FOSS Pathways Detail Correlation for New York State Science Learning Standards

Grades K-5

New York State EDUCATION DEPARTMENT
Knowledge › Skill › Opportunity

FOSS PATHWAYS™

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KINDERGARTEN		
K-PS1-1: Plan and conduct an investigation to test the claim that different kinds of matter exist as either solid or liquid, depending on temperature. (NYSED Specific)	**Disciplinary Core Ideas** PS1.A: Structure and Properties of Matter **Science and Engineering Practices** Planning and Carrying Out Investigations Analyzing and Interpreting Data **Crosscutting Concepts** Cause and Effect Energy and Matter	**MATERIALS AND FORCES** Investigation 1, Parts 2-4 Investigation 2, Part 1
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.	**Disciplinary Core Ideas** PS2.A: Forces and Motion PS2.B: Types of Interactions **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**MATERIALS AND FORCES** Investigation 3, Parts 1-3
K-PS2-2: Analyze data to determine if a design solution works as intended to change the motion of an object with a push or a pull.*	**Disciplinary Core Ideas** PS2.A: Forces and Motion PS2.B: Types of Interactions ETS1.A: Defining Engineering Problems **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Cause and Effect	**MATERIALS AND FORCES** Investigation 3, Parts 2 and 3
K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.	**Disciplinary Core Ideas** LS1.C: Organization for Matter and Energy Flow in Organisms **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Patterns	**TREES AND WEATHER** Investigation 1, Parts 1-4 Investigation 3, Parts 1-3 **ANIMALS TWO BY TWO** Investigation 1, Parts 1 and 2 Investigation 2, Parts 1-3 Investigation 3, Part 1 Investigation 4, Part 1
K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	**Disciplinary Core Ideas** ESS2.D: Weather and Climate ESS2.E: Biogeology **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Systems and System Models	**MATERIALS AND FORCES** Investigation 1, Parts 2-4 Investigation 2, Part 2 **TREES AND WEATHER** Investigation 1, Part 1 Investigation 2, Parts 2 and 3 Investigation 4, Part 2 **ANIMALS TWO BY TWO** Investigation 2, Parts 2 and 3 Investigation 4, Part 2

**This performance expectation integrates traditional science content with engineering through a practice or disciplinary core idea*

KINDERGARTEN		
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.	**Disciplinary Core Ideas** ESS3.A: Natural Resources **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** System and System Models	**TREES AND WEATHER** Investigation 1, Parts 1-4 **ANIMALS TWO BY TWO** Investigation 1, Part 1 and 2 Investigation 2, Parts 2 and 3 Investigation 3, Part 1
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.*	**Disciplinary Core Ideas** ESS3.C: Human Impacts on Earth Systems ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Obtaining, Evaluating, and Communicating Information **Crosscutting Concepts** Cause and Effect	**MATERIALS AND FORCES** Investigation 2, Part 3
K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.	**Disciplinary Core Ideas** ESS2.D: Weather and Climate **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Patterns	**TREES AND WEATHER** Investigation 2, Parts 1-3 Investigation 3, Parts 1-3
K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.*	**Disciplinary Core Ideas** ESS3.B: Natural Hazards ETS1.A: Defining and Delimiting an Engineering Problem **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Cause and Effect	**TREES AND WEATHER** Investigation 2, Part 3
K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface.	**Disciplinary Core Ideas** PS3.B: Conservation of Energy and Energy Transfer **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**MATERIALS AND FORCES** Investigation 1, Parts 1 and 2 **TREES AND WEATHER** Investigation 2, Part 2

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KINDERGARTEN		
K-PS3-2: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.*	**Disciplinary Core Ideas** PS3.B: Conservation of Energy and Energy Transfer **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Cause and Effect	**MATERIALS AND FORCES** Investigation 1, Parts 2-4 Investigation 2, Part 1
Engineering Opportunities		
K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**Disciplinary Core Ideas** ETS1.A: Defining and Delimiting Engineering Problems **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Structure and Function	**MATERIALS AND FORCES** Investigation 1, Parts 2-4 Investigation 3, Part 2 Side Trip 1
K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**Disciplinary Core Ideas** ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Structure and Function	**MATERIALS AND FORCES** Investigation 2, Part 3 Side Trip 1
K-2-ETS1-3: Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**Disciplinary Core Ideas** ETS1.C: Optimizing the Design Solution **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Structure and Function	**MATERIALS AND FORCES** Investigation 2, Part 1

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Disciplinary Core Ideas Assessment Opportunities

Grade K	MATERIALS AND FORCES			TREES AND WEATHER			ANIMALS TWO BY TWO			
DCI	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4
PS1.A										
PS2.A										
PS2.B										
PS3.B										
PS3.C										
LS1.C										
ESS2.D										
ESS2.E										
ESS3.A										
ESS3.B										
ESS3.C										
ETS1.A										
ETS1.B										
ETS1.C										

Science and Engineering Practices Assessment Opportunities

Grade K	MATERIALS AND FORCES			TREES AND WEATHER			ANIMALS TWO BY TWO			
SEP	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4
Asking Questions and Defining Problems										
Developing and Using Models										
Planning and Carrying Out Investigations										
Analyzing and Interpreting Data										
Using Mathematics and Computational Thinking										
Constructing Explanations and Designing Solutions										
Engaging in Argument from Evidence										
Obtaining, Evaluating, and Communicating Information										

Crosscutting Concepts Assessment Opportunities

Grade K	MATERIALS AND FORCES			TREES AND WEATHER			ANIMALS TWO BY TWO			
CCC	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4
Patterns										
Cause and Effect										
Scale, Proportion, and Quantity										
Systems and System Models										
Energy and Matter										
Structure and Function										
Stability and Change										

GRADE 1		
1-PS4-1: Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	**Disciplinary Core Ideas** PS4.A: Wave Properties **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**SOUND AND LIGHT** Investigation 1, Parts 1 and 2 Investigation 2, Parts 1 and 2 Side Trip 1
1-PS4-2: Make observations to construct an evidence-based account that objects can be seen only when illuminated.	**Disciplinary Core Ideas** PS4.B: Electromagnetic Radiation **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Cause and Effect	**SOUND AND LIGHT** Investigation 4, Part 2 Side Trip 2
1-PS4-3: Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	**Disciplinary Core Ideas** PS4.B: Electromagnetic Radiation **Science and Engineering Practices** Planning and Evaluating Information **Crosscutting Concepts** Cause and Effect	**SOUND AND LIGHT** Investigation 3, Parts 1 and 2 Investigation 4, Parts 1-3
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.*	**Disciplinary Core Ideas** PS4.C: Information Technologies and Instrumentation **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Cause and Effect	**SOUND AND LIGHT** Investigation 2, Part 2
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.*	**Disciplinary Core Ideas** LS1.A: Structure and Function LS1.D: Information Processing **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Structure and Function	**PLANTS AND ANIMALS** Investigation 3, Part 1
1-LS1-2: Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	**Disciplinary Core Ideas** LS1.B: Growth and Development of Organisms **Science and Engineering Practices** Obtaining, Evaluating, and Communicating Information **Crosscutting Concepts** Patterns	**PLANTS AND ANIMALS** Investigation 2, Part 2

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GRADE 1		
1-LS3-1: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	**Disciplinary Core Ideas** LS3.A: Inheritance of Traits LS3.B: Variation of Traits **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Patterns	**PLANTS AND ANIMALS** Investigation 1, Parts 1 and 2 Investigation 2, Parts 1 and 2
1-ESS1-1: Use observations of the sun, moon, and starts to describe patterns that can be predicted.	**Disciplinary Core Ideas** ESS1.A: The Universe and Its Stars **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Patterns	**CHANGES IN THE SKY** Investigation 1, Parts 1-3 Investigation 2, Parts 1 and 2
1-ESS1-2: Make observations at different times of the year to relate the amount of daylight to the time of year.	**Disciplinary Core Ideas** ESS1.B: Earth and the Solar System **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Patterns	**CHANGES IN THE SKY** Investigation 3, Part 1
Engineering Opportunities		
K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**Disciplinary Core Ideas** ETS1.A: Defining and Delimiting Engineering Problems **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Structure and Function	**SOUND AND LIGHT** Investigation 2, Part 2 Investigation 4, Part 3 **PLANTS AND ANIMALS** Investigation 3, Part 1
K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**Disciplinary Core Ideas** ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Structure and Function	**SOUND AND LIGHT** Investigation 2, Part 2 Investigation 4, Part 3 Side Trip 1 **PLANTS AND ANIMALS** Investigation 3, Part 1
K-2-ETS1-3: Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**Disciplinary Core Ideas** ETS1.C: Optimizing the Design Solution **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Structure and Function	**SOUND AND LIGHT** Investigation 2, Part 2

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Disciplinary Core Ideas Assessment Opportunities

Grade 1	SOUND AND LIGHT				CHANGES IN THE SKY			PLANTS AND ANIMALS		
DCI	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3
PS4.A										
PS4.B										
PS4.C										
LS1.A										
LS1.B										
LS3.A										
LS3.B										
ESS1.A										
ESS1.B										
ETS1.A										
ETS1.B										
ETS1.C										

Science and Engineering Practices Assessment Opportunities

Grade 1	SOUND AND LIGHT				CHANGES IN THE SKY			PLANTS AND ANIMALS		
SEP	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3
Asking Questions and Defining Problems										
Developing and Using Models										
Planning and Carrying Out Investigations										
Analyzing and Interpreting Data										
Using Mathematics and Computational Thinking										
Constructing Explanations and Designing Solutions										
Engaging in Argument from Evidence										
Obtaining, Evaluating, and Communicating Information										

Crosscutting Concepts Assessment Opportunities

Grade 1	SOUND AND LIGHT				CHANGES IN THE SKY			PLANTS AND ANIMALS		
CCC	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3
Patterns										
Cause and Effect										
Scale, Proportion, and Quantity										
Systems and System Models										
Structure and Function										
Stability and Change										

GRADE 2		
2-PS1-1: Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	**Disciplinary Core Ideas** PS1.A: Structure and Properties of Matter **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Patterns	**SOLIDS AND LIQUIDS** Investigation 1, Parts 1 and 2 Investigation 2, Parts 1-3 Investigation 3, Parts 1-3 **WATER AND LANDFORMS** Investigation 1, Parts 1 and 2 Investigation 2, Parts 1 and 2
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.*	**Disciplinary Core Ideas** PS1.A: Structure and Properties of Matter **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Cause and Effect	**SOLIDS AND LIQUIDS** Investigation 1, Part 3 Side Trip 1
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.	**Disciplinary Core Ideas** PS1.A: Structure and Properties of Matter **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Energy and Matter	**SOLIDS AND LIQUIDS** Investigation 1, Part 3
2-PS1-4: Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	**Disciplinary Core Ideas** PS1.B: Chemical Reactions **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Cause and Effect	**SOLIDS AND LIQUIDS** Investigation 3, Parts 2 and 3
2-LS2-1: Plan and conduct an investigation to determine if plants need sunlight and water to grow.	**Disciplinary Core Ideas** LS2.A: Interdependent Relationships in Ecosystems **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**INSECTS AND PLANTS** Investigation 2, Parts 1 and 2 Side Trip 2
2-LS2-2: Develop a simple model that mimics the function of an animals in dispersing seeds or pollinating plants.*	**Disciplinary Core Ideas** LS2.A: Interdependent Relationships in Ecosystems ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Structure and Function	**INSECTS AND PLANTS** Investigation 2, Part 3 Investigation 3, Part 2
2-LS4-1: Make observations of plants and animals to compare the diversity of life in different habitats.	**Disciplinary Core Ideas** LS4.D: Biodiversity and Humans **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Not explicitly stated	**INSECTS AND PLANTS** Investigation 1, Parts 1-3 Investigation 3, Part 1

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GRADE 2		
2-ESS1-1: Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	**Disciplinary Core Ideas** ESS1.C: The History of Planet Earth **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Stability and Change	**WATER AND LANDFORMS** Investigation 1, Parts 1 and 2 Investigation 2, Parts 1 and 2 **WATER AND LANDFORMS** Investigation 3, Parts 1 and 2
2-ESS2-1: Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*	**Disciplinary Core Ideas** ESS2.A: Earth Materials and Systems ETS1.C: Optimizing the Design Solution **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Stability and Change	**WATER AND LANDFORMS** Investigation 3, Part 1
2-ESS2-2: Develop a model to represent the shapes and kinds of land and bodies of water in an area.	**Disciplinary Core Ideas** ESS2.B: Plate Tectonics and Large-Scale System Interactions **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Patterns	**WATER AND LANDFORMS** Investigation 4, Part 2
2-ESS2-3: Obtain information to identify where water is found on Earth and that it can be solid or liquid.	**Disciplinary Core Ideas** ESS2.C: The Roles of Water in Earth's Surface Processes **Science and Engineering Practices** Obtaining, Evaluating, and Communicating Information **Crosscutting Concepts** Patterns	**WATER AND LANDFORMS** Investigation 4, Part 1
Engineering Opportunities		
K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**Disciplinary Core Ideas** ETS1.A: Defining and Delimiting Engineering Problems **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Structure and Function	**SOLIDS AND LIQUIDS** Investigation 1, Part 3
K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**Disciplinary Core Ideas** ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Structure and Function	**SOLIDS AND LIQUIDS** Investigation 1, Part 3 **INSECTS AND PLANTS** Investigation 2, Part 3 Investigation 4, Part 2
K-2-ETS1-3: Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**Disciplinary Core Ideas** ETS1.C: Optimizing the Design Solution **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Structure and Function	**SOLIDS AND LIQUIDS** Investigation 1, Part 3 **WATER AND LANDFORMS** Investigation 3, Part 1

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Disciplinary Core Ideas Assessment Opportunities

Grade 2	SOLIDS AND LIQUIDS			WATER AND LANDFORMS				INSECTS AND PLANTS		
DCI	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3
PS1.A										
PS1.B										
LS1.A										
LS1.B										
LS2.A										
LS4.D										
ESS1.C										
ESS2.A										
ESS2.B										
ESS2.C										
ETS1.A										
ETS1.B										
ETS1.C										

Science and Engineering Practices Assessment Opportunities

Grade 2	SOLIDS AND LIQUIDS			WATER AND LANDFORMS				INSECTS AND PLANTS		
SEP	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3
Asking Questions and Defining Problems										
Developing and Using Models										
Planning and Carrying Out Investigations										
Analyzing and Interpreting Data										
Using Mathematics and Computational Thinking										
Constructing Explanations and Designing Solutions										
Engaging in Argument from Evidence										
Obtaining, Evaluating, and Communicating Information										

Crosscutting Concepts Assessment Opportunities

Grade 2	SOLIDS AND LIQUIDS			WATER AND LANDFORMS				INSECTS AND PLANTS		
CCC	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3
Patterns										
Cause and Effect										
Scale, Proportion, and Quantity										
Systems and System Models										
Energy and Matter										
Structure and Function										
Stability and Change										

GRADE 3		
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.	**Disciplinary Core Ideas** PS2.A: Forces and Motion PS2.B: Types of Interactions **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**MOTION** Investigation 3, Parts 1-3
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.	**Disciplinary Core Ideas** PS2.A: Forces and Motion **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Patterns	**MOTION** Investigation 1, Parts 2 and 3 Investigation 2, Parts 1-3
3-PS2-3: Ask questions to determine cause and effect relationships of electrical or magnetic interactions between two objects not in contact with each other.	**Disciplinary Core Ideas** PS2.B: Types of Interactions **Science and Engineering Practices** Asking Questions and Defining Solutions **Crosscutting Concepts** Cause and Effect	**MOTION** Investigation 1, Parts 1-3
3-PS2-4: Define a simple design problem that can be solved by applying scientific ideas about magnets.*	**Disciplinary Core Ideas** PS2.B: Types of Interactions **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Interdependence of Science, Engineering, and Technology	**MOTION** Investigation 3, Part 4
3-LS2-1: Construct an argument that some animals form groups that help members survive.	**Disciplinary Core Ideas** LS2.D: Social Interactions and Group Behavior **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Cause and Effect	**STRUCTURES OF LIFE** Investigation 3, Part 3
3-LS4-1: Analyze and interpret data from fossils to provide evidence of the organisms and environments in which they lived long ago.	**Disciplinary Core Ideas** LS4.A: Evidence of Common Ancestry and Diversity **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Scale, Proportion, and Quantity	**STRUCTURES OF LIFE** Investigation 4, Part 2

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GRADE 3		
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.	**Disciplinary Core Ideas** LS4.C: Adaptation **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Interdependence of Science, Engineering, and Technology	**STRUCTURES OF LIFE** Investigation 3, Part 2 Investigation 4, Parts 1 and 2
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.*	**Disciplinary Core Ideas** LS2.C: Ecosystem Dynamics, Functioning, and Resilience **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Systems and System Models	**STRUCTURES OF LIFE** Investigation 4, Part 1
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.	**Disciplinary Core Ideas** LS1.B: Growth and Development of Organisms **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Patterns	**STRUCTURES OF LIFE** Investigation 1, Parts 1-3 Investigation 2, Parts 1 and 2 Investigation 3, Parts 1 and 2
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.	**Disciplinary Core Ideas** LS3.A: Inheritance of Traits LS3.B: Variation of Traits **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Patterns	**STRUCTURES OF LIFE** Investigation 2, Parts 1 and 2 Investigation 3, Part 2 Investigation 4, Part 1
3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.	**Disciplinary Core Ideas** LS3.A: Inheritance of Traits LS3.B: Variation of Traits **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Cause and Effect	**STRUCTURES OF LIFE** Investigation 2, Part 2
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.	**Disciplinary Core Ideas** LS4.B: Natural Selection **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Cause and Effect	**STRUCTURES OF LIFE** Investigation 4, Part 1

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GRADE 3		
3-ESS2-1: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	**Disciplinary Core Ideas** ESS2.D: Weather and Climate **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Patterns	**WATER AND CLIMATE** Investigation 2, Parts 1 and 2 Investigation 4, Part 1
3-ESS2.2: Obtain and combine information to describe climates in different regions of the world.	**Disciplinary Core Ideas** ESS2.D: Weather and Climate **Science and Engineering Practices** Obtaining, Evaluating, and Communicating Information **Crosscutting Concepts** Patterns	**WATER AND CLIMATE** Investigation 4, Part 2
3-ESS3-1: Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*	**Disciplinary Core Ideas** ESS3.B: Natural Hazards **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Cause and Effect	**WATER AND CLIMATE** Investigation 1, Parts 1-4 (foundational) Investigation 3, Parts 1-4
3-ESS2-3: Plan and conduct an investigation to determine the connections between weather and water processes in Earth systems. (NYSED Specific)	**Disciplinary Core Ideas** ESS2.D: Weather and Climate **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**WATER AND CLIMATE** Investigation 3, Parts 1-3

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GRADE 3		
Engineering Opportunities		
3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**Disciplinary Core Ideas** ETS1.A: Defining and Delimiting Engineering Problems **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Influence of Engineering, Technology, and Science on Society and the Natural World	**MOTION** Investigation 3, Parts 1 and 4
3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**Disciplinary Core Ideas** ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Influence of Engineering, Technology, and Science on Society and the Natural World	**MOTION** Investigation 3, Parts 2 and 4
3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**Disciplinary Core Ideas** ETS1.C: Optimizing the Design Solution **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** None explicitly stated	**MOTION** Investigation 3, Part 3

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Disciplinary Core Ideas Assessment Opportunities

Grade 3	WATER AND CLIMATE				MOTION			STRUCTURES OF LIFE			
DCI	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4
PS2.A											
PS2.B											
LS1.A											
LS1.B											
LS2.C											
LS2.D											
LS3.A											
LS3.B											
LS4.A											
LS4.B											
LS4.C											
LS4.D											
ESS2.C											
ESS2.D											
ESS3.B											
ETS1.A											
ETS1.B											
ETS1.C											

Science and Engineering Practices Assessment Opportunities

Grade 3	WATER AND CLIMATE				MOTION			STRUCTURES OF LIFE			
SEP	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4
Asking Questions and Defining Problems											
Developing and Using Models											
Planning and Carrying Out Investigations											
Analyzing and Interpreting Data											
Using Mathematics and Computational Thinking											
Constructing Explanations and Designing Solutions											
Engaging in Argument from Evidence											
Obtaining, Evaluating, and Communicating Information											

Crosscutting Concepts Assessment Opportunities

Grade 3	WATER AND CLIMATE				MOTION			STRUCTURES OF LIFE			
CCC	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 1	INV. 2	INV. 3	INV. 4
Patterns											
Cause and Effect											
Scale, Proportion, and Quantity											
Systems and System Models											
Structure and Function											

GRADE 4		
4-PS3-1: Use evidence to construct an explanation relating the speed of an object to the energy of that object.	**Disciplinary Core Ideas** PS3.A: Definitions of Energy **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Energy and Matter	**ENERGY** Investigation 3, Parts 1 and 2
4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electrical currents.	**Disciplinary Core Ideas** PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Energy and Matter	**ENERGY** Investigation 1, Parts 1-3 Investigation 2, Parts 1-3
4-PS3-3: Ask questions and predict outcomes about the changes in energy that occur when objects collide.	**Disciplinary Core Ideas** PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer PS3.C: Relationship Between Energy and Forces **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Energy and Matter	**ENERGY** Investigation 3, Part 2
4-PS3-4: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*	**Disciplinary Core Ideas** PS3.B: Conservation of Energy and Energy Transfer PS3.D: Energy in Chemical Processes and Everyday Life **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Energy and Matter	**ENERGY** Investigation 1, Parts 2 and 3 Investigation 2, Parts 1 and 2
4-ESS3-1: Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment.	**Disciplinary Core Ideas** ESS3.A: Natural Resources **Science and Engineering Practices** Obtaining, Evaluating, and Communicating Information **Crosscutting Concepts** Cause and Effect	**Energy** Investigation 1, Part 2
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.	**Disciplinary Core Ideas** PS4.A: Wave Properties **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Patterns	**ENERGY** Investigation 4, Part 2

**This performance expectation integrates traditional science content with engineering through a practice or disciplinary core idea*

GRADE 4		
4-PS4-3: Generate and compare multiple solutions that use patterns to transfer information.*	**Disciplinary Core Ideas** PS4.C: Information Technologies and Instrumentation **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Patterns	**ENERGY** Investigation 2, Parts 2 and 3
4-PS4-2: Develop a model to describe that light reflecting from objects and entering the eyes allows objects to be seen.	**Disciplinary Core Ideas** PS4.B: Electromagnetic Radiation **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Patterns	**ENERGY** Investigation 4, Part 1
4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	**Disciplinary Core Ideas** LS1.A: Structure and Function **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Systems and System Models	**SENSES AND SURVIVAL** Investigation 1, Parts 1-2 Investigation 2, Parts 1 and 2 Investigation 3, Parts 1 and 2
4-LS1-2: Use a model to describe that animals receive different types of information through their senses, process that information in their brain, and respond to the information in different ways.	**Disciplinary Core Ideas** LS1.D: Information Processing **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** System and System Models	**SENSES AND SURVIVAL** Investigation 1, Parts 1-3
4-ESS1-1: Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	**Disciplinary Core Ideas** ESS1.C: The History of Planet Earth **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Patterns	**SOILS, ROCKS, AND LANDFORMS** Investigation 4, Part 2
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.	**Disciplinary Core Ideas** ESS2.A: Earth Materials and Systems ESS2.E: Biogeology **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**SOILS, ROCKS, AND LANDFORMS** Investigation 1, Parts 1 and 2 Investigation 2, Parts 1-3

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GRADE 4		
4-ESS2-2: Analyze and interpret data from maps to describe patterns of Earth's features.	**Disciplinary Core Ideas** ESS2.B: Plate Tectonics and Large-Scale System Interactions **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Patterns	**SOILS, ROCKS, AND LANDFORMS** Investigation 3, Parts 1 and 2 Investigation 4, Part 1
4-ESS3-2: Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*	**Disciplinary Core Ideas** ESS3.B: Natural Hazards **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Cause and Effect	**SOILS, ROCKS, AND LANDFORMS** Investigation 2, Part 3 Investigation 3, Part 2
Engineering Opportunities		
3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**Disciplinary Core Ideas** ETS1.A: Defining and Delimiting Engineering Problems **Science and Engineering Practices** Asking Questions and Defining Problems **Crosscutting Concepts** Influence of Engineering, Technology, and Science on Society and the Natural World	**ENERGY** Investigation 1, Part 3 Investigation 2, Part 1 **SENSES AND SURVIVAL** Investigation 3, Part 1
3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**Disciplinary Core Ideas** ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Influence of Engineering, Technology, and Science on Society and the Natural World	**ENERGY** Investigation 2, Part 2 **SOILS, ROCKS, AND LANDFORMS** Investigation 2, Part 3
3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**Disciplinary Core Ideas** ETS1.C: Optimizing the Design Solution **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** None explicitly stated	**ENERGY** Investigation 2, Part 2

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Disciplinary Core Ideas Assessment Opportunities

Grade 4	SOILS, ROCKS, AND LANDFORMS				ENERGY				SENSES AND SURVIVAL		
DCI	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3
PS3.A											
PS3.B											
PS3.C											
PS3.D											
PS4.A											
PS4.B											
PS4.C											
LS1.A											
LS1.D											
ESS1.C											
ESS2.A											
ESS2.B											
ESS2.E											
ESS3.A											
ESS3.B											
ETS1.A											
ETS1.B											
ETS1.C											

Science and Engineering Practices Assessment Opportunities

Grade 4	SOILS, ROCKS, AND LANDFORMS				ENERGY				SENSES AND SURVIVAL		
SEP	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3
Asking Questions and Defining Problems											
Developing and Using Models											
Planning and Carrying Out Investigations											
Analyzing and Interpreting Data											
Using Mathematics and Computational Thinking											
Constructing Explanations and Designing Solutions											
Engaging in Argument from Evidence											
Obtaining, Evaluating, and Communicating Information											

Crosscutting Concepts Assessment Opportunities

Grade 4	SOILS, ROCKS, AND LANDFORMS				ENERGY				SENSES AND SURVIVAL		
CCC	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3
Patterns											
Cause and Effect											
Scale, Proportion, and Quantity											
Systems and System Models											
Energy and Matter in Systems											
Structure and Function											
Stability and Change of Systems											

GRADE 5		
5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen.	**Disciplinary Core Ideas** PS1.A: Structure and Properties of Matter **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Scale, Proportion, and Quantity	**MIXTURES AND SOLUTIONS** Investigation 1, Parts 1-4 Investigation 2, Parts 1 and 2 **EARTH AND SUN** Investigation 1, Parts 1 and 2
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.	**Disciplinary Core Ideas** PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions **Science and Engineering Practices** Using Mathematics and Computational Thinking **Crosscutting Concepts** Scale, Proportion, and Quantity	**MIXTURES AND SOLUTIONS** Investigation 1, Parts 2 and 4
5-PS1-3: Make observations and measurements to identify materials based on their properties.	**Disciplinary Core Ideas** PS1.A: Structure and Properties of Matter **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Scale, Proportion, and Quantity	**MIXTURES AND SOLUTIONS** Investigation 3, Parts 1-3
5-PS1-4: Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	**Disciplinary Core Ideas** PS1.B: Chemical Reactions **Science and Engineering Practices** Planning and Carrying Out Investigations **Crosscutting Concepts** Cause and Effect	**MIXTURES AND SOLUTIONS** Investigation 4, Parts 1 and 2
5-PS3-1: Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.	**Disciplinary Core Ideas** PS3.D: Energy in Chemical Processes and Everyday Life LS1.C: Organization for Matter and Energy Flow in Organisms **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** Energy and Matter	**LIVING SYSTEMS** Investigation 2, Parts 1 and 2
5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.	**Disciplinary Core Ideas** LS1.C: Organization for Matter and Energy Flow in Organisms **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Energy and Matter	**LIVING SYSTEMS** Investigation 2, Part 1

**This performance expectation integrates traditional science content with engineering through a practice or disciplinary core idea*

GRADE 5		
5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	**Disciplinary Core Ideas** LS2.A: Interdependent Relationships in Ecosystems **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** System and System Models	**LIVING SYSTEMS** Investigation 1, Parts 1 and 2 Investigation 3, Parts 1-3 Investigation 4, Part 1
5-ESS2-1: Develop a model using an example to describe ways in which the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	**Disciplinary Core Ideas** ESS2.A: Earth Materials and Systems **Science and Engineering Practices** Developing and Using Models **Crosscutting Concepts** System and System Models	**EARTH AND SUN** Investigation 1, Part 2 Investigation 2, Part 1 **LIVING SYSTEMS** Investigation 2, Part 1 Investigation 3, Parts 1-3 Investigation 4, Part 1
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.	**Disciplinary Core Ideas** ESS2.C: The Roles of Water in Earth's Surface Processes **Science and Engineering Practices** Using Mathematics and Computational Thinking **Crosscutting Concepts** Scale, Proportion, and Quantity	**EARTH AND SUN** Investigation 2, Part 1
5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	**Disciplinary Core Ideas** ESS3.C: Human Impacts on Earth Systems **Science and Engineering Practices** Obtaining, Evaluating, and Communicating Information **Crosscutting Concepts** Systems and System Models	**MIXTURES AND SOLUTIONS** Investigation 2, Part 2 Investigation 3, Part 3 **EARTH AND SUN** Investigation 2, Part 2 **LIVING SYSTEMS** Investigation 3, Parts 2 and 3 Investigation 4, Part 1
5-PS2-1: Support an argument that the gravitational force exerted by Earth on objects is directed down.	**Disciplinary Core Ideas** PS2.B: Types of Interactions **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Cause and Effect	**EARTH AND SUN** Investigation 4, Part 1

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GRADE 5		
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 Earth.	**Disciplinary Core Ideas** ESS1.A: The Universe and Its Stars **Science and Engineering Practices** Engaging in Argument from Evidence **Crosscutting Concepts** Scale, Proportion, and Quantity	**EARTH AND SUN** Investigation 4, Parts 2 and 3
5-ESS1-2: Represent data in graphical displays to reveal patterns of daily changes in the length and direction of shadows, day and night, and the seasonal appearance of some starts in the night sky.	**Disciplinary Core Ideas** ESS1.B: Earth and the Solar System **Science and Engineering Practices** Analyzing and Interpreting Data **Crosscutting Concepts** Patterns	**EARTH AND SUN** Investigation 3, Parts 1 and 2 Investigation 4, Parts 2 and 3
Engineering Opportunities		
3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**Disciplinary Core Ideas** ETS1.B: Developing Possible Solutions **Science and Engineering Practices** Constructing Explanations and Designing Solutions **Crosscutting Concepts** Influence of Engineering, Technology, and Science on Society and the Natural World	**MIXTURES AND SOLUTIONS** Investigation 1, Part 3 Investigation 3, Part 3

**This performance expectation integrates traditional science content with engineering through a practice or disciplinary core idea*

Disciplinary Core Ideas Assessment Opportunities

Grade 5	EARTH AND SUN				MIXTURES AND SOLUTIONS				LIVING SYSTEMS			
DCI	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4
PS1.A												
PS1.B												
PS2.B												
PS3.D												
LS1.C												
LS2.A												
LS2.B												
ESS1.A												
ESS1.B												
ESS2.A												
ESS2.C												
ESS3.C												
ETS1.A												
ETS1.B												
ETS1.C												

Science and Engineering Practices Assessment Opportunities

Grade 5	EARTH AND SUN				MIXTURES AND SOLUTIONS							
SEP	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4
Asking Questions and Defining Problems												
Developing and Using Models												
Planning and Carrying Out Investigations												
Analyzing and Interpreting Data												
Using Mathematics and Computational Thinking												
Constructing Explanations and Designing Solutions												
Engaging in Argument from Evidence												
Obtaining, Evaluating, and Communicating Information												

Crosscutting Concepts Assessment Opportunities

Grade 5	EARTH AND SUN				MIXTURES AND SOLUTIONS				LIVING SYSTEMS			
CCC	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4	INV. 1	INV. 2	INV. 3	INV. 4
Patterns												
Cause and Effect												
Scale, Proportion, and Quantity												
Systems and System Models												
Energy and Matter in Systems												
Structure and Function												
Stability and Change of Systems												

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