE pp.138–149 DQ5_L3 TE pp.170–177 DQ4_L3 Food Chain video DQ4_L3 Food Chains interactive DQ5 Benchmark Assessment: From Matter to Organisms	**Developing and Using Models** Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model to describe phenomena.	**Key Resources** DQ2_L3 Carnivores video DQ2_L4 Herbivores of Yellowstone video DQ2_L5 Yellowstone Food Web video DQ2_L5 Butterfly's Breakfast video DQ3_L3 How Plants Make Food video Classroom Matter Flowchart activity DQ3_L4 TE pp.112–118 DQ4_L3.L4 TE pp.138–149 DQ5_L3 TE pp.170–177 DQ4_L3 Food Chain video DQ4_L3 Food Chains interactive DQ5 Benchmark Assessment: From Matter to Organisms Leveled Reader: The Galápagos Islands

stable web of life. Newly introduced species can damage the balance of an ecosystem.	DQ6_L1 Making Changes to an Ecosystem interactive DQ6_L2 Wolves in Yellowstone video Leveled Reader: The Galápagos Islands		Leveled Reader: The Galápagos Islands		
Cycles of Matter and Energy Transfer in Ecosystems Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.					

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Space Systems: Stars and the Solar Systems

5-ESS1-1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth. State Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).	Grade 5 Module 4: Galactic Guidebook M4_DQ2 TE p.37 M4_DQ3 TE p.71

DCI	Correlations	CCC	Correlations	SEP	Correlations
The Universe and its Stars The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth.	Grade 5 Module 4: Galactic Guidebook M4_DQ2 TE p.37 M4_DQ3 TE p.71 **Key Resources** DQ2_L1 Where are the Stars? Model TE pp.43–47 DQ2_L3 Star Brightness Model TE pp.54–61 DQ2_L4 Brightness of Stars video DQ3_L4 Why Do We Only See Stars at Night? video Leveled Reader: Looking to the Stars and Beyond	**Scale, Proportion, and Quantity** Natural objects exist from the very small to the immensely large.	Grade 5 Module 4: Galactic Guidebook M4_DQ2 TE p.37 M4_DQ3 TE p.71 **Key Resources** DQ2_L1 Where are the Stars? Model TE pp.43–47 DQ2_L3 Star Brightness Model TE pp.54–61 DQ2_L4 Brightness of Stars video DQ3_L4 Why Do We Only See Stars at Night? video Leveled Reader: Looking to the Stars and Beyond	**Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Support an argument with evidence, data, or a model.	Grade 5 Module 4: Galactic Guidebook M4_DQ2 TE p.37 M4_DQ3 TE p.71 **Key Resources** DQ2_L1 Where are the Stars? Model TE pp.43–47 DQ2_L3 Star Brightness Model TE pp.54–61 DQ2_L4 Brightness of Stars video DQ3_L4 Why Do We Only See Stars at Night? video Leveled Reader: Looking to the Stars and Beyond

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Space Systems: Stars and the Solar Systems

5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Grade 5 Module 4: Galactic Guidebook M4_DQ1 TE p.1 M4_DQ3 TE p.71 M4_DQ5 TE p.155
Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months. *State Assessment Boundary: Assessment does not include causes of seasons.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Earth and the Solar System The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night, daily changes in the length and direction of shadows, and different positions of the sun, moon, and stars at different times of the day, month, and year.	Grade 5 Module 4: Galactic Guidebook M4_DQ1 TE p.1 M4_DQ3 TE p.71 M4_DQ5 TE p.155 **Key Resources** DQ1_L3 Sunrise Sunset Calculator interactive DQ1_L4 Stargazer interactive DQ3_L2 Stargazer interactive DQ3_L5 Earth in Space video DQ3_L5 Moon Phases and Moon's Orbit video DQ5_L1 Stargazer interactive DQ5_L5 Sun and Shadows video Leveled Reader: Looking to the Stars and Beyond DQ5 Benchmark Assessment: Earth's Daily and Seasonal Patterns **Key Resources**	**Patterns** Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.	Grade 5 Module 4: Galactic Guidebook M4_DQ1 TE p.1 M4_DQ3 TE p.71 M4_DQ5 TE p.155 **Key Resources** DQ1_L3 Sunrise Sunset Calculator interactive DQ1_L4 Stargazer interactive DQ3_L2 Stargazer interactive DQ3_L5 Earth in Space video DQ3_L5 Moon Phases and Moon's Orbit video DQ5_L1 Stargazer interactive DQ5_L5 Sun and Shadows video Leveled Reader: Looking to the Stars and Beyond DQ5 Benchmark Assessment: Earth's Daily and Seasonal Patterns **Key Resources**	**Analyzing and Interpreting Data** Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.	Grade 5 Module 4: Galactic Guidebook M4_DQ1 TE p.1 M4_DQ3 TE p.71 M4_DQ5 TE p.155 **Key Resources** DQ1_L3 Sunrise Sunset Calculator interactive DQ1_L4 Stargazer interactive DQ3_L2 Stargazer interactive DQ3_L5 Earth in Space video DQ3_L5 Moon Phases and Moon's Orbit video DQ5_L1 Stargazer interactive DQ5_L5 Sun and Shadows video Leveled Reader: Looking to the Stars and Beyond DQ5 Benchmark Assessment: Earth's Daily and Seasonal Patterns **Key Resources**

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	Earth's Motion in the Solar System video		Earth's Motion in the Solar System video		Earth's Motion in the Solar System video

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Earth's Systems

5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 M3_DQ2 TE p.37 M3_DQ3 TE p.67 M3_DQ4 TE p.121
Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system. *State Assessment Boundary: Assessment is limited to the interactions of two systems at a time.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Earth Materials and Systems Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 M3_DQ2 TE p.37 M3_DQ3 TE p.67 M3_DQ4 TE p.121 **Key Resources** DQ3_L2 The Atmosphere video DQ3_L3 The Geosphere video DQ3_L6 Where Does the Snow Go? video DQ4_L1 Pacific Ocean video DQ4_L3 Why is the Ocean Salty? video Leveled Reader: Where's the Water?	**Systems and System Models** A system can be described in terms of its components and their interactions.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 M3_DQ2 TE p.37 M3_DQ3 TE p.67 M3_DQ4 TE p.121 **Key Resources** DQ2_L1 Watershed Model TE pp.42–49 DQ3_L2 The Atmosphere video DQ3_L3 The Geosphere video DQ3_L6 Where Does the Snow Go? video DQ3_L2 Rain Model TE pp.80–87 DQ3_L5-6 Rainshadow Model TE pp.100–127 DQ4_L1 Pacific Ocean video DQ4_L3 Why is the Ocean Salty? video	**Developing and Using Models** Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model using an example to describe a scientific principle.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 M3_DQ2 TE p.37 M3_DQ3 TE p.67 M3_DQ4 TE p.121 **Key Resources** DQ2_L1 Watershed Model TE pp.42–49 DQ3_L2 The Atmosphere video DQ3_L3 The Geosphere video DQ3_L6 Where Does the Snow Go? video DQ3_L2 Rain Model TE pp.80–87 DQ3_L5-6 Rainshadow Model TE pp.100–127 DQ4_L1 Pacific Ocean video DQ4_L3 Why is the Ocean Salty? video DQ4_L3,L4 Throughout Ocean Salination Model TE pp.140–149

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					Leveled Reader: Where's the Water?

Earth's Systems

5-ESS2-2. Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. *State Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.*	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1

DCI	Correlations	CCC	Correlations	SEP	Correlations
The Roles of Water in Earth's Surface Processes Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 Leveled Reader: Where's the Water?	**Scale, Proportion, and Quantity** Standard units are used to measure and describe physical quantities such as weight, and volume.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 Leveled Reader: Where's the Water?	**Using Mathematics and Computational Thinking** Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. Describe and graph quantities such as area and volume to address scientific questions.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 Leveled Reader: Where's the Water?

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Earth's Systems

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 M3_DQ2 TE p.37 M3_DQ3 TE p.67 M3_DQ5 TE p.169

DCI	Correlations	CCC	Correlations	SEP	Correlations
Human Impacts on Earth Systems Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.	Grade 5 Module 3: H2O Response Team M3_DQ1 TE p.1 M3_DQ2 TE p.37 M3_DQ3 TE p.67 M3_DQ5 TE p.169 **Key Resources** DQ2_L1 Water Pollution video DQ2_L2 Teeny Greeny video DQ2_L3 Living in the Desert video DQ5_L4 Recycle Your Oil video DQ5_L1 California's Water Shortages video Leveled Reader: Where's the Water? Twig Science Reporter News Update 03/02/2018 News Update 02/01/2018 News Update 12/14/2017 News Update 12/07/2017	**Systems and System Models** A system can be described in terms of its components and their interactions.	Grade 5 Module 3: H2O Response Team M3_DQ2 TE p.37 **Key Resources** DQ2_L1 Water Pollution video DQ2_L2 Teeny Greeny video DQ2_L3 Living in the Desert video Leveled Reader: Where's the Water? DQ5 Benchmark Assessment: Water Pollution	**Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 3– 5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.	Grade 5 Module 3: H2O Response Team M3_DQ2 TE p.37 **Key Resources** DQ2_L1 Water Pollution video DQ2_L2 Teeny Greeny video DQ2_L3 Living in the Desert video Leveled Reader: Where's the Water? DQ5 Benchmark Assessment: Water Pollution

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From Molecules to Organisms: Structures and Processes

PE	Correlations
MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 (TE pp. 220–275, TB pp.109–138) Key Resources L1 **Microscopes** video L1, L3 **Virtual Microscope** interactive
Emphasis is on developing evidence that living things are made of cells, distinguishing between living and non-living things, and understanding that living things may be made of one cell or many and varied cells.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Function All living things are made up of cells. A cell is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).	Grade 6 Module 1 BioTech Systems Worldwide M1_DQ3 (TE pp. 220–275, TB pp.109–138) Key Resources L1, L3 **Virtual Microscope** interactive	**Scale, Proportion, and Quantity** Phenomena that can be observed at one scale may not be observable at another scale.	Grade 6 Module 1 BioTech Systems Worldwide M1_DQ3 L1 (TE pp. 220–227, TB pp.109–110) L2 (TE pp. 228–235, TB pp.111–112) L3 (TE pp. 236–243, TB pp.113–116) Key Resources L1 **Microscopes** video L1, L3 **Virtual Microscope** interactive	**Planning and Carrying Out Investigations** Planning and carrying out investigations in 6–8 builds on K–5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or solutions. Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.	Grade 6 Module 1 BioTech Systems Worldwide M1_DQ3 L1 (TE pp. 220–227, TB pp.109–110) L2 (TE pp. 228–235, TB pp.111–112) L3 (TE pp. 236–243, TB pp.113–116) L6 (TE pp. 260–269, TB pp.131–134) L7 (TE pp. 270–275, TB pp.135–138) Key Resources L1, L3 **Virtual Microscope** interactive

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From Molecules to Organisms: Structures and Processes

PE	Correlations
MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 (TE pp. 220–275, TB pp.109–138) Key Resources L1, L3 **Virtual Microscope** interactive L4 **What is a Cell?** video
Emphasis is on the cell functioning as a whole system and the primary role of identified parts of the cell, specifically the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall. *State Assessment Boundary: Assessment of organelle structure/ function relationships is limited to the cell wall and cell membrane. Assessment of the function of the other organelles is limited to their relationship to the whole cell. Assessment does not include the biochemical function of cells, cell parts, or specific stages of the cell cycle.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Function Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 L4 (TE pp. 244–251, TB pp.117–125) L5 (TE pp. 252–259, TB pp.126–130) L7 (TE pp. 270–275, TB pp.135–138) Key Resources L4 **What is a Cell?** video	**Structure and Function** Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts, therefore complex natural and designed structures/systems can be analyzed to determine how they function.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 (TE pp. 220–275, TB pp.109–138) Key Resources L1 **Microscopes** video L1, L3 **Virtual Microscope** interactive L4 **What is a Cell?** video	**Developing and Using Models** Developing and using models in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. Develop and use a model to describe phenomena.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 L1 (TE pp. 220–227, TB pp.109–110) L2 (TE pp. 228–235, TB pp.111–112) L3 (TE pp. 236–243, TB pp.113–116) L4 (TE pp. 244–251, TB pp.117–125) L5 (TE pp. 252–259, TB pp.126–130) L7 (TE pp. 270–275, TB pp.135–138) Key Resources L5 **Modeling Cells** activity

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CONTENT AND PERFORMANCE STANDARDS

From Molecules to Organisms: Structures and Processes

PE	Correlations
MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. *Emphasis is on the conceptual understanding that cells form tissues and tissues form organs specialized for particular body functions. Examples could include the interaction of subsystems within a system and the normal functioning of those systems.* *State Assessment Boundary: Assessment does not include the mechanism of one body system independent of others. Assessment is limited to the circulatory, excretory, digestive, respiratory, muscular, and nervous systems.*	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 (TE pp. 54–164, TB pp. 15–72) **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ2 (TE pp. 172–212, TB pp. 75–106) **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 (TE pp. 220–275, TB pp.109–138) **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ4 L1 (TE pp. 288–295, TB pp. 141–143) L5 (TE pp. 314–318, TB p. 154) Key Resources L1 **Human Hands** video

DCI	Correlations	CCC	Correlations	SEP	Correlations
Structure and Function In multicellular organisms, the body is a system of multiple interacting subsystems.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 L2 (TE pp. 62–69, TB pp.18–21) L3 (TE pp. 70–77, TB pp. 22–26) L4 (TE pp. 78–87, TB pp. 27–33) L5 (TE pp. 88–93, TB pp. 34–36)	**Systems and System Models** Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 (TE pp. 54–164, TB pp. 15–72) Key Resources L3 **Food's Incredible Journey** video	**Engaging in Argument from Evidence** Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 L2 (TE pp. 62–69, TB pp.18–21) L3 (TE pp. 70–77, TB pp. 22–26)

These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.	L6 (TE pp. 94–101, TB pp. 37–38) L7 (TE pp. 102–109, TB pp. 39–45) L9 (TE pp. 118–127, TB pp. 51–55) L10 (TE pp. 128–135, TB pp. 56–59) L11 (TE pp. 136–141, TB p. 60) L12 (TE pp. 142–149, TB pp. 61–64) L13 (TE pp. 150–157, TB pp. 65–68) L14 (TE pp. 158–164, TB pp. 69–72) Key Resources L3 **Food's Incredible Journey** video L13 **Climbing Systems** video **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ2 (TE pp. 172–212, TB pp. 75–106) **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 L1 (TE pp. 220–227, TB pp.109–110) L2 (TE pp. 228–235, TB pp.111–112) L3 (TE pp. 236–243, TB pp.113–116) L6 (TE pp. 260–269, TB pp.131–134)		L13 **Climbing Systems** video **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ2 L2 (TE pp.180-185, TB pp.79-80) **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 L1 (TE pp. 220–227, TB pp.109–110) L2 (TE pp. 228–235, TB pp.111–112) L4 (TE pp. 244–251, TB pp.117–125) L5 (TE pp. 252–259, TB pp.126–130) L6 (TE pp. 260–269, TB pp.131–134)	either explanations or solutions about the natural and designed world(s). Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon.	L4 (TE pp. 78–87, TB pp. 27–33) L9 (TE pp. 118–127, TB pp. 51–55) L13 (TE pp. 150–157, TB pp. 65–68) L14 (TE pp. 158–164, TB pp. 69–72) **Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ3 L3 (TE pp. 236–243, TB pp.113–116) L6 (TE pp. 260–269, TB pp.131–134) L7 (TE pp. 270–275, TB pp.135–138)

	L7 (TE pp. 270–275, TB pp.135–138) Key Resources L3 **Different Types of Cells** video				
		Connections to Nature of Science **Science is a Human Endeavor** Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	**Grade 6 Module 1 BioTech Systems Worldwide** M1_DQ3 L3 (TE pp. 236–243, TB pp.113–116) L6 (TE pp. 260–269, TB pp.131–134)		

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CONTENT AND PERFORMANCE STANDARDS

From Molecules to Organisms: Structures and Processes

PE	Correlations
MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.	**Grade 6 Module 3** **The Red List** M3_DQ1 L2 (TE pp. 18–23, TB pp. 5–7) L3 (TE pp. 24–31, TB pp. 8–11) L4 (TE pp. 32–39, TB pp. 12–16) L5 (TE pp. 40–47, TB pp. 17–22) L6 (TE pp. 48–55, TB pp. 23–24) L7 (TE pp. 56–63, TB pp. 25–33) L8 (TE pp. 64–71, TB pp. 34–36) L9 (TE pp. 72–79, TB pp. 37–44) L10 (TE pp. 80–86, TB pp. 45–48) Key Resources L3 **Courtship Rituals: Alligator** video L7 **Giant Otter** video Throughout: **Claim- Evidence-Reasoning** Chart **Grade 6 Module 3** **The Red List** M3_DQ2 L1 (TE pp. 96–103, TB pp. 51–54) L2 (TE pp. 104–111, TB p. 55) Key Resources L1 **Parts of the Plant: Flowers** video **Grade 6 Module 3** **The Red List** M3_DQ4 L3 (TE pp. 266–271, TB pp. 140–143) L4 (TE pp. 272–275, TB pp. 144–146) L5 (TE pp. 276–280, TB pp. 147–148)
Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds; and, creating conditions for seed germination and growth. Examples of plant structures could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.	

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DCI	Correlations	CCC	Correlations	SEP	Correlations
Growth and Development of Organisms Animals engage in characteristic behaviors that increase the odds of reproduction. Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction.	**Grade 6 Module 3** **The Red List** M3_DQ1 L3 (TE pp. 24–31, TB pp. 8–11) L4 (TE pp. 32–39, TB pp. 12–16) L5 (TE pp. 40–47, TB pp. 17–22) L6 (TE pp. 48–55, TB pp. 23–24) L7 (TE pp. 56–63, TB pp. 25–33) L8 (TE pp. 64–71, TB pp. 34–36) L9 (TE pp. 72–79, TB pp. 37–44) L10 (TE pp. 80–86, TB pp. 45–48) **Grade 6 Module 3** **The Red List** M3_DQ2 L1 (TE pp. 96–103, TB pp. 51–54) L2 (TE pp. 104–111, TB p. 55) Key Resources L1 **Parts of the Plant: Flowers** video **Grade 6 Module 3** **The Red List** M3_DQ4 L3 (TE pp. 266–271, TB pp. 140–143) L4 (TE pp. 272–275, TB pp. 144–146) L5 (TE pp. 276–280, TB pp. 147–148)	**Cause and Effect** Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability.	**Grade 6 Module 3** **The Red List** M3_DQ1 (TE pp. 8–86, TB pp. 3–48) **Grade 6 Module 3** **The Red List** M3_DQ4 L3 (TE pp. 266–271, TB pp. 140–143) L4 (TE pp. 272–275, TB pp. 144–146) L5 (TE pp. 276–280, TB pp. 147–148) **Grade 6 Module 4** **Cities of the Future** M4_DQ3 L4 (TE pp.200–207, TB pp. 111–115) L6 (TE pp.216–224, TB pp. 122–124)	**Engaging in Argument from Evidence** Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s). Use an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.	**Grade 6 Module 3** **The Red List** M3_DQ1 L2 (TE pp. 18–23, TB pp. 5–7) L3 (TE pp. 24–31, TB pp. 8–11) L4 (TE pp. 32–39, TB pp. 12–16) L5 (TE pp. 40–47, TB pp. 17–22) L6 (TE pp. 48–55, TB pp. 23–24) L7 (TE pp. 56–63, TB pp. 25–33) L8 (TE pp. 64–71, TB pp. 34–36) L9 (TE pp. 72–79, TB pp. 37–44) L10 (TE pp. 80–86, TB pp. 45–48) Key Resources L3 **Courtship Rituals: Alligator** video **Grade 6 Module 3** **The Red List** M3_DQ4 L3 (TE pp. 266–271, TB pp. 140–143) L4 (TE pp. 272–275, TB pp. 144–146) L5 (TE pp. 276–280, TB pp. 147–148) **Grade 6 Module 3** **Benchmark Assessment: Survival of the Fittest Flower** (TE pp. 236–243)

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From Molecules to Organisms: Structures and Processes

PE	Correlations
MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	**Grade 6 Module 3** **The Red List** M3_DQ2 L3 (TE pp. 112–119, TB pp. 56–60) L4 (TE pp. 120–129, TB pp. 61–63) L5 (TE pp. 130–137, TB pp. 64–66) L6 (TE pp. 138–145, TB pp. 67–69) L7 (TE pp. 146–153, TB pp. 70–71) L8 (TE pp. 154–161, TB pp. 72–73) Key Resources L4-8 **Butterfly Genes Modeling** activity **Grade 6 Module 3** **The Red List** M3_DQ3 (TE pp.190–235, TB pp. 87–128) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148)
Examples of local environmental conditions could include availability of food, light, space, and water. Examples of genetic factors could include large breed cattle and species of grass affecting growth of organisms. Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large ponds than they do in small ponds. *State Assessment Boundary: Assessment does not include genetic mechanisms, gene regulation, or biochemical processes.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Growth and Development of Organisms Genetic factors as well as local conditions affect the growth of the adult plant.	**Grade 6 Module 3** **The Red List** M3_DQ2 L3 (TE pp. 112–119, TB pp. 56–60) L6 (TE pp. 138–145, TB pp. 67–69) L8 (TE pp. 154–161, TB pp. 72–73) Key Resources L3 **Modeling Pea Plants** activity TE pp.112–119, TB pp.56–60	**Cause and Effect** Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability.	**Grade 6 Module 3** **The Red List** M3_DQ2 L3 (TE pp. 112–119, TB pp. 56–60) L4 (TE pp. 120–129, TB pp. 61–63) L5 (TE pp. 130–137, TB pp. 64–66) L6 (TE pp. 138–145, TB pp. 67–69)	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple	**Grade 6 Module 3** **The Red List** M3_DQ2 L3 (TE pp. 112–119, TB pp. 56–60) L4 (TE pp. 120–129, TB pp. 61–63) L5 (TE pp. 130–137, TB pp. 64–66) L6 (TE pp. 138–145, TB pp. 67–69)

	Grade 6 Module 3 **The Red List** M3_DQ3 L2 (TE pp.196–203, TB pp. 91–94) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148) **Grade 6 Module 3** **Leveled Reader: Biomes** All chapters (LR pp. 4–32)		L7 (TE pp. 146–153, TB pp. 70–71) L8 (TE pp. 154–161, TB pp. 72–73) **Grade 6 Module 3** **The Red List** M3_DQ3 (TE pp.190–235, TB pp. 87–128) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148) **Grade 6 Module 4** **Cities of the Future** M4_DQ3 (TE pp.174–224, TB pp. 97–124) **Grade 6 Module 3** **Benchmark Assessment: Survival of the Fittest Flower** (TE pp. 236–243)	sources of evidence consistent with scientific knowledge, principles, and theories. Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	L7 (TE pp. 146–153, TB pp. 70–71) Key Resources L4-8 **Butterfly Genes Modeling** activity **Grade 6 Module 3** **The Red List** M3_DQ3 (TE pp.190–235, TB pp. 87–128) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148)

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From Molecules to Organisms: Structures and Processes

PE	Correlations
MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. *State Assessment Boundary: Assessment does not include mechanisms for the transmission of this information.*	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 L5 (TE pp. 88–93, TB pp. 34–36) L6 (TE pp. 94–101, TB pp. 37–38) L7 (TE pp. 102–109, TB pp. 39–45) L8 (TE pp. 110–117, TB pp. 46–50) L11 (TE pp. 136–141, TB p. 60) L12 (TE pp. 142–149, TB pp. 61–64) L13 (TE pp. 150–157, TB pp. 65–68) Key Resources L5 **Animal Senses** Prior-Knowledge Read-Aloud text L6 **Nervous System** video

DCI	Correlations	CCC	Correlations	SEP	Correlations
Information Processing Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 L5 (TE pp. 88–93, TB pp. 34–36) L6 (TE pp. 94–101, TB pp. 37–38) L7 (TE pp. 102–109, TB pp. 39–45) L8 (TE pp. 110–117, TB pp. 46–50) L12 (TE pp. 142–149, TB pp. 61–64) L13 (TE pp. 150–157, TB pp. 65–68) Key Resources L6 **Nervous System** video	**Cause and Effect** Cause and effect relationships may be used to predict phenomena in natural systems.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 L6 (TE pp. 94–101, TB pp. 37–38) L8 (TE pp. 110–117, TB pp. 46–50)	**Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 6–8 builds on K–5 experiences and progresses to evaluating the merit and validity of ideas and methods. Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ1 L5 (TE pp. 88–93, TB pp. 34–36) L6 (TE pp. 94–101, TB pp. 37–38) L7 (TE pp. 102–109, TB pp. 39–45) L8 (TE pp. 110–117, TB pp. 46–50) L11 (TE pp. 136–141, TB p. 60) L12 (TE pp. 142–149, TB pp. 61–64) L13 (TE pp. 150–157, TB pp. 65–68) Key Resources L6 **Nervous System** video

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Heredity: Inheritance and Variation of Traits

PE	Correlations
MS-LS3-2. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. *Emphasis is on using models such as Punnett squares, diagrams, and simulations to describe the cause and effect relationship of gene transmission from parent(s) to offspring and resulting genetic variation.* *State Assessment Boundary: Assessment is limited to monohybrid crossing.*	**Grade 6 Module 3** **The Red List** M3_DQ2 (TE pp. 96–182, TB pp. 51–84) Key Resources L3 **Pea Plant Modeling** activity TE pp.112–119, TB pp.56–60 L4-8 **Butterfly Genes Modeling** activity TE pp.120–129, TB pp.61–63 **Grade 6 Module 3** **The Red List** M3_DQ3 L4 (TE pp.210–215, TB pp. 101–108) L5 (TE pp.216–221, TB pp. 109–114) **Grade 6 Module 3** **Benchmark Assessment: Survival of the Fittest Flower** (TE pp. 236–243)

DCI	Correlations	CCC	Correlations	SEP	Correlations
Growth and Development of Organisms Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring.	**Grade 6 Module 3** **The Red List** M3_DQ2 L1 (TE pp. 96–103, TB pp. 51–54) L2 (TE pp. 104–111, TB p. 55) L3 (TE pp. 112–119, TB pp. 56–60) L4 (TE pp. 120–129, TB pp. 61–63) L7 (TE pp. 146–153, TB pp. 70–71)	**Cause and Effect** Cause and effect relationships may be used to predict phenomena in natural systems.	**Grade 6 Module 3** **The Red List** M3_DQ2 L5 (TE pp. 130–137, TB pp. 64–66) L6 (TE pp. 138–145, TB pp. 67–69) L7 (TE pp. 146–153, TB pp. 70–71) L8 (TE pp. 154–161, TB pp. 72–73) L9 (TE pp. 162–169, TB pp. 74–77)	**Developing and Using Models** Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.	**Grade 6 Module 3** **The Red List** M3_DQ2 L3 (TE pp. 112–119, TB pp. 56–60) L4 (TE pp. 120–129, TB pp. 61–63) L5 (TE pp. 130–137, TB pp. 64–66) L6 (TE pp. 138–145, TB pp. 67–69) L7 (TE pp. 146–153, TB pp. 70–71)

	L8 (TE pp. 154–161, TB pp. 72–73) L9 (TE pp. 162–169, TB pp. 74–77) L10 (TE pp. 170–175, TB pp. 78–81) L11 (TE pp. 176–182, TB pp. 82–84) **Grade 6 Module 3** **Benchmark Assessment: Survival of the Fittest Flower** (TE pp. 236–243)		L10 (TE pp. 170–175, TB pp. 78–81) **Grade 6 Module 3** **The Red List** M3_DQ3 L4 (TE pp.210–215, TB pp. 101–108) L5 (TE pp.216–221, TB pp. 109–114) **Grade 6 Module 3** **Benchmark Assessment: Survival of the Fittest Flower** (TE pp. 236–243)	Develop and use a model to describe phenomena.	L8 (TE pp. 154–161, TB pp. 72–73) L9 (TE pp. 162–169, TB pp. 74–77) Key Resources L3 **Pea Plant Modeling** activity TE pp.112–119, TB pp.56–60 L4-8 **Butterfly Genes Modeling** activity TE pp.120–129, TB pp.61–63 L9 **Cactus Modeling** activity TE pp.162–169, TB pp.74–77 **Grade 6 Module 3** **The Red List** M3_DQ3 L4 (TE pp.210–215, TB pp. 101–108) L5 (TE pp.216–221, TB pp. 109–114)
Inheritance of Traits Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited.	**Grade 6 Module 3** **The Red List** M3_DQ2 L3 (TE pp. 112–119, TB pp. 56–60) L4 (TE pp. 120–129, TB pp. 61–63) L5 (TE pp. 130–137, TB pp. 64–66) L6 (TE pp. 138–145, TB pp. 67–69) L7 (TE pp. 146–153, TB pp. 70–71) L8 (TE pp. 154–161, TB pp. 72–73) L9 (TE pp. 162–169, TB pp. 74–77) L10 (TE pp. 170–175, TB pp. 78–81) L11 (TE pp. 176–182, TB pp. 82–84) Key Resources				

	L3 **Pea Plant Modeling** activity TE pp.112–119, TB pp.56–60 L4-8 **Butterfly Genes Modeling** activity TE pp.120–129, TB pp.61–63 L9 **Cactus Modeling** activity TE pp.162–169, TB pp.74–77 **Grade 6 Module 3** **The Red List** M3_DQ3 L4 (TE pp.210–215, TB pp. 101–108) L5 (TE pp.216–221, TB pp. 109–114)				
Variation of Traits In sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other.	**Grade 6 Module 3** **The Red List** M3_DQ2 L3 (TE pp. 112–119, TB pp. 56–60) L5 (TE pp. 130–137, TB pp. 64–66) L6 (TE pp. 138–145, TB pp. 67–69) L7 (TE pp. 146–153, TB pp. 70–71) L8 (TE pp. 154–161, TB pp. 72–73) L10 (TE pp. 170–175, TB pp. 78–81) L11 (TE pp. 176–182, TB pp. 82–84) Key Resources L3 **Pea Plant Modeling** activity TE pp.112–119, TB pp.56–60				

	L4-8 **Butterfly Genes Modeling** activity TE pp.120–129, TB pp.61–63 **Grade 6 Module 3** **Benchmark Assessment: Survival of the Fittest Flower** (TE pp. 236–243)				

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Earth's Systems

PE	Correlations
MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L5 (TE pp. 34–39, TB pp. 21–23) L6 (TE pp. 40–45, TB pp. 24–35) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56) L4 (TE pp. 94–99, TB pp. 57–59) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) L14 (TE pp. 158–163, TB pp.105–113) L16 (TE pp. 170–174, TB pp.117–122)
Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical. *State Assessment Boundary: A quantitative understanding of the latent heats of vaporization and fusion is not assessed.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
The Roles of Water in Earth's Surface Processes Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56) L4 (TE pp. 94–99, TB pp. 57–59) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) L14 (TE pp. 158–163, TB pp.105–113)	**Energy and Matter** Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L5 (TE pp. 34–39, TB pp. 21–23) M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56)	**Developing and Using Models** Developing and using models in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L5 (TE pp. 34–39, TB pp. 21–23) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L3 (TE pp. 88–93, TB pp. 55–56)

as downhill flows on land. Global movements of water and its changes in form are propelled by sunlight and gravity.	L16 (TE pp. 170–174, TB pp.117–122) Key Resources L1 **Where Does the Water Go?** video L3 **Changing States of Matter** video L4 **The Water Cycle** video		L4 (TE pp. 94–99, TB pp. 57–59) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) L7 (TE pp. 112–117, TB pp. 67–70) L8 (TE pp. 118–123, TB pp. 71–74) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) L12 (TE pp. 144–151, TB pp. 94–96) L13 (TE pp. 152–157, TB pp. 97–104) L16 (TE pp. 170–174, TB pp.117–122)	Develop a model to describe unobservable mechanisms.	L4 (TE pp. 94–99, TB pp. 57–59) L10 (TE pp. 130–137, TB pp. 77–80) L16 (TE pp. 170–174, TB pp.117–122)

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Earth's Systems

PE	Correlations
MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. *Emphasis is on how air masses flow from regions of high pressure to low pressure, causing weather (defined by temperature, pressure, humidity, precipitation, and wind) at a fixed location to change over time, and how sudden changes in weather can result when different air masses collide. Emphasis is on how weather can be predicted within probabilistic ranges. Examples of data can be provided to students (such as weather maps, diagrams, and visualizations) or obtained through laboratory experiments (such as with condensation).* *State Assessment Boundary: Assessment does not include recalling the names of cloud types or weather symbols used on weather maps or the reported diagrams from weather stations.*	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ4 L1 (TE pp. 244–249, TB pp.157–160) L2 (TE pp. 250–257, TB pp.161–165) L3 (TE pp. 258–263, TB pp.166–170) L4 (TE pp. 264–270, TB pp.171–179) L5 (TE pp. 272–277, TB pp.180–181) L6 (TE pp. 278–283, TB pp.182–183) L8 (TE pp. 290–295, TB pp.188–190) L9 (TE pp. 296–299, TB pp.191–192) L10 (TE pp. 300–303, TB pp.193–196) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L5 (TE pp. 100–105, TB pp. 60–63) L7 (TE pp. 112–117, TB pp. 67–70) L8 (TE pp. 118–123, TB pp. 71–74) L9 (TE pp. 124–129, TB pp. 75–76) L13 (TE pp. 152–157, TB pp. 97–104) L14 (TE pp. 158–163, TB pp.105–113) L15 (TE pp. 164–169, TB pp.114–116) L16 (TE pp. 170–174, TB pp.117–122) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L6 (TE pp. 40–45, TB pp. 24–35) L7 (TE pp. 46–51, TB pp. 36–39) L8 (TE pp. 52–57, TB pp. 39–41)

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DCI	Correlations	CCC	Correlations	SEP	Correlations
The Roles of Water in Earth's Surface Processes The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L6 (TE pp. 40–45, TB pp. 24–35) L8 (TE pp. 52–57, TB pp. 39–41) Key Resources L8 **Prevailing Winds** video **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L3 (TE pp. 88–93, TB pp. 55–56) L5 (TE pp. 100–105, TB pp. 60–63) L7 (TE pp. 112–117, TB pp. 67–70) L9 (TE pp. 124–129, TB pp. 75–76) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) L13 (TE pp. 152–157, TB pp. 97–104) L14 (TE pp. 158–163, TB pp.105–113) L15 (TE pp. 164–169, TB pp.114–116) L16 (TE pp. 170–174, TB pp.117–122) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ4	**Cause and Effect** Cause and effect relationships may be used to predict phenomena in natural or designed systems.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L5 (TE pp. 100–105, TB pp. 60–63) L7 (TE pp. 112–117, TB pp. 67–70) L8 (TE pp. 118–123, TB pp. 71–74) L9 (TE pp. 124–129, TB pp. 75–76) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ4 L1 (TE pp. 244–249, TB pp.157–160) L2 (TE pp. 250–257, TB pp.161–165) L3 (TE pp. 258–263, TB pp.166–170) L4 (TE pp. 264–270, TB pp.171–179) L5 (TE pp. 272–277, TB pp.180–181) L6 (TE pp. 278–283, TB pp.182–183) L8 (TE pp. 290–295, TB pp.188–190) L9 (TE pp. 296–299, TB pp.191–192) L10 (TE pp. 300–303, TB pp.193–196) **Grade 6 Module 2**	**Planning and Carrying Out Investigations** Planning and carrying out investigations in 6–8 builds on K–5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or solutions. Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L5 (TE pp. 100–105, TB pp. 60–63) L7 (TE pp. 112–117, TB pp. 67–70) L8 (TE pp. 118–123, TB pp. 71–74) L14 (TE pp. 158–163, TB pp.105–113) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ4 L2 (TE pp. 250–257, TB pp.161–165) L3 (TE pp. 258–263, TB pp.166–170) L5 (TE pp. 272–277, TB pp.180–181) Key Resources L4 **Origin of Wind** text (TB) TE pp.264–270, TB pp.171–179 L5 **Air Mass** demonstration TE pp.272–277, TB pp.180–181

	L1 (TE pp. 244–249, TB pp.157–160) L2 (TE pp. 250–257, TB pp.161–165) L3 (TE pp. 258–263, TB pp.166–170) L4 (TE pp. 264–270, TB pp.171–179) L5 (TE pp. 272–277, TB pp.180–181) L6 (TE pp. 278–283, TB pp.182–183) L8 (TE pp. 290–295, TB pp.188–190) L9 (TE pp. 296–299, TB pp.191–192) L10 (TE pp. 300–303, TB pp.193–196) **Grade 6 Module 2** **Leveled Reader: What Causes Weather?** Chapter 1 (LR pp.2–13) Chapter 2 (LR pp.14–21)		**Leveled Reader: What Causes Weather?** All chapters (LR pp. 2–30)		
Weather and Climate Because these patterns are so complex, weather can only be predicted probabilistically.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ4 L1 (TE pp. 244–249, TB pp.157–160) L2 (TE pp. 250–257, TB pp.161–165) Key Resources L3 **Weather Systems** video				

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CONTENT AND PERFORMANCE STANDARDS

Weather and Climate

PE	Correlations
MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. *Emphasis is on how patterns vary by latitude, altitude, and geographic land distribution. Emphasis of atmospheric circulation is on the sunlight - driven latitudinal banding, the Coriolis effect, and resulting prevailing winds; emphasis of ocean circulation is on the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines of continents. Examples of models can be diagrams, maps and globes, or digital representations.* *State Assessment Boundary: Assessment does not include the dynamics of the Coriolis effect.*	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L1 (TE pp. 8–13, TB pp. 3–4) L2 (TE pp. 14–19, TB pp. 5–7) L5 (TE pp. 34–39, TB pp. 21–23) L6 (TE pp. 40–45, TB pp. 24–35) L7 (TE pp. 46–51, TB pp. 36–39) L8 (TE pp. 52–57, TB pp. 39–41) L9 (TE pp. 58–62, TB pp. 42–44) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 (TE pp. 74–174, TB pp. 47–122) Key Resources L11 **Ocean Conveyor** video; **Ocean Currents** text (TB) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ4 L4 (TE pp. 264–270, TB pp.171–179) L5 (TE pp. 272–277, TB pp.180–181) L6 (TE pp. 278–283, TB pp.182–183) L7 (TE pp. 284–289, TB pp.184–187)

DCI	Correlations	CCC	Correlations	SEP	Correlations
The Roles of Water in Earth's Surface Processes Variations in density due to variations in temperature and salinity drive a global	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L7 (TE pp. 46–51, TB pp. 36–39) **Grade 6 Module 2**	**Systems and System Models** Models can be used to represent systems and their interactions—such as inputs,	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L1 (TE pp. 8–13, TB pp. 3–4) L2 (TE pp. 14–19, TB pp. 5–7) L3 (TE pp. 20–27, TB pp. 8–16) L4 (TE pp. 28–33, TB pp. 17–20)	**Developing and Using Models** Developing and using models in 6–8 builds on K–5 experiences and progresses to developing, using,	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 L6 (TE pp. 40–45, TB pp. 24–35) **Grade 6 Module 2**

pattern of interconnected ocean currents.	**Destination Everywhere!** M2_DQ2 L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) Key Resources L11 **Ocean Conveyor** video; **Ocean Currents** text (TB) TE pp.138–143, TB pp.81–93 **Grade 6 Module 2** **Leveled Reader: What Causes Weather?** Chapter 1 (LR pp.2–13)	processes and outputs—and energy, matter, and information flows within systems.	L5 (TE pp. 34–39, TB pp. 21–23) L7 (TE pp. 46–51, TB pp. 36–39) L8 (TE pp. 52–57, TB pp. 39–41) L9 (TE pp. 58–62, TB pp. 42–44) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L4 (TE pp. 94–99, TB pp. 57–59) L9 (TE pp. 124–129, TB pp. 75–76) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) L12 (TE pp. 144–151, TB pp. 94–96) L14 (TE pp. 158–163, TB pp.105–113) L15 (TE pp. 164–169, TB pp.114–116) L16 (TE pp. 170–174, TB pp.117–122) Key Resources L1-4 **Water Cycle Model** TE pp.74–80, TB pp.47–50 L-5-6 **Land and Water Model** TE pp.100–105, TB pp.60–63 L10 **Convection Current Model** TE pp.130–137, TB pp.77–80 L12 **Unequal Heating Model** TE pp.144–151, TB pp.94–96 **Grade 6 Module 2** **Destination Everywhere!**	and revising models to describe, test, and predict more abstract phenomena and design systems. Develop and use a model to describe phenomena.	**Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L3 (TE pp. 88–93, TB pp. 55–56) L4 (TE pp. 94–99, TB pp. 57–59) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) L7 (TE pp. 112–117, TB pp. 67–70) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) L12 (TE pp. 144–151, TB pp. 94–96) L13 (TE pp. 152–157, TB pp. 97–104) L14 (TE pp. 158–163, TB pp.105–113) L15 (TE pp. 164–169, TB pp.114–116) L16 (TE pp. 170–174, TB pp.117–122) Key Resources L1-4 **Water Cycle Model** TE pp.74–80, TB pp.47–50 L-5-6 **Land and Water Model** TE pp.100–105, TB pp.60–63 L10 **Convection Current Model** TE pp.130–137, TB pp.77–80
Weather and Climate Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. The ocean exerts a major influence on weather and climate by absorbing energy from	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ1 (TE pp. 8–62, TB pp. 3–44) Key Resources Throughout: **Climate Explorer** interactive L7 **Ocean Patterns** video L8 **Prevailing Winds** video **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56)				

the sun, releasing it over time, and globally redistributing it through ocean currents.	L4 (TE pp. 94–99, TB pp. 57–59) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) L7 (TE pp. 112–117, TB pp. 67–70) L9 (TE pp. 124–129, TB pp. 75–76) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) L12 (TE pp. 144–151, TB pp. 94–96) L13 (TE pp. 152–157, TB pp. 97–104) L14 (TE pp. 158–163, TB pp.105–113) L15 (TE pp. 164–169, TB pp.114–116) L16 (TE pp. 170–174, TB pp.117–122) Key Resources L11 **Ocean Conveyor** video; **Ocean Currents** text (TB) **Grade 6 Module 2** **Leveled Reader: What Causes Weather?** All chapters (LR pp. 2–30)		M2_DQ4 L3 (TE pp. 258–263, TB pp.166–170) L4 (TE pp. 264–270, TB pp.171–179) L5 (TE pp. 272–277, TB pp.180–181) L6 (TE pp. 278–283, TB pp.182–183) Key Resources L5-6 **Weather Fronts Model** TE pp.272–277, TB pp.180–181 L6 **Weather Fronts** video		L12 **Unequal Heating Model** TE pp.144–151, TB pp.94–96

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CONTENT AND PERFORMANCE STANDARDS

Earth and Human Activity

PE	Correlations
MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	**Grade 6 Module 4** **Cities of the Future** M4_DQ1 L4 (TE pp.30–39, TB pp. 16–20) L5 (TE pp.40–47, TB pp. 21–24) L6 (TE pp.48–58, TB pp. 25–28) Key Resource L4 **Monitoring Amphibians** video L5 **Water Pollution** investigation TE pp.40–47, TB pp.21–24 **Grade 6 Module 4** **Cities of the Future** M4_DQ3 (TE pp.174–224, TB pp. 97–124) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L2 (TE pp.242–249, TB pp. 130–141) L3 (TE pp.250–257, TB pp. 142–154) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)
Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could manage that impact. Examples of human impacts can include conservation techniques, water usage (such as municipal withdrawals, industrial applications, and irrigation), land usage (such as urban development, recreation, agriculture, or reclamation), and pollution.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Human Impacts on Earth Systems	**Grade 6 Module 4** **Cities of the Future**	**Cause and Effect** Relationships can be classified as causal or	**Grade 6 Module 4** **Cities of the Future** M4_DQ1	**Constructing Explanations and Designing Solutions**	**Grade 6 Module 4** **Cities of the Future** M4_DQ1

Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things.	M4_DQ1 (TE pp.8–58, TB pp. 3–28) **Grade 6 Module 4 Cities of the Future** M4_DQ3 (TE pp.174–224, TB pp. 97–124) Key Resources L2 **Where Will Plants Migrate as It Gets Warmer?** text TE pp.184–191, TB pp.104–106 **Grade 6 Module 4 Leveled Reader: Global Warming** All chapters (LR pp.2-30)	correlational, and correlation does not necessarily imply causation.	L1 (TE pp.8–15, TB pp. 3–9) L2 (TE pp.16–21, TB pp. 10–11) L3 (TE pp.22–28, TB pp. 12–15) L5 (TE pp.40–47, TB pp. 21–24) L6 (TE pp.48–58, TB pp. 25–28) **Grade 6 Module 4 Cities of the Future** M4_DQ2 L2 (TE pp.78–89, TB pp. 37–42) L3 (TE pp.90–98, TB pp. 43–46) L4 (TE pp.100–109, TB pp. 47–58) L6 (TE pp.118–126, TB pp. 64–77) L7 (TE pp.128–135, TB pp. 78–79) L8 (TE pp.136–141, TB pp. 80–81) L9 (TE pp.142–151, TB pp. 82–89) L10 (TE pp.152–161, TB pp. 90–94) **Grade 6 Module 4 Cities of the Future** M4_DQ4 L1 (TE pp.232–241, TB pp. 127–129)	Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Apply scientific principles to design an object, tool, process or system.	L6 (TE pp.48–58, TB pp. 25–28) **Grade 6 Module 4 Cities of the Future** M4_DQ4 L2 (TE pp.242–249, TB pp. 130–141) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)

			L2 (TE pp.242–249, TB pp. 130–141) L3 (TE pp.250–257, TB pp. 142–154)		
		Connections to Engineering, Technology, and Applications of Science **Influence of Science, Engineering, and Technology on Society and the Natural World** The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time.	**Grade 6 Module 4** **Cities of the Future** M4_DQ4 (TE pp.232–309, TB pp. 127–180) Key Resources L4 **Eco-Cities: Indoor Farming** video; **Eco-Cities: Food Waste** video L5 **Eco-Cities: Transportation** video; **Eco-Cities: Energy** video L6 **What Is Land Used For?** video		

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CONTENT AND PERFORMANCE STANDARDS

Earth and Human Activity

PE	Correlations
MS-ESS3–5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	**Grade 6 Module 4** **Cities of the Future** M4_DQ2 (TE pp.68–161, TB pp. 31–94) **Grade 6 Module 4** **Benchmark Assessment: Global Warming** (TE pp.162-165) **Grade 6 Module 2** **Leveled Reader: What Causes Weather?** Chapter 3 (LR pp.22-30)
Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Global Climate Change Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying	**Grade 6 Module 4** **Cities of the Future** M4_DQ2 (TE pp.68–161, TB pp. 31–94) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L1 (TE pp.232–241, TB pp. 127–129) L3 (TE pp.250–257, TB pp. 142–154) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173)	**Stability and Change** Stability might be disturbed either by sudden events or gradual changes that accumulate over time.	**Grade 6 Module 4** **Cities of the Future** M4_DQ2 L5 (TE pp.110–117, TB pp. 59–63) L6 (TE pp.118–126, TB pp. 64–77) L7 (TE pp.128–135, TB pp. 78–79) L8 (TE pp.136–141, TB pp. 80–81) L10 (TE pp.152–161, TB pp. 90–94) **Grade 6 Module 4** **Cities of the Future** M4_DQ3 L1 (TE pp.174–183, TB pp. 97–103)	**Asking Questions and Defining Problems** Asking questions and defining problems in grades 6–8 builds on grades K–5 experiences and progresses to specifying relationships between variables, clarifying arguments and models. Ask questions to identify and clarify evidence of an argument.	**Grade 6 Module 4** **Cities of the Future** M4_DQ2 L1 (TE pp.68–77, TB pp. 31–36) L2 (TE pp.78–89, TB pp. 37–42) L4 (TE pp.100–109, TB pp. 47–58) L10 (TE pp.152–161, TB pp. 90–94) **Grade 6 Module 4** **Benchmark Assessment: Global Warming** (TE pp. 162–165)

that knowledge wisely in decisions and activities.	L8 (TE pp.292–297, TB pp. 174–176) **Grade 6 Module 4** **Leveled Reader: Global Warming** All chapters (LR pp.2-30)		L3 (TE pp.192–199, TB pp. 107–110) L4 (TE pp.200–207, TB pp. 111–115) L5 (TE pp.208–215, TB pp. 116–121) **Grade 6 Module 4** **Leveled Reader: Global Warming** All chapters (LR pp.2-30)		

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Energy

PE	Correlations
MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. *Examples of devices could include an insulated box, a solar cooker, and a Styrofoam cup.* *State Assessment Boundary: Assessment does not include calculating the total amount of thermal energy transferred. Engineering, Technology & Appl*	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) Key Resources L3 **Insulation** video; **Case Study: Vacuum Flask** video **Grade 6 Module 2** **Benchmark Assessment: Solar Cooker Design Challenge** (TE pp. 232–235) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66)

DCI	Correlations	CCC	Correlations	SEP	Correlations
Definitions of Energy Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L5 (TE pp. 206–211, TB pp.142–143)	**Energy and Matter** The transfer of energy can be tracked as energy flows through a designed or natural system.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3	**Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Apply scientific ideas or principles to design, construct,	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 2** **Benchmark Assessment: Solar Cooker Design Challenge** (TE pp. 232–235)

	L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148) Key Resources L6 **Particle Model** video		L1 (TE pp. 182–187, TB pp.125–127) L4 (TE pp. 200–205, TB pp.136–141) L6 (TE pp. 212–217, TB pp.144–146) L8 (TE pp. 224–227, TB pp.149–152)	and test a design of an object, tool, process or system.	
Conservation of Energy and Energy Transfer Energy is spontaneously transferred out of hotter regions or objects and into colder ones.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L10 (TE pp. 130–137, TB pp. 77–80) L11 (TE pp. 138–143, TB pp. 81–93) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L3 (TE pp. 194–199, TB pp.131–135) L4 (TE pp. 200–205, TB pp.136–141) L6 (TE pp. 212–217, TB pp.144–146) L8 (TE pp. 224–227, TB pp.149–152)				
Defining and Delimiting an Engineering Problem The more precisely a design task's criteria and constraints can be defined, the more likely	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L1 (TE pp. 182–187, TB pp.125–127) L3 (TE pp. 194–199, TB pp.131–135)				

it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that is likely to limit possible solutions.	L4 (TE pp. 200–205, TB pp.136–141) L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148) L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154) Key Resources L1 **Criteria and Constraints** visual L9 **Passive Solar Home Rubric**				
Developing Possible Solutions A solution needs to be tested, and then modified on the basis of the test results in order to improve it. There are systematic processes for evaluating solutions with respect to how well they meet criteria and constraints of a problem.	**Grade 6 Module 2 Destination Everywhere!** M2_DQ3 L1 (TE pp. 182–187, TB pp.125–127) L2 (TE pp. 188–193, TB pp.128–130) L3 (TE pp. 194–199, TB pp.131–135) L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148) L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154) **Grade 6 Module 2 Benchmark Assessment: Solar Cooker Design Challenge** (TE pp. 232–235)				

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CONTENT AND PERFORMANCE STANDARDS

Energy

PE	Correlations
MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) L10 (TE pp. 130–137, TB pp. 77–80) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L5 (TE pp. 206–211, TB pp.142–143) L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148)
Examples of experiments could include comparing final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature, the temperature change of samples of different materials with the same mass as they cool or heat in the environment, or the same material with different masses when a specific amount of energy is added. *State Assessment Boundary: Assessment does not include calculating the total amount of thermal energy transferred.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Definitions of Energy Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) **Grade 6 Module 2**	**Scale, Proportion, and Quantity** Proportional relationships (e.g., speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L7 (TE pp. 218–223, TB pp.147–148)	**Planning and Carrying Out Investigations** Planning and carrying out investigations to answer questions or test solutions to problems in 6–8 builds on K–5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or design solutions. Plan an investigation individually and collaboratively, and in the design: identify independent and	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L1 (TE pp. 74–80, TB pp. 47–50) L2 (TE pp. 82–87, TB pp. 51–54) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) **Grade 6 Module 2**

	Destination Everywhere! M2_DQ3 L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148) Key Resources L6 **Particle Model** video			dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.	**Destination Everywhere!** M2_DQ3 L5 (TE pp. 206–211, TB pp.142–143) L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148)
Conservation of Energy and Energy Transfer The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment.	**Grade 6 Module 2 Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) **Grade 6 Module 2 Destination Everywhere!** M2_DQ3 L5 (TE pp. 206–211, TB pp.142–143) L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148)			***Connections to Nature of Science*** **Scientific Knowledge is Based on Empirical Evidence** Science knowledge is based upon logical and conceptual connections between evidence and explanations.	**Grade 6 Module 2 Destination Everywhere!** M2_DQ3 L5 (TE pp. 206–211, TB pp.142–143) L6 (TE pp. 212–217, TB pp.144–146) L7 (TE pp. 218–223, TB pp.147–148)

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Energy

PE	Correlations
MS-PS3–5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) L10 (TE pp. 130–137, TB pp. 77–80) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L1 (TE pp. 182–187, TB pp.125–127) L2 (TE pp. 188–193, TB pp.128–130) L6 (TE pp. 212–217, TB pp.144–146) L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154)
Examples of empirical evidence used in arguments could include an inventory or other representation of the energy before and after the transfer in the form of temperature changes or motion of object. *State Assessment Boundary: Assessment does not include calculations of energy.*	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Conservation of Energy and Energy Transfer When the motion energy of an object changes, there is inevitably some other change in energy at the same time.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) L7 (TE pp. 112–117, TB pp. 67–70) L10 (TE pp. 130–137, TB pp. 77–80)	**Energy and Matter** Energy may take different forms (e.g., energy in fields, thermal energy, energy of motion)	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) L10 (TE pp. 130–137, TB pp. 77–80)	**Engaging in Argument from Evidence** Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed worlds. Construct, use, and present oral and written arguments supported by empirical evidence and scientific	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ2 L2 (TE pp. 82–87, TB pp. 51–54) L3 (TE pp. 88–93, TB pp. 55–56) L5 (TE pp. 100–105, TB pp. 60–63) L6 (TE pp. 106–111, TB pp. 64–66) **Grade 6 Module 2** **Destination Everywhere!**

	L11 (TE pp. 138–143, TB pp. 81–93) **Grade 6 Module 2 Destination Everywhere!** M2_DQ3 L6 (TE pp. 212–217, TB pp.144–146) L8 (TE pp. 224–227, TB pp.149–152) Key Resources L6 **Particle Model** video		**Grade 6 Module 2 Destination Everywhere!** M2_DQ3 L1 (TE pp. 182–187, TB pp.125–127) L2 (TE pp. 188–193, TB pp.128–130) L6 (TE pp. 212–217, TB pp.144–146) L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154)	reasoning to support or refute an explanation or a model for a phenomenon.	M2_DQ3 L1 (TE pp. 182–187, TB pp.125–127) L2 (TE pp. 188–193, TB pp.128–130) L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154) **Grade 6 Module 4 Cities of the Future** M4_DQ2 L3 (TE pp.90–98, TB pp. 43–46)
				Connections to Nature of Science **Scientific Knowledge is Based on Empirical Evidence** Science knowledge is based upon logical and conceptual connections between evidence and explanations.	**Grade 6 Module 2 Destination Everywhere!** M2_DQ2 L3 (TE pp. 88–93, TB pp. 55–56) L6 (TE pp. 106–111, TB pp. 64–66) **Grade 6 Module 2 Destination Everywhere!** M2_DQ3 L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154) **Grade 6 Module 4 Cities of the Future** M4_DQ2 L3 (TE pp.90–98, TB pp. 43–46)

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Engineering Design

PE	Correlations
MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ4 (TE pp. 288–318, TB pp. 141–154)
Example problems could include citing and designing a retirement home, a hospice building, or a new Junior High School within the city.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L3 (TE pp.250–257, TB pp. 142–154) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) **Grade 6 Module 1** **Leveled Reader: It's Alive!** Chapter 2 (LR pp.18–23) Chapter 3 (LR pp.24–32)

DCI	Correlations	CCC	Correlations	SEP	Correlations
Defining and Delimiting Engineering Problems The more precisely a design task's criteria and	**Grade 6 Module 2** **Destination Everywhere!**	**Influence of Science, Engineering, and Technology on Society and the Natural World**	**Grade 6 Module 1** **BioTech Systems Worldwide**	**Asking Questions and Defining Problems** Asking questions and defining problems in	**Grade 6 Module 1** **BioTech Systems Worldwide**

constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.	M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L1 (TE pp.232–241, TB pp. 127–129) L2 (TE pp.242–249, TB pp. 130–141) L3 (TE pp.250–257, TB pp. 142–154) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) **Grade 6 Module 1** **Leveled Reader: It's Alive!** Chapter 2 (LR pp.18–23) Chapter 3 (LR pp.24–32)	All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. The uses of technologies and limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.	M1_DQ4 (TE pp. 288–318, TB pp. 141–154) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148) **Grade 6 Module 4** **Cities of the Future** M4_DQ1 L1 (TE pp.8–15, TB pp. 3–9) L2 (TE pp.16–21, TB pp. 10–11) L3 (TE pp.22–28, TB pp. 12–15) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L1 (TE pp.232–241, TB pp. 127–129) L2 (TE pp.242–249, TB pp. 130–141) L3 (TE pp.250–257, TB pp. 142–154) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) **Grade 6 Module 4** **Leveled Reader: Global Warming** All chapters (LR pp.2-30)	grades 6–8 builds on grades K–5 experiences and progresses to specifying relationships between variables, clarifying arguments and models. Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions.	M1_DQ4 (TE pp. 288–318, TB pp. 141–154) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L3 (TE pp.250–257, TB pp. 142–154) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176)

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Engineering Design

PE	Correlations
MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ4 (TE pp. 288–318, TB pp. 141–154) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 3** **The Red List** M3_DQ4 (TE pp. 250–280, TB pp. 131–148) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L3 (TE pp.250–257, TB pp. 142–154) L4 (TE pp.258–265, TB pp. 155–158) L5 (TE pp.266–273, TB pp. 159–162) L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)
Preliminary building designs could involve overall dimensions, number of rooms, entries & exits, orientation to permit solar energy collection. Criteria and constraints could include these design elements or those of another project.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Developing Possible Solutions There are systematic processes for evaluating solutions with respect to how well they meet the	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ4 L2 (TE pp. 296–303, TB pp. 144–150) L4 (TE pp. 308–313, TB pp. 152–153)	-	-	**Engaging in Argument from Evidence** Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world.	**Grade 6 Module 1** **BioTech Systems Worldwide** M1_DQ4 L2 (TE pp. 296–303, TB pp. 144–150) L4 (TE pp. 308–313, TB pp. 152–153) L5 (TE pp. 314–318, TB p. 154)

criteria and constraints of a problem.	L5 (TE pp. 314–318, TB p. 154) **Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L2 (TE pp. 188–193, TB pp.128–130) L3 (TE pp. 194–199, TB pp.131–135) L7 (TE pp. 218–223, TB pp.147–148) L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L3 (TE pp.250–257, TB pp. 142–154) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)			Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L3 (TE pp.250–257, TB pp. 142–154) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)

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Engineering Design

PE	Correlations
MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154)
Tests could include building capacity, heating efficiency, use of hazardous materials, meeting ADA requirements, or earthquake survival.	**Grade 6 Module 4** **Cities of the Future** M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180) **Grade 6 Module 2** **Benchmark Assessment: Solar Cooker Design Challenge** (TE pp. 232–235)

DCI	Correlations	CCC	Correlations	SEP	Correlations
Developing Possible Solutions There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L2 (TE pp. 188–193, TB pp.128–130) L3 (TE pp. 194–199, TB pp.131–135) L4 (TE pp. 200–205, TB pp.136–141) L7 (TE pp. 218–223, TB pp.147–148) L8 (TE pp. 224–227, TB pp.149–152)	-	-	**Analyzing and Interpreting Data** Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. Analyze and interpret data to determine similarities and differences in findings.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L1 (TE pp. 182–187, TB pp.125–127) L2 (TE pp. 188–193, TB pp.128–130) L3 (TE pp. 194–199, TB pp.131–135) L4 (TE pp. 200–205, TB pp.136–141) L6 (TE pp. 212–217, TB pp.144–146)

	L9 (TE pp. 228–231, TB pp.153–154) **Grade 6 Module 2** **Benchmark Assessment: Solar Cooker Design Challenge** (TE pp. 232–235) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)				L7 (TE pp. 218–223, TB pp.147–148) L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154) **Grade 6 Module 2** **Benchmark Assessment: Solar Cooker Design Challenge** (TE pp. 232–235) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)
Optimizing the Design Solution Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 L8 (TE pp. 224–227, TB pp.149–152) L9 (TE pp. 228–231, TB pp.153–154) **Grade 6 Module 4** **Cities of the Future**				

incorporated into the new design.	M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)				

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Engineering Design

PE	Correlations
MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)
The object, tool or process could include a bicycle, a bridge, a smart furnace, or an auto airbag system. Test data could be collected from tests of a model object, or from test data for a similar object, tools, or process found on the internet.	

DCI	Correlations	CCC	Correlations	SEP	Correlations
Developing Possible Solutions A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. Models of all kinds are important for testing solutions.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp.			**Developing and Using Models** Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. Develop a model to generate data to test ideas about designed systems, including those representing inputs and outputs.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB

	179–180)				pp. 179–180)
Optimizing the Design Solution The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.	**Grade 6 Module 2** **Destination Everywhere!** M2_DQ3 (TE pp. 182–231, TB pp.125–154) **Grade 6 Module 4** **Cities of the Future** M4_DQ4 L6 (TE pp.274–281, TB pp. 163–167) L7 (TE pp.282–291, TB pp. 168–173) L8 (TE pp.292–297, TB pp. 174–176) L9 (TE pp.298–303, TB pp. 177–178) L10 (TE pp.304–309, TB pp. 179–180)				