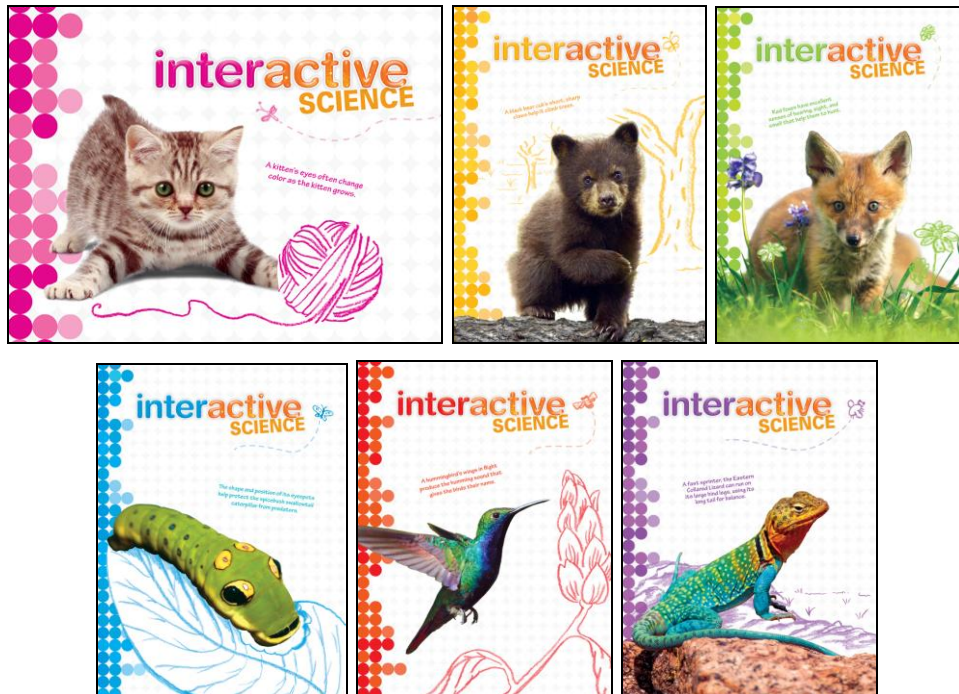


A Correlation of

Interactive Science

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To the

New York City Science Scope and Sequence for Grades Kindergarten-5

A Correlation of Interactive Science, ©2016, to the New York City Science Scope and Sequence for Grades K-5

Introduction

The following document demonstrates how ***Interactive Science, ©2016, Grades K-5***, supports the New York City Department of Education Science Scope & Sequence, Grades K-5. Correlation references are to the Student Edition and the Teacher Edition. Please note that the Kindergarten Student Edition text pages are two-sided; each singular page contains a corresponding Activity Page on the reverse side.

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

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

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New York City Science Scope and Sequence for Grades K-5	Interactive Science ©2016
Grade Kindergarten	
Unit 1 Trees Through the Seasons	
Unit Overview:	
Students observe, compare, and describe the physical properties of trees and their structures throughout the seasons. Students develop a beginning awareness of the characteristics and life cycle of trees and an awareness of trees in their environment. <i>[Refer to Appendix A for Conservation Day]</i>	
Key Ideas:	
LE. Key Idea 1: Living things are both similar to and different from each other and from nonliving things.	
LE. Key Idea 3: Individual organisms and species change over time.	
LE. Key Idea 4: The continuity of life is sustained through reproduction and development.	
LE. Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (LE: 1.1b, 1.2a, 3.1b-c, 4.2a, 5.1a, 5.2a)</i>	
<ul style="list-style-type: none"> ▪ Plants require air, water, nutrients, and light in order to live and thrive (1.1b). 	<p>SE Only: 20, 21, 35, 56</p> <p>TE Only: 37, 39A, 39B, 40, 42, 52, 53, 61, 62, 66, 69, 71a, 71c</p>
<ul style="list-style-type: none"> ▪ Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die (1.2a). 	<p>SE Only: 34, 35, 36, 37</p> <p>TE Only: 36, 39A, 39B, 49, 50, 51, 53, 54, 55, 56, 57, 62, 63, 71c</p>
<ul style="list-style-type: none"> ▪ Growth is the process by which plants and animals increase in size (4.2a). 	<p>SE Only: 34, 35</p> <p>TE Only: 50, 51, 53</p>
<ul style="list-style-type: none"> ▪ All living things grow, take in nutrients, breathe, reproduce, and eliminate waste (5.1a). 	<p>SE Only: 34, 35, 36, 37</p> <p>TE Only: 36, 39A, 39B, 49, 50, 51, 53, 54, 55, 56, 57, 62, 71c</p>
<ul style="list-style-type: none"> ▪ Each plant has different structures that serve different functions in growth, survival, and reproduction (3.1b). 	<p>SE Only: 38</p> <p>TE Only: 58, 59</p>

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<ul style="list-style-type: none"> ▪ In order to survive in their environment, plants and animals must be adapted to that environment (3.1c). <ul style="list-style-type: none"> – Seeds disperse by a plant’s own mechanism and/or in a variety of ways that can include wind, water, and animals. – Leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell, and texture. 	<p>SE Only: 36, 39</p> <p>TE Only: 54, 55, 58, 59, 60, 62, 64, 65, 71a, 71b</p>
<ul style="list-style-type: none"> ▪ Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form and grow (5.2a). 	<p>Interactive Science addresses this Major Understanding in Grade 1, Lesson 3.3 (What are the four seasons?) and in Grade 1, Lesson P1.4 (How do scientists find answers?)</p>
Unit 2 Exploring Properties	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators: (PS 3.1b-g)</i>	
<ul style="list-style-type: none"> ▪ Matter has properties that can be observed through the senses.(3.1b) 	<p>SE Only: 63, 76, 81</p> <p>TE Only: 115A, 116, 118, 124, 126-127, 133</p>
<ul style="list-style-type: none"> ▪ Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.(3.1c) 	<p>SE Only: 60, 62, 63, 76, 79, 81, 84</p> <p>TE Only: 98, 102, 109c, 109d, 116, 118, 126, 127, 133, 154</p>
<ul style="list-style-type: none"> ▪ Measurements can be made with standard metric units and nonstandard units.(3.1d) 	<p>SE Only: 64, 79</p> <p>TE Only: 109c, 119</p>
<ul style="list-style-type: none"> ▪ The material(s) an object is made up of determine some specific properties of the object. Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.(3.1e) 	<p>SE Only: 24-32, 62, 63, 79, 96</p> <p>TE Only: 13, 44-45, 70, 98, 102, 109, 109d, 132-133, 160-162</p>

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<ul style="list-style-type: none"> ▪ Some properties of an object are dependent on the conditions of the present surroundings in which the object exists (3.1g). <ul style="list-style-type: none"> – temperature: hot or cold – lighting: shadows, color – moisture: wet or dry 	<p>SE Only: 16, 60</p> <p>TE Only: 20-23, 71a, 98, 102, 109a, 109d</p>
<ul style="list-style-type: none"> ▪ Objects and/or materials can be sorted or classified according to their properties (3.1f). 	<p>TE Only: 33, 36, 50, 51, 61, 71a, 94</p>
Unit 3 Animals	
Unit Overview:	
<p>As students investigate the continuity of life, emphasis should be placed on how animals reproduce their own kind. They should begin to recognize how differences among individuals within a species can help an organism or population to survive. Students at this level will identify the behaviors and physical adaptations that allow organisms to survive in their environment. The characteristics of the cycle of life vary from organism to organism.</p> <p>Students need many opportunities to observe a variety of organisms for the patterns of similarities and differences of the life functions used to sustain life. All organisms carry out basic life functions in order to sustain life. <i>[Refer to Appendix A for the Humane Treatment of Animals]</i></p>	
Key Ideas:	
<p>LE. Key Idea 1: Living things are both similar to and different from each other and from nonliving things.</p>	
<p>LE. Key Idea 2: Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.</p>	
<p>LE. Key Idea 3: Individual organisms and species change over time.</p>	
<p>LE. Key Idea 4: The continuity of life is sustained through reproduction and development.</p>	
<p>LE. Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.</p>	
NYS SCIENCE STANDARDS	
Major Understandings:	
<p><i>Quoted from New York State Performance Indicators (LE: 1.1a, 1.1c, 1.1d, 1.2a, 2.2a, 3.1a, 4.1g, 4.2a, 5.1a, 5.2e, 5.2f)</i></p>	
<ul style="list-style-type: none"> ▪ Animals need air, water, and food in order to live and thrive.(1.1a) 	<p>SE Only: 36, 37</p> <p>TE Only: 50, 51, 54, 55, 56, 61, 63, 69, 71a, 71c, 90-91</p>
<ul style="list-style-type: none"> ▪ Nonliving things do not live and thrive.(1.1c) 	<p>SE Only: 33</p> <p>TE Only: 41, 48, 49, 51</p>
<ul style="list-style-type: none"> ▪ Nonliving things can be human-created or naturally occurring.(1.1d) 	<p>SE Only: 33, 58</p> <p>TE Only: 48, 49, 95</p>

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<ul style="list-style-type: none"> ▪ Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.(1.2a) 	<p>SE Only: 34, 35, 36, 37</p> <p>TE Only: 36, 39A, 39B, 49, 50, 51, 53, 54, 55, 56, 57, 62, 63, 69, 71c</p>
<ul style="list-style-type: none"> ▪ Plants and animals closely resemble their parents and other individuals in their species.(2.2a) 	<p>Interactive Science addresses this Major Understanding in Grade 1, Lesson 2.5 (How are living things like their parents?).</p>
<ul style="list-style-type: none"> ▪ Each animal has different structures that serve different functions in growth, survival, and reproduction.(3.1a) <ul style="list-style-type: none"> – wings, legs, or fins enable some animals to seek shelter and escape predators – the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink – eyes, nose, ears, tongue, and skin of some animals enable the animals to sense their surroundings – claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food – some animals have parts that are used to produce sounds and smells to help the animal meet its needs – the characteristics of some animals change as seasonal conditions change (e.g., fur grows and is shed to help regulate body heat; body fat is a form of stored energy and it changes as the seasons change) 	<p>SE Only: 22, 25, 34, 39</p> <p>TE Only: 43, 44, 51, 60, 62</p>
<ul style="list-style-type: none"> ▪ The length of time from an animal’s birth to its death is called its life span. Life spans of different animals vary.(4.1g) 	<p>Interactive Science addresses this Major Understanding in Grade 1, Lesson 2.4 (How do some animals grow?).</p>
<ul style="list-style-type: none"> ▪ Growth is the process by which plants and animals increase in size.(4.2a) 	<p>SE Only: 34, 35</p> <p>TE Only: 50, 51, 53</p>
<ul style="list-style-type: none"> ▪ All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.(5.1a) 	<p>SE Only: 34, 35, 36, 37</p> <p>TE Only: 36, 39A, 39B, 49, 50, 51, 53, 54, 55, 56, 57, 62, 71c</p>

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Grade 1	
Unit 1 Animal Diversity	
Unit Overview:	
<p>Students’ ideas about the characteristics of organisms develop from their basic concepts of living and nonliving things. As students investigate the continuity of life, emphasis should be placed on how animals reproduce their own kind. Teachers should lead students to make observations about how the offspring of familiar animals compare to one another and to their parents.</p> <p>Throughout time, animals have changed depending on their environment. In learning how organisms have been successful in their habitats, students should observe and record information about animals. They should begin to recognize how differences among individuals within a species can help an organism or population to survive. Students at this level will identify the behaviors and physical adaptations that allow organisms to survive in their environment. Students describe animal life cycles and life spans. <i>[Refer to Appendix A for the Humane Treatment of Animals]</i></p>	
Key Ideas:	
LE. Key Idea 1: Living things are both similar to and different from each other and from nonliving things.	
LE. Key Idea 2: Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.	
LE. Key Idea 3: Individual organisms and species change over time.	
LE. Key Idea 4: The continuity of life is sustained through reproduction and development.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<p><i>Quoted from New York State Performance Indicators(LE: 1.1a, 2.1a, 2.2a-b, 3.1a, c, 4.1a, e-g)</i></p>	

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<ul style="list-style-type: none"> ▪ Each animal has different structures that serve different functions in growth, survival, and reproduction.(3.1a) <ul style="list-style-type: none"> – wings, legs, or fins enable some animals to seek shelter and escape predators – the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink – eyes, nose, ears, tongue, and skin of some animals enable the animals to sense their surroundings – claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food – some animals have parts that are used to produce sounds and smells to help the animal meet its needs – the characteristics of some animals change as seasonal conditions change (e.g., fur grows and is shed to help regulate body heat; body fat is a form of stored energy and it changes as the seasons change) 	<p>SE/TE: 72, 73, 74, 75, 76, 96-97, 99</p>
<ul style="list-style-type: none"> ▪ Animals need air, water, and food in order to live and thrive.(1.1a) 	<p>SE/TE: 222-227</p> <p>TE Only: 71</p>
<ul style="list-style-type: none"> ▪ In order to survive in their environment, plants and animals must be adapted to that environment.(3.1c) <ul style="list-style-type: none"> – Seeds disperse by a plant’s own mechanism and/or in a variety of ways that can include wind, water, and animals. – Animal adaptations include coloration for warning or attraction, camouflage, defense mechanisms, movement, hibernation, and migration. 	<p>SE/TE: 64, 74, 84, 95, 96-97, 127</p> <p>TE Only: 64B, 67a, 99a</p>

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<ul style="list-style-type: none"> ▪ Plants and animals closely resemble their parents and other individuals in their species.(2.2a) 	<p>SE/TE: 44, 73, 75, 76, 78, 79, 80, 81, 92</p> <p>TE Only: 44G, 78A, 78B, 81a, 81b, 95a, 95b</p>
<ul style="list-style-type: none"> ▪ Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).(2.1a) 	<p>SE/TE: 80</p>
<ul style="list-style-type: none"> ▪ Plants and animals can transfer specific traits to their offspring when they reproduce.(2.2b) 	<p>SE/TE: 74, 75</p> <p>TE Only: 44G</p>
<ul style="list-style-type: none"> ▪ Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.(4.1a) 	<p>SE/TE: 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 91, 93</p> <p>TE Only: 44C, 44G, 44H, 68B, 71a, 71b, 72A, 72B, 77b</p>
Unit 2 Properties of Matter	
Unit Overview:	
<p>Students observe and describe the three states of matter. Students describe, categorize, compare, and measure observable physical properties of matter and objects. Students' initial efforts in performing these processes may yield simple descriptions and sketches, which may lead to increasingly more detailed drawings and richer verbal descriptions. Appropriate tools can aid students in their efforts.</p>	
Key Ideas:	
<p>PS. Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.</p>	
<p>PS. Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.</p>	
NYS SCIENCE STANDARDS	
Major Understandings:	
<p><i>Quoted from New York State Performance Indicators (PS: 2.1c, 3.1c-g, 3.1g, 3.2a, c)</i></p>	
<ul style="list-style-type: none"> ▪ Matter exists in three states: solid, liquid, gas.(3.2a) <ul style="list-style-type: none"> – Solids have a definite shape and volume. – Liquids do not have a definite shape but have a definite volume. – Gases do not hold their shape or volume. 	<p>Interactive Science addresses this Major Understanding in Grade 2, Chapter 1, Lesson 2 (What are solids, liquids, and gases?).</p>

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<ul style="list-style-type: none"> ▪ Water is recycled by natural processes on Earth.(2.1c) <ul style="list-style-type: none"> – evaporation: changing of water (liquid) into water vapor (gas) – condensation: changing of water vapor (gas) into water (liquid) – precipitation: rain, sleet, snow, hail – runoff: water flowing on Earth’s surface – groundwater: water that moves downward into the ground 	<p>Interactive Science addresses this Major Understanding in Grade 2, Chapter 1, Lesson 4 (How can water change?).</p>
<ul style="list-style-type: none"> ▪ Changes in the properties or materials of objects can be observed and described.(3.2c) 	<p>SE/TE: 20, 207 TE Only: 20B, 23a</p>
<ul style="list-style-type: none"> ▪ The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.(3.1e) 	<p>SE/TE: 24, 26, 190-199, 214-215 TE Only: 215b, 215c, 215d, 221c</p>
<ul style="list-style-type: none"> ▪ Objects and/or materials can be sorted or classified according to their properties.(3.1f) 	<p>SE/TE: 46, 60, 78, 161 TE Only: 18, 186D, 186G</p>
<ul style="list-style-type: none"> ▪ Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.(3.1c) 	<p>SE/TE: 20, 21, 27, 40-41, 136-137, 161, 176-177, 204, 205, 206, 207 TE Only: 20B, 23a, 27b, 43d, 177b, 177c, 177d, 207a, 207b</p>
<ul style="list-style-type: none"> ▪ Measurements can be made with standard metric units and nonstandard units.<i>(Note: Exceptions to the metric system usage are found in meteorology.)</i>(3.1d) 	<p>SE/TE: 28, 162, 163, 164, 165, 176, 179-182, 183, 186, 187, 188 TE Only: 43d, 162B, 167a, 167b, EM1</p>

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<ul style="list-style-type: none"> ▪ Some properties of an object are dependent on the conditions of the present surroundings in which the object exists. (3.1g) For example: <ul style="list-style-type: none"> – temperature: hot or cold – lighting: shadows, color – moisture: wet or dry 	SE/TE: 2, 21, 22, 23, 26, 102, 136-137
Unit 3 Weather and Seasons	
Unit Overview:	
<p>Weather involves interactions among air, water, and land. Students should observe and describe weather conditions that occur during each season. They can observe, measure, record and compare data throughout the year by using science tools. Students should compare temperatures in different locations and compare day and night temperature. Students should illustrate and describe how the sun appears to move during the day. Illustrate and describe how the moon changes appearance over time. Describe the 24-hour day/night cycle. Students should understand that energy exists in a variety of forms. Students should observe and record the changes in the sun’s and other star’s position, and the moon’s appearance relative to time of day and month, and note the pattern of this change. Recognize that the sun’s energy warms the air.</p>	
Key Ideas:	
PS. Key Idea 1: The Earth and celestial phenomena can be described by principles of relative motion and perspective.	
PS. Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.	
PS. Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.	
PS. Key Idea 4: Energy exists in many forms, and when these forms change energy is conserved.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PS: 1.1a-c, 2.1a-b, 3.1g, 4.2a)</i>	
<ul style="list-style-type: none"> ▪ Natural cycles and patterns include: (1.1a) <ul style="list-style-type: none"> – Earth spinning around once every 24 hours (rotation), resulting in day and night – Earth moving in a path around the Sun (revolution), resulting in one Earth year – the length of daylight and darkness varying with the seasons. – weather changing from day to day and through the seasons – the appearance of the Moon changing as it moves in a path around Earth to complete a single cycle 	SE/TE: 102, 103, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 131, 132, 133, 134, 135, 138 TE Only: 100C, 100D, 100G, 100H, 118A, 118B, 123a, 123b, 124B, 135a

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<ul style="list-style-type: none"> ▪ Weather is the condition of the outside air at a particular moment.(2.1a) 	<p>SE/TE: 124, 125, 126, 127, 130, 138</p> <p>TE Only: 124B</p>
<ul style="list-style-type: none"> ▪ Weather can be described and measured by: (2.1b) <ul style="list-style-type: none"> – temperature – wind speed and direction – form and amount of precipitation – general sky conditions (cloudy, sunny, partly cloudy) 	<p>SE/TE: 130, 138</p> <p>TE Only: 100D</p>
<ul style="list-style-type: none"> ▪ Some properties of an object are dependent on the conditions of the present surroundings in which the object exists.(3.1g) <ul style="list-style-type: none"> – temperature: hot or cold – lighting: shadows, color – moisture: wet or dry 	<p>SE/TE: 42, 102, 168</p>
<ul style="list-style-type: none"> ▪ Humans organize time into units based on natural motions of Earth: (1.1b) <ul style="list-style-type: none"> – second, minute, hour – week, month 	<p>SE/TE: 139</p> <p>TE Only: 139a, 139b</p>
<ul style="list-style-type: none"> ▪ The Sun and other stars appear to move in a recognizable pattern both daily and seasonally.(1.1c) 	<p>SE/TE: 114, 115, 116, 117, 133</p> <p>TE Only: 100G, 117a, 117b</p>
<ul style="list-style-type: none"> ▪ Everyday events involve one form of energy being changed to another.(4.2a). 	<p>SE/TE: 16, 17, 18, 19, 25, 34, 100, 104</p> <p>TE Only: 2C, 2G-2H, 19a</p>

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Grade 2	
Unit 1 Earth Materials	
Unit Overview:	
Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land. Students should be engaged in observing, describing, and investigating the basic properties and components of soil. Students should explore how erosion and deposition are the results of interactions between air, water, and land. Students should observe and describe the physical properties of rocks. Compare and sort rocks by size, color, luster, texture, patterns, hardness/softness. Students should understand that nonliving things can be human-created or naturally occurring.	
Key Ideas:	
LE. Key Idea 1: Living things are both similar to and different from each other and from nonliving things.	
PS. Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.	
PS. Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PS: 2.1d, 3.1b-g, 3.1c, 3.1d, 3.1e, 3.1f, 3.1g) (LE: 1.1d)</i>	
<ul style="list-style-type: none"> ▪ Erosion and deposition result from the interaction among air, water, and land.(2.1d) <ul style="list-style-type: none"> — Interaction between air and water breaks down Earth materials. — Pieces of Earth material may be moved by air, water, wind, and gravity. — Pieces of Earth material will settle or deposit on land or in the water in different places. — Soil is composed of broken-down pieces of living and nonliving Earth material. 	<p>SE/TE: 139, 141, 142, 143, 151, 153, 154, 155, 158</p> <p>TE Only: 118D, 118G, 118, 138B, 140, 143b, 152, 155a, 155b, 155d, 159a</p>
<ul style="list-style-type: none"> ▪ Matter has properties (color, hardness, odor, sound, taste, etc.) that can be observed through the senses.(3.1b) 	<p>SE/TE: 16, 17, 18, 19, 20, 25, 55</p> <p>TE Only: 2C, 2G, 2H, 23b, 28, 43, 49, 118G</p>
<ul style="list-style-type: none"> ▪ Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.(3.1c) 	<p>SE/TE: 17, 18, 19, 20, 21, 23, 25, 26, 27, 29, 36, 41</p> <p>TE Only: 29a, 36B, 43, 49, 118G</p>

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<ul style="list-style-type: none"> ▪ Measurements can be made with standard metric units and nonstandard units (Note: Exceptions to the metric system usage are found in meteorology.) (3.1d) 	<p>SE/TE: 18, 20-21, 36, 163, 182, 184, 194, 222, EM1</p> <p>TE Only: 36B, 39a</p>
<ul style="list-style-type: none"> ▪ The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders. (3.1e) 	<p>SE/TE: 18, 20, 21, 22, 23, 36, 58-59</p> <p>TE Only: 29a</p>
<ul style="list-style-type: none"> ▪ Objects and/or materials can be sorted or classified according to their properties. (3.1f) 	<p>SE/TE: 16, 56, 59, 60, 178, 181, 241</p> <p>TE Only: 16B, 23a, 61a</p>
<ul style="list-style-type: none"> ▪ Some properties of an object are dependent on the conditions of the present surroundings in which the object exists. (3.1g) <p>For Example:</p> <ul style="list-style-type: none"> — temperature: hot or cold — lighting: shadows, color — moisture: wet or dry 	<p>SE/TE: 22, 23, 24, 27, 38</p> <p>TE Only: 24B, 29a</p>
<ul style="list-style-type: none"> ▪ Nonliving things can be human-created or naturally occurring. (LE 1.1d) 	<p>TE Only: 117c</p>

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Unit 2 Forces and Motion	
Unit Overview:	
Energy and matter interact through forces that result in changes in motion. Students should be able to observe and describe relative positions between objects in their world. Exploring the observable effects of gravity and magnetism may help students develop an understanding of the reason for the direction of an object’s motion. Manipulation and application of simple tools and machines may help students learn about the relationships between forces and motion.	
Key Ideas:	
PS. Key Idea 5: Energy and matter interact through forces that result in changes in motion.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PS: 5.1, 5.1 a-c, 5.2a)</i>	
<ul style="list-style-type: none"> ▪ The position of an object can be described by locating it relative to another object or the background.(5.1a) 	Interactive Science addresses this Major Understanding in Grade 1, Lesson 1.1 (What can you tell about an object’s position?).
<ul style="list-style-type: none"> ▪ Describe the effects of common forces (pushes and pulls) of objects, such as those caused by gravity, magnetism and mechanical forces.(5.1) 	SE/TE: 143, 184-185, 218, 228, TE Only: 159a, 218B, 221a, 235a
<ul style="list-style-type: none"> ▪ The position or direction of motion of an object can be changed by pushing or pulling.(5.1b) 	TE Only: 2, 235a
<ul style="list-style-type: none"> ▪ The force of gravity pulls objects toward the center of Earth.(5.1c) 	SE/TE: 143 TE Only: 159a
<ul style="list-style-type: none"> ▪ The forces of gravity and magnetism can affect objects through gases, liquids, and solids.(5.2a) 	SE/TE: 143, 184-185, 218 TE Only: 159a, 182B, 218B, 221a

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Unit 3 Plant Diversity	
Unit Overview:	
Living things are both similar to and different from each other and from nonliving things. There are basic characteristics, needs, and functions common to all living things. Nonliving things are present in nature or are made by living things. Understanding the variety and complexity of life and its processes can help students develop respect for their own and for all life. It should also lead them to better realize the value of all life on this fragile planet. As students investigate the continuity of life, emphasis should be placed on how plants reproduce their own kind. Throughout time, plants changed depending on their environment. In learning how organisms have been successful in their habitats, students should observe and record information about plants. The continuity of life is sustained through reproduction and development. <i>[Refer to Appendix A for Conservation Day]</i>	
Key Ideas:	
LE. Key Idea 1: Living things are both similar to and different from each other and from nonliving things.	
LE. Key Idea 2: Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.	
LE. Key Idea 3: Individual organisms and species change over time.	
LE. Key Idea 4: The continuity of life is sustained through reproduction and development.	
LE. Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (LE: 1.1b, 1.2a, 2.1a, 2.2a, b, 3.1b, 4.1a-d, 5.1a, 5.2a)</i>	
<ul style="list-style-type: none"> ▪ Each plant has different structures that serve different functions in growth, survival, and reproduction. (3.1b) <ul style="list-style-type: none"> – Roots help support the plant and take in water and nutrients. – Leaves help plants utilize sunlight to make food for the plant. – Stems, stalks, trunks, and other similar structures provide support for the plant. – Some plants have flowers. – Flowers are reproductive structures of plants that produce fruit which contains seeds. – Seeds contain stored food that aids in germination and the growth of young plants. 	<p>SE/TE: 76, 77, 78, 79, 80, 81, 107-110, 111, 112, 177</p> <p>TE Only: 76b</p>
<ul style="list-style-type: none"> ▪ Some traits of living things have been inherited. (2.1a) 	TE Only: 62G-62H
<ul style="list-style-type: none"> ▪ Plants and animals closely resemble their parents and other individuals in the species. (2.2a) 	TE Only: 62G-62H

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<ul style="list-style-type: none"> ▪ Plants and animals can transfer specific traits to their offspring when they reproduce.(2.2b) 	TE Only: 62G-62H
<ul style="list-style-type: none"> ▪ Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.(4.1a) 	Refer to Grade 1, Chapter 2, Lesson 3 How do plants grow? and Lesson 4 How do animals grow?
<ul style="list-style-type: none"> ▪ Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant.(4.1b) 	SE/TE: 80, 81, 116 TE Only: 105a
<ul style="list-style-type: none"> ▪ The length of time from beginning of development to death of the plant is called its life span.(4.1c) 	Refer to Grade 1, Chapter 2, Lesson 3 How do plants grow?
<ul style="list-style-type: none"> ▪ Life cycles of some plants include changes from seed to mature plant.(4.1d) 	Refer to Grade 1, Chapter 2, Lesson 3 How do plants grow?
<ul style="list-style-type: none"> ▪ Plants require air, water, and food in order to live and thrive.(1.1b) 	SE/TE: 64, 77, 96, 97, 99, 101, 104-105, 116 TE Only: 62G-62H, 105a, 117a
<ul style="list-style-type: none"> ▪ Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.(1.2a) 	SE/TE: 77, 89, 96, 97, 99, 101, 104-105 TE Only: 81b, 105a
<ul style="list-style-type: none"> ▪ All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.(5.1a) 	SE/TE: 77, 79, 96, 100, 101, 102, 103 TE Only: 81b
<ul style="list-style-type: none"> ▪ Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable plants to grow; seeds germinate, and leaves form and grow.(5.2a) 	SE/TE: 97

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Grades K-2 Cross-Cutting Concepts	
Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.	
<ul style="list-style-type: none"> ▪ Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. 	<p>Grade K SE Only: 42, 55 TE Only: 40, 52-57, 76-77, 78, 79, 88, 89, 90, 91, 92, 93, 109a</p> <p>Grade 1 SE/TE: 68, 70, 118, 119, 121, 139 TE Only: 71a, 95, 99b, 100, 116, 135c, 139a, 139b</p> <p>Grade 2 SE/TE: 194 TE Only: 118G-118H, 197c, 203c</p>
Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.	
<ul style="list-style-type: none"> ▪ Events have causes that generate observable patterns. 	<p>Grade K SE Only: 3, 4, 55, 60, 85 TE Only: 8, 11, 19, 23, 49, 97, 125, 155, 163</p> <p>Grade 1 SE/TE: 5, 17, 21, 22, 27, 29, 38, 70, 115, 119</p> <p>Grade 2 SE/TE: 4, 38, 148-149, 222 TE Only: 62, 143</p>
<ul style="list-style-type: none"> ▪ Simple tests can be designed to gather evidence to support or refute student ideas about causes. 	<p>Grade K SE Only: 66 TE Only: 33a, 109</p> <p>Grade 1 SE/TE: 29, 40, 96, 136-137</p> <p>Grade 2 SE/TE: 4, 38, 148-149, 222 TE Only: 149a, 149b, 149c, 149d, 225</p>

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<p>Scale, Proportion, and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.</p>	
<ul style="list-style-type: none"> ▪ Relative scales allow objects and events to be compared and described (e.g., bigger and smaller; hotter and colder; faster and slower). 	<p>Grade K SE Only: 16, 60 TE Only: 10, 20-23, 33, 33a, 71a, 109a, 109d, 115b, 140</p> <p>Grade 1 SE/TE: 31, 33, 66, 88, 161 TE Only: 28B, 31b, 43d, 99c, 140C, 129c</p> <p>Grade 2 SE/TE: 136, 194 TE Only: 147, 159a, 159c, 183, 204H, 230</p>
<ul style="list-style-type: none"> ▪ Standard units are used to measure length. 	<p>Grade K SE Only: 64 TE Only: 133</p> <p>Grade 1 SE/TE: 165, EM1 TE Only: 43d, 211</p> <p>Grade 2 SE/TE: 21, 182, 194, EM1 TE Only: 118C, 159b, 182B, 186, 187a, 189, 192B, 195b</p>
<p>Systems and System Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.</p>	
<ul style="list-style-type: none"> ▪ Objects and organisms can be described in terms of their parts. 	<p>Grade K SE Only: 34 TE Only: 51</p> <p>Grade 1 SE/TE: 66, 84, 98 TE Only: 44C</p> <p>Grade 2 SE/TE: 78-81, 90-93, 114-115, 117, 231, 232-233</p>

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<ul style="list-style-type: none"> ▪ Systems in the natural and designed world have parts that work together. 	<p>Grade K SE Only: 34 TE Only: 51</p> <p>Grade 1 SE/TE: 6-15, 66, 70, 98</p> <p>Grade 2 SE/TE: 231, 232-233 TE Only: 76</p>
<p>Energy and Matter: Flows, Cycles, and Conservation: Tracking energy and matter flows into, out of, and within systems helps one understand their system’s behavior.</p>	
<ul style="list-style-type: none"> ▪ Objects may break into smaller pieces, be put together into larger pieces, or change shapes. 	<p>Grade 2 SE/TE: 30, 34-35, 48-49, 51-54, 55 TE Only: 2, 30B, 35a, 35b, 61c</p>
<p>Structure and Function: The way an object is shaped or structured determines many of its properties and functions.</p>	
<ul style="list-style-type: none"> ▪ The shape and stability of structures of natural and designed objects are related to their function(s). 	<p>Grade K SE Only: 44-53, 86-93 TE Only: 82-85, 116, 152, 156-159</p> <p>Grade 1 SE/TE: 66, 84, 85, 94, 178 TE Only: 99a, 140, 186</p> <p>Grade 2 SE/TE: 45, 47, 182, 183, 184, 185 TE Only: 47a, 63, 108, 117b, 187, 187a</p>

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Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.	
<ul style="list-style-type: none"> ▪ Some things stay the same while other things change. 	<p>Grade K SE Only: 42, 57, 60 TE Only: 80-81, 92-93, 109a</p> <p>Grade 1 SE/TE: 28, 94, 98 TE Only: 2G, 31a</p> <p>Grade 2 SE/TE: 38, 138, 139, 140, 141, 142, 153, 158 TE Only: 138B, 143b, 152, 155b, 155d</p>
<ul style="list-style-type: none"> ▪ Things may change slowly or rapidly. 	<p>Grade K SE Only: 38 TE Only: 57, 58, 59</p> <p>Grade 1 SE/TE: 70, 74, 94, 98</p> <p>Grade 2 SE/TE: 38, 138, 139, 140, 141, 142, 153, 158 TE Only: 138B, 143b, 152, 155b, 155d</p>

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Grades K-2 Engineering Design	
Asking Questions and Defining Problems: Asking questions and defining problems in 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 natural and/or designed world(s).	<p>Grade K SE Only: 62, 75 TE Only: 116-117, 124-125</p> <p>Grade 1 SE/TE: 4, 40, 46, 68, 78, 82, 87, 96, 102, 118, 128, 136, 142, 156, 158, 168, 169, 174, 179-182, 208, 222, 226</p> <p>Grade 2 SE/TE: 58, 156, 160-161, 174-177, 190 TE Only: 117a, 143, 197a</p>
Ask and/or identify questions that can be answered by an investigation. Define a simple problem that can be solved through the development of a new or improved object or tool.	<p>Grade K SE Only: 18, 39, 60, 75, 81, 99 TE Only: 24, 60, 64, 98, 117, 124-125, 136, 166</p> <p>Grade 1 SE/TE: 40, 96, 136, 169, 174, 186-187, 202, 209</p> <p>Grade 2 SE/TE: 160-161, 174-177, 190, 208-217, 242 TE Only: 197a</p>
Developing and Using Models: Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.	
Distinguish between a model and the actual object, process, and/ or events the model represents.	<p>Grade K SE Only: 23-32, 44-53 TE Only: 44-47, 71c, 82-85</p> <p>Grade 1 SE/TE: 99, 128, 139, 187, 214-215, 222-227 TE Only: 80, 139a, 215a, 215b, 221c</p> <p>Grade 2 SE/TE: 6-15, 40, 47, 88, 144, 146, 158, 159, 232 TE Only: 40B, 47a, 63, 114, 117b, 144B, 147a, 159c,</p>

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Compare models to identify common features and differences.	<p>Grade K SE Only: 23-32, 44-53 TE Only: 44-47, 71c, 82-85</p> <p>Grade 1 SE/TE: 99, 139, 208 TE Only: 80, 139a, 215, 215a</p> <p>Grade 2 SE/TE: 6-15, 40, 74, 88, 159, 232 TE Only: 40B, 61c, 88B, 93a</p>
Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s).	<p>Grade K SE Only: 23-32, 44-53 TE Only: 44-47, 71c, 82-85</p> <p>Grade 1 SE/TE: 99, 139, 214-215 TE Only: 80, 121, 139a, 215a, 215b, 221c</p> <p>Grade 2 SE/TE: 6-15, 40, 47, 100, 114, 144, 159, 232 TE Only: 40B, 47a, 63, 100B, 103a, 117b, 144B, 147c, 159c</p>
Develop a simple model based on evidence to represent a proposed object or tool.	<p>Grade K SE Only: 23-32, 44-53 TE Only: 44-47, 71c, 82-85</p> <p>Grade 1 SE/TE: 99, 128, 139, 208, 214-221 TE Only: 215a, 215b, 215c, 221c</p> <p>Grade 2 SE/TE: 6-15, 40, 47, 88, 144, 159, 232 TE Only: 40B, 63, 88B, 93a, 135, 144B, 147a</p>

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Planning and Carrying Out an Investigation: Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.	
With guidance, plan and conduct an investigation in collaboration with peers (for K).	Grade K SE Only: 77 TE Only: 24, 28-29, 60, 64, 98, 128, 129, 136, 166
Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.	Grade K SE Only: 18, 39, 60, 81, 99 TE Only: 24, 60, 98, 136, 166 Grade 1 SE/TE: 3, 32-33, 45, 86-87, 101, 128-129, 141, 176, 187, 214-215 TE Only: 33d, 171 Grade 2 SE/TE: 3, 48-49, 63, 104-105, 114, 119, 148-149, 161, 196-197, 205, 234-235 TE Only: 61a, 117a, 159a
Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question.	Grade K SE Only: 76, 79, 81 TE Only: 126-127, 132-133, 136 Grade 1 TE Only: 43d, 139b Grade 2 SE/TE: 163, 180 TE Only: 186, 197
Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.	Grade K SE Only: 84 TE Only: 28, 33a, 64, 102, 109c, 140, 154, 170 Grade 1 SE/TE: 4, 28, 46, 68, 78, 82, 87, 102, 118, 128, 136-137, 142, 158, 162, 168, 176, 188, 208, 226 TE Only: 139b Grade 2 SE/TE: 61, 88, 157, 180, 225 TE Only: 30, 61a, 93a, 149c, 159b, 186, 197a, 197c

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<p>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.</p>	<p>Grade K SE Only: 84, 93 TE Only: 126-127, 132-133, 154, 156, 160-161</p> <p>Grade 1 SE/TE: 226 TE Only: 43d, 139b</p> <p>Grade 2 SE/TE: 35, 180, 181, 222 TE Only: 2C</p>
<p>Make predictions based on prior experiences.</p>	<p>Grade K SE Only: 21, 39, 60 TE Only: 19, 22, 23, 26, 28, 42, 60, 62, 64, 98, 109d, 128, 129, 135</p> <p>Grade 1 SE/TE: 40, 41, 68, 72, 96, 102, 136, 160, 200, 214 TE Only: 28, 32, 33c, 39c, 43a, 64, 66, 68B, 71a, 82B, 84, 85a, 100, 129c, 168B, 171a, 155c, 200B, 203a, 215c</p> <p>Grade 2 SE/TE: 58, 59, 60, 61, 88, 105, 114, 115, 156, 180, TE Only: 30, 49c, 57c, 88B, 93a, 105b, 113c, 118C, 149c, 222</p>
<p>Analyzing and Interpreting Data: Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p>	
<p>Record information (observations, thoughts, and ideas). Use and share pictures, drawings, and/or writings of observations.</p>	<p>Grade K SE Only: 42, 62, 63, 73, 76, 78 TE Only: 14, 47, 33a, 33b, 60, 80, 85, 99, 107, 123, 136, 159</p> <p>Grade 1 SE/TE: 4, 20, 33, 41, 68, 88, 97, 118, 129, 137, 142, 162, 172, 176, 188, 200, 208, 215</p> <p>Grade 2 SE/TE: 4, 30, 36, 48, 59, 88, 105, 114-115, 148, 157, 182, 188, 192-195, 196, 222, 235, 246 TE Only: 49a, 105b, 160c, 235a</p>

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Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.	<p>Grade K SE Only: 42, 60, 63, 76, 78 TE Only: 10, 36, 42, 28, 33a, 71a, 80, 98, 107, 109a, 115A, 118, 126-127, 136, 140</p> <p>Grade 1 SE/TE: 4, 46, 68, 78, 82, 87, 102, 118, 128, 142, 158, 168, 208, 226 TE Only: 135c</p> <p>Grade 2 SE/TE: 79, 162, 179, 180, 181, 193, 228 TE Only: 117a, 117c, 159a, 233a</p>
Compare predictions (based on prior experiences) to what occurred (observable events).	<p>Grade K SE Only: 12 TE Only: 15, 45, 92, 109d</p> <p>Grade 1 SE/TE: 40, 68, 96, 160, 168, 200, 214, 215 TE Only: 171a, 215, 215b, 215c</p> <p>Grade 2 SE/TE: 60, 61, 105, 114-115 TE Only: 30, 49c, 105b, 118C</p>
Analyze data from tests of an object or tool to determine if it works as intended.	<p>Grade K SE Only: 4-13, 23-32, 44-53, 65-74, 86-95 TE Only: 12-15, 33b, 44-47, 82-85, 109a, 120-123, 156-159</p> <p>Grade 1 SE/TE: 33, 87, 129, 177, 215</p> <p>Grade 2 SE/TE: 49, 105, 114-115, 149, 197, 203, 235 TE Only: 49b, 61b, 105b, 105c, 105d</p>

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<p align="center">New York City Science Scope and Sequence for Grades K-5</p>	<p align="center">Interactive Science ©2016</p>
<p>Using Mathematics and Computational Thinking: Mathematical and computational thinking in K–2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).</p>	
<p>Decide when to use qualitative vs. quantitative data. Use counting and numbers to identify and describe patterns in the natural and designed world(s).</p>	<p>Grade K TE Only: 71c, 74, 99, 109a, 109b</p> <p>Grade 1 SE/TE: 66, 88 TE Only: 139b, 175a</p> <p>Grade 2 SE/TE: 194 TE Only: 118C</p>
<p>Describe, measure, and/ or compare quantitative attributes of different objects and display the data using simple graphs.</p>	<p>Grade K TE Only: 80, 99, 130</p> <p>Grade 1 SE/TE: 174, 175 TE Only: 139b</p> <p>Grade 2 SE/TE: 195 TE Only: 61a, 61b, 117b, 117c, 160c</p>
<p>Use quantitative data to compare two alternative solutions to a problem.</p>	<p>Grade K TE Only: 109c, 109d</p> <p>Grade 1 SE/TE: 198 TE Only: 139b</p> <p>Grade 2 TE Only: 117b, 117c</p>

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Constructing Explanations and Defining 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.	<p>Grade K SE Only: 55 TE Only: 71a, 79, 89, 92</p> <p>Grade 1 SE/TE: 6-15, 28, 40-41, 139 TE Only: 99a</p> <p>Grade 2 SE/TE: 94, 102-103, 104-105 TE Only: 99, 94b, 99a, 105a, 105b, 105c, 105d, 117c, 119, 159a</p>
Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.	<p>Grade K SE Only: 4-13, 23-32, 44-53, 65-74, 86-95 TE Only: 12-15, 44-47, 82-85, 109d, 120-123, 156-159</p> <p>Grade 1 SE/TE: 6-15, 28, 40-41, 187, 208, 222-227, 228 TE Only: 99a, 186G-186H</p> <p>Grade 2 SE/TE: 186, 205, 208-217, 242-247, 248 TE Only: 119, 224</p>
Generate and/or compare multiple solutions to a problem.	<p>Grade K SE Only: 4-13, 23-32, 44-53, 65-74, 86-95 TE Only: 12-15, 44-47, 82-85, 120-123, 156-159</p> <p>Grade 1 SE/TE: 3, 6-15, 45, 48-57, 101, 104-113, 141, 144-153, 187, 190-199, 227</p> <p>Grade 2 SE/TE: 3, 6-15, 63, 66-75, 119, 122-131, 161, 164-173, 205, 208-217 TE Only: 61c, 159b</p>

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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).	
Identify arguments that are supported by evidence.	<p>Grade K SE Only: 80 TE Only: 71b, 134, 135</p> <p>Grade 1 SE/TE: 40-41, 42, 96-97, 98, 136-137, 138, 208</p> <p>Grade 2 SE/TE: 188-191 TE Only: 61d, 191a-191b</p>
Distinguish between explanations that account for all gathered evidence and those that do not.	<p>Grade K TE Only: 71b</p> <p>Grade 1 SE/TE: 40-41, 96-97, 136-137</p> <p>Grade 2 SE/TE: 188-191 TE Only: 61d, 191a-191b</p>
Analyze why some evidence is relevant to a scientific question and some is not.	<p>Grade K SE Only: 80 TE Only: 71b, 134, 135</p> <p>Grade 1 SE/TE: 40-41, 96-97, 136-137</p> <p>Grade 2 SE/TE: 188-191 TE Only: 61d, 191a-191b</p>
Distinguish between opinions and evidence in one’s own explanations.	<p>Grade K SE Only: 80 TE Only: 71b, 134, 135</p> <p>Grade 1 SE/TE: 40-41, 96-97, 136-137</p> <p>Grade 2 SE/TE: 188-191 TE Only: 61d, 191a-191b</p>

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Listen actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.	<p>Grade K TE Only: 71b, 134, 135</p> <p>Grade 1 SE/TE: 40-41, 96-97, 136-137, 208</p> <p>Grade 2 SE/TE: 188-191 TE Only: 61d, 191a-191b</p>
Construct an argument with evidence to support a claim.	<p>Grade K SE Only: 80 TE Only: 71b, 134, 135</p> <p>Grade 1 SE/TE: 40-41, 96-97, 136-137, 208</p> <p>Grade 2 SE/TE: 188-191 TE Only: 61d, 191a-191b</p>
Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence.	<p>Grade K SE Only: 80 TE Only: 71b, 134, 135</p> <p>Grade 1 SE/TE: 28, 40-41, 136-137, 208 TE Only: 29</p> <p>Grade 2 SE/TE: 188-191 TE Only: 61d, 191a-191b</p>

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<p align="center">New York City Science Scope and Sequence for Grades K-5</p>	<p align="center">Interactive Science ©2016</p>
<p>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.</p>	
<p>Read Grade-appropriate texts and/or use media to obtain scientific and/ or technical information to determine patterns in and/or evidence about the natural and designed world(s).</p>	<p>Grade K SE Only: 75, 76, 77, 78, 79, 80 TE Only: 74, 77A-77B, 81, 92, 96, 109c, 112, 115A-115B, 148, 151A-151B, 188</p> <p>Grade 1 SE/TE: 3, 40-41, 42, 45, 96-97, 99, 101, 136-137, 138, 139 TE Only: 2G, 2H, 43a, 43b, 43c, 43d, 44G, 44H, 61, 99a, 99b, 99c, 100G, 100H, 139a, 139b, 174, 202, 223</p> <p>Grade 2 SE/TE: 50, 60, 61, 116, 117, 150, 158, 159, 174-177, 188, 236, 248 TE Only: 2C, 2G, 2H, 45, 46, 61a, 61b, 62C, 62G, 62H, 96, 97, 117b, 117c, 118C, 118G, 118H, 140, 143, 159a, 159c, 159d, 160C, 160G, 160H, 204d, 204G, 204H, 220, 227, 243</p>
<p>Describe how specific images (e.g., a diagram showing how a machine works) support a scientific or engineering idea.</p>	<p>Grade K SE Only: 57, 61 TE Only: 25, 61, 93, 99, 137, 167</p> <p>Grade 1 SE/TE: 66, 70, 74, 76, 164, 165, 202, 211, EM1</p> <p>Grade 2 SE/TE: 44, 45, 78-79, 81, 102-103, 112, 133 TE Only: 62D, 83, 87, 108, 109, 132B, 138B, 145, 159b, 159c, 160C</p>

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<p>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 and/ or supporting a scientific claim.</p>	<p>Grade K SE Only: 75, 76, 77, 78, 79, 80 TE Only: 81, 92, 93, 96, 109b, 109c, 112, 132, 148, 177A-77B, 115A-115B, 151A-151B</p> <p>Grade 1 SE/TE: 138, 139, 228 TE Only: 27, 61, 80, 99b, 139a, 139b, 161, 174, 209, 223</p> <p>Grade 2 SE/TE: 55, 90, 111, 153, 190-191 TE Only: 45, 46, 61a, 96, 97, 117b, 117c, 140, 159c, 159d, 220, 227, 243</p>
<p>Communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas.</p>	<p>Grade K SE Only: 2, 5, 7, 8, 9, 12, 13, 18, 19, 21, 22, 24, 25, 26, 28, 29, 31, 32, 36, 38, 39, 40, 46, 47, 49, 50, 52, 53, 56, 58, 62, 63, 65, 68, 69, 70, 72, 73, 74, 78, 81, 83, 84, 86, 88, 89, 90, 91, 92, 94, 95, 97, 99 TE Only: 4, 5, 10, 12-15, 33, 36, 37, 44-47, 74, 75, 82-85, 112, 113, 120-123, 148, 149, 156-159</p> <p>Grade 1 SE/TE: 8-9, 28, 42-43, 43, 46, 68, 78, 50-51, 82, 98-99, 102, 106-107, 118, 138-139, 142, 146-147, 158, 162, 168, 172, 188, 192-193, 200, 203, 208, 210, 222-227, 228 TE Only: 18, 23, 27, 31, 43a, 43b, 43c, 43d, 44C, 60, 61, 62, 66, 70, 74, 80, 84, 88, 99a, 99b, 99c, 116, 120, 121, 127, 130, 131, 139a, 139b, 154, 157, 161, 166, 171, 175, 186D, 202, 203, 206, 211, 216, 223, 226</p>

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<p align="center">New York City Science Scope and Sequence for Grades K-5</p>	<p align="center">Interactive Science ©2016</p>
<p>(Continued) Communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas.</p>	<p>(Continued) Grade 2 SE/TE: 4, 17, 20, 22, 24, 25, 27, 29, 30, 32, 34, 35, 40, 56, 57, 63, 79, 85, 87, 94, 97, 100, 103, 113, 135, 142, 144, 156, 175, 177, 183, 185, 187, 192-195, 205, 206, 218, 221, 224, 225, 227, 229, 233, 234, 241, 242-247 TE Only: 2C, 2D, 21, 30B, 35a, 40B, 47a, 59, 61a, 61b, 61c, 61d, 62C, 62D, 103a, 117a, 117b, 117c, 118C, 118D, 149a, 159a, 159c, 160C, 160D, 204C, 204D, 231, 236</p>

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Grade 3	
Unit 1 Matter	
Unit Overview:	
Students should describe, categorize, compare, and measure observable physical properties of matter and objects. Things can be done to materials to change their properties, but not all materials respond in the same way to what is done to them. Younger students emphasize physical properties while older students will recognize chemical changes. Appropriate tools are a necessary component to describe some physical properties of objects.	
Key Ideas:	
PS. Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PS: 3.1b-e)</i>	
<ul style="list-style-type: none"> ▪ Matter has properties (color, hardness, odor, sound, taste, etc.) that can be observed through the senses.(3.1b) 	SE/TE: 58-65, 67, 77, 294, 322
<ul style="list-style-type: none"> ▪ Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.(3.1c) 	SE/TE: 16, 17, 58, 60, 61, 62, 77 TE Only: 97, 99a
<ul style="list-style-type: none"> ▪ Measurements can be made with standard metric units and nonstandard units (Note: Exceptions to the metric system usage are found in meteorology.)(3.1d) 	SE/TE: 26, 94, 96, 140, 154, 216, 289, 308, 322, 340, 344, 362, EM1 TE Only: 83a, 258B, 265a, 266B, 269a, 398B, 313a, 363a
<ul style="list-style-type: none"> ▪ The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.(3.1e) 	SE/TE: 2, 20-21, 29, 30, 33, 77, 80, 81 TE Only: 99c

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Unit 2 Energy	
Unit Overview:	
Students should understand that energy exists in a variety of forms. Students should observe the results of simple energy transformations from one form to another in their physical environment. The safe use and respect of various energy forms must be stressed in the classroom. Describe a variety of forms of energy (e.g., heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy.	
Key Ideas:	
PS. Key Idea 4: Energy exists in many forms, and when these forms change energy is conserved.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PS: 4.1a-d, f, g, 4.2a, b)</i>	
<ul style="list-style-type: none"> ▪ Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.(4.1a) 	<p>SE/TE: 46, 47, 48, 49, 50, 51, 59, 66, 67, 69, 71, 76, 77, 85-88, 89, 90, 91, 98</p> <p>TE Only: 38G-38H, 46B, 51b, 69b, 83a, 83b</p>
<ul style="list-style-type: none"> ▪ Everyday events involve one form of energy being changed to another.(4.2a) <ul style="list-style-type: none"> — Animals convert food to heat and motion. — The Sun’s energy warms the air and water. 	<p>SE/TE: 42-45, 47, 48, 51, 53, 54, 55, 67, 68, 69, 98, 212</p> <p>TE Only: 38G-38H, 38, 52B</p>
<ul style="list-style-type: none"> ▪ Humans utilize interactions between matter and energy.(4.2b) <ul style="list-style-type: none"> — Chemical to electrical, light, and heat: battery and bulb. — Electrical to sound (e.g., doorbell buzzer). — Mechanical to sound (e.g., musical instruments, clapping) — Light to electrical (e.g., solar-powered calculator). 	<p>SE/TE: 42-45, 48, 49, 51, 53, 54, 55, 57, 58, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81</p> <p>TE Only: 38G-38H, 51b, 57b, 76b, 81a</p>
<ul style="list-style-type: none"> ▪ Energy can be transferred from one place to another.(4.1b) 	<p>SE/TE: 40, 42-45, 51, 55, 67, 68, 69, 72, 76, 77, 78, 79, 80, 81, 82, 98</p> <p>TE Only: 38G-38H, 38, 56, 57a, 69b, 81a</p>
<ul style="list-style-type: none"> ▪ Some materials transfer energy better than others (heat and electricity).(4.1c) 	<p>SE/TE: 48, 68, 69, 80, 81, 82</p> <p>TE Only: 63, 69b</p>

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<ul style="list-style-type: none"> ▪ Energy and matter interact: water is evaporated by the Sun’s heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; dark colors may absorb light, light colors may reflect light.(4.1d) 	<p>SE/TE: 47, 48, 49, 52, 54, 59, 60, 61, 62, 65, 69, 76, 77, 78, 81</p> <p>TE Only: 52B, 63, 65a, 65b, 76b</p>
<ul style="list-style-type: none"> ▪ Heat can be released in many ways, for example, by burning, rubbing (friction), or combining one substance with another.(4.1f) 	<p>SE/TE: 66, 67, 68, 69, 82</p> <p>TE Only: 69a</p>
<ul style="list-style-type: none"> ▪ Interactions with forms of energy can be either helpful or harmful.(4.1g) 	<p>SE/TE: 48, 49, 53, 54, 68, 69, 81, 82-83</p> <p>TE Only: 38G-38H, 38, 73</p>
Unit 3 Simple Machines	
Unit Overview:	
<p>Students will observe and describe the ease and difficulty of the movement of objects in their world. Exploring the observable effects of gravity helps students develop an understanding of the reason for the direction of an object’s motion. Manipulation and application of simple tools and machines may help students learn about the relationships between forces and motion. Describe the effects of common forces (pushes and pulls) of objects, such as those caused by gravity, and mechanical forces.</p>	
Key Ideas:	
<p>PS. Key Idea 5: Energy and matter interact through forces that result in changes in motion.</p>	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PS: 5.1b-d, f)</i>	
<ul style="list-style-type: none"> ▪ Mechanical energy may cause change in motion through the application of force and through the use of simple machines such as pulleys, levers, and inclined planes.(5.1f) 	<p>SE/TE: 4-7, 49, 51, 350-355</p> <p>TE Only: 24, 46B, 51b, 83</p>
<ul style="list-style-type: none"> ▪ The amount of change in the motion of an object is affected by friction.(5.1d) 	<p>SE/TE: 16, 17, 33, 34</p> <p>TE Only: 1G-1H, 31</p>
<ul style="list-style-type: none"> ▪ The position or direction of motion of an object can be changed by pushing or pulling.(5.1b) 	<p>SE/TE: 15, 16, 33, 99</p> <p>TE Only: 1G-1H, 21b, 99a</p>
<ul style="list-style-type: none"> ▪ The force of gravity pulls objects toward the center of Earth.(5.1c) 	<p>SE/TE: 22, 23, 24, 25, 29, 30, 33, 35, 50, 51, 122, 124</p> <p>TE Only: 1G-1H, 5, 22B, 25a, 25b, 28, 37, 100H, 122B, 246D</p>

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Unit 4 Plant and Animal Adaptations	
Unit Overview:	
Recognize that for humans and other living things there is genetic continuity between generations. Describe how the structures of plants and animals are appropriate for the environment of that plant or animal. Describe basic life functions of common living organisms (e.g., guppies, mealworms, gerbils). Describe some survival behaviors of common living organisms. Describe how plants and animals, including humans, depend upon each other and the nonliving environment. <i>[Refer to Appendix A for the Humane Treatment of Animals and for Conservation Day]</i>	
Key Ideas:	
LE. Key Idea 2: Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.	
LE. Key Idea 3: Individual organisms and species change over time.	
LE. Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.	
LE. Key Idea 6: Plants and animals depend on each other and their environment.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (LE: 2.1a, b, 3.1 a-c, 5.1a, b, 5.2a, b, d-f and 6.1f)</i>	
<ul style="list-style-type: none"> ▪ All living things grow, take in nutrients, breathe, reproduce, and eliminate waste. (5.1a) 	<p>SE/TE: 104, 117, 123, 124, 134, 135, 136, 137, 138, 139, 149, 153, 200</p> <p>TE Only: 100D, 100G-100H, 113, 122B, 127b, 139b, 141, 149a, 204</p>
<ul style="list-style-type: none"> ▪ An organism’s external physical features can enable it to carry out life functions in its particular environment. (5.1b) 	<p>SE/TE: 110, 116-117, 118, 119, 120, 121, 122, 123, 125, 130, 133, 136, 137, 140-141, 149</p> <p>TE Only: 128B, 142</p>
<ul style="list-style-type: none"> ▪ Each plant has different structures that serve different functions in growth, survival, and reproduction. (3.1b) <ul style="list-style-type: none"> – Roots help support the plant and take in water and nutrients. – Leaves help plants utilize sunlight to make food for the plant. – Stems, stalks, trunks, and other similar structures provide support for the plant. – Some plants have flowers. – Flowers are reproductive structures of plants that produce fruit which contains seeds. – Seeds contain stored food that aids in germination and the growth of young plants. 	<p>SE/TE: 110, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 141, 149, 240-243</p> <p>TE Only: 100G-100H, 127b, 128B, 133a, 133b, 245a</p>

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<ul style="list-style-type: none"> ▪ In order to survive in their environment, plants and animals must be adapted to that environment (3.1c). <ul style="list-style-type: none"> – Seeds disperse by a plant’s own mechanism and/or in a variety of ways that can include wind, water, and animals. – Leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell, and texture. 	<p>SE/TE: 129, 130, 132, 136, 137, 243</p> <p>TE Only: 100G-100H</p>
<ul style="list-style-type: none"> ▪ Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form and grow.(5.2a) 	<p>SE/TE: 110, 111, 116, 129</p> <p>TE Only: 121a</p>
<ul style="list-style-type: none"> ▪ When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.(6.1f) 	<p>SE/TE: 206, 209, 215, 216, 217, 218, 219, 222, 223, 236, 244</p> <p>TE Only: xlvi-xlvii, 196G-196H, 209a, 215b, 223a, 237b, 245e, 245h</p>

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<ul style="list-style-type: none"> ▪ Each animal has different structures that serve different functions in growth, survival, and reproduction.(3.1a) <ul style="list-style-type: none"> – wings, legs, or fins enable some animals to seek shelter and escape predators – the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink – eyes, nose, ears, tongue, and skin of some animals enable the animals to sense their surroundings – claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food – some animals have parts that are used to produce sounds and smells to help the animal meet its needs – the characteristics of some animals change as seasonal conditions change (e.g., fur grows and is shed to help regulate body heat; body fat is a form of stored energy and it changes as the seasons change) 	<p>SE/TE: 162, 163, 165, 170, 174, 221, 244</p> <p>TE Only: 216B, 245a, 245b</p>
<ul style="list-style-type: none"> ▪ Animals respond to change in their environment, (e.g., perspiration, heart rate, breathing rate, eye blinking, shivering, and salivating).(5.2b) 	<p>Interactive Science addresses this Major Understanding in Grade 4, Lesson 4.6 (How do animals respond to the environment?).</p>
<ul style="list-style-type: none"> ▪ Some animals, including humans, move from place to place to meet their needs.(5.2d) 	<p>SE/TE: 172, 219, 223, 237</p> <p>TE Only: 215b, 218, 237b</p>
<ul style="list-style-type: none"> ▪ Particular animal characteristics are influenced by changing environmental conditions including: fat storage in winter, coat thickness in winter, camouflage, shedding of fur.(5.2e) 	<p>SE/TE: 221, 244</p> <p>TE Only: 196C, 223b</p>
<ul style="list-style-type: none"> ▪ Some animal behaviors are influenced by environmental conditions. These behaviors may include: nest building, hibernating, hunting, migrating, and communicating.(5.2f) 	<p>SE/TE: 172, 174, 217, 218, 221, 237, 244</p> <p>TE Only: 196C, 223b</p>

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<ul style="list-style-type: none"> ▪ Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).(2.1a) 	<p>SE/TE: 129, 169, 170, 171, 172, 245</p> <p>TE Only: 175a, 175b, 245a, 245c</p>
<ul style="list-style-type: none"> ▪ Some characteristics result from an individual’s interactions with the environment and cannot be inherited by the next generation (e.g., having scars; riding a bicycle).(2.1b) 	<p>SE/TE: 168, 171, 172, 173, 175</p> <p>TE Only: 175b, 182, 245d</p>

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Grade 4	
Unit 1 Animals and Plants in their Environment	
Unit Overview:	
Plants, animals and their environment are interdependent. Plants and animals interact in a number of ways that affect their survival. The survival of plants and animals varies, in response to their particular environment. As the physical environment changes over time, plants and animals adaptation.[Refer to Appendix A for the Humane Treatment of Animals and for Conservation Day]	
Key Ideas:	
LE. Key Idea 3: Individual organisms and species change over time.	
LE. Key Idea 4: The continuity of life is sustained through reproduction and development.	
LE. Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.	
LE. Key Idea 6: Plants and animals depend on each other and their environment.	
LE. Key Idea 7: Identify ways in which humans have changed their environment and the effects of those changes.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (LE: 3.2a, b, 4.2b, 5.2c, g, 6.1a, f, 6.2a, b, 7.1a-c)</i>	
<ul style="list-style-type: none"> ▪ Green plants are producers because they provide the basic food supply for themselves and animals.(6.1a) 	<p>SE/TE: 138-139</p> <p>TE Only: 141b, 161a, 174C, 174G-174H</p>
<ul style="list-style-type: none"> ▪ All animals depend on plants. Some animals (predators) eat other animals (prey).(6.1b) 	<p>SE/TE: 160</p> <p>TE Only: 141b</p>
<ul style="list-style-type: none"> ▪ Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.(6.1c) 	<p>Interactive Science addresses this Major Understanding in Grade 3, Lesson 5.2 (How do living things get energy?), as well as in the Grade 4 TE as listed below.</p> <p>TE Only: 161, 161a, 174G-174H, 221</p>
<ul style="list-style-type: none"> ▪ Decomposers are living things that play a vital role in recycling nutrients.(6.1d) 	<p>Interactive Science addresses this Major Understanding in Grade 3, Lesson 5.2 (How do living things get energy?), as well as in the Grade 4 TE as listed below.</p> <p>TE Only: 174C, 174G-174H, 223b</p>
<ul style="list-style-type: none"> ▪ Plants manufacture food by utilizing air, water, and energy from the Sun.(6.2a) 	<p>SE/TE: 138-139, 140, 169, 170</p> <p>TE Only: 136B, 141b, 146, 174C</p>

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<ul style="list-style-type: none"> ▪ The Sun’s energy is transferred on Earth from plants to animals through the food chain.(6.2b) 	<p>Interactive Science addresses this Major Understanding in Grade 3, Lesson 5.2 (How do living things get energy?), as well as in the Grade 4 TE as listed below.</p> <p>TE Only: 161a, 174C, 174G-174H</p>
<ul style="list-style-type: none"> ▪ Food supplies the energy and materials necessary for growth and repair.(4.2b) 	<p>SE/TE: 138</p> <p>TE Only: 174G-174H</p>
<ul style="list-style-type: none"> ▪ An organism’s pattern of behavior is related to the nature of that organism’s environment, including the kinds and numbers of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.(6.1e) 	<p>SE/TE: 136, 142, 143, 144, 145, 146, 147, 148, 154, 155, 171</p> <p>TE Only: 136B, 141a, 148B, 153a, 154B</p>
<ul style="list-style-type: none"> ▪ Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.(3.2a) 	<p>SE/TE: 152, 189, 190, 215-218</p> <p>TE Only: 174D, 191, 193b</p>
<ul style="list-style-type: none"> ▪ All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing.(3.2b) 	<p>SE/TE: 143, 149, 153</p> <p>TE Only: 153b</p>
<ul style="list-style-type: none"> ▪ The health, growth, and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat, and sunlight.(5.2g) 	<p>SE/TE: 136, 137, 148</p> <p>TE Only: 136B, 141a, 174, 184, 185</p>
<ul style="list-style-type: none"> ▪ Senses can provide essential information (regarding danger, food, mates, etc.) to animals about their environment.(5.2c) 	<p>SE/TE: 154, 155</p> <p>TE Only: 159a, 229b</p>
<ul style="list-style-type: none"> ▪ When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.(6.1f) 	<p>SE/TE: 188, 189, 192, 193, 214, 229</p> <p>TE Only: 153a, 174, 184, 185, 186, 188B, 193a</p>
<ul style="list-style-type: none"> ▪ Humans depend on their natural and constructed environments.(7.1a) 	<p>SE/TE: 195, 196, 199</p>

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<ul style="list-style-type: none"> ▪ Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities.(7.1b) 	<p>SE/TE: 190, 192-193, 214, 229</p> <p>TE Only: 174, 175, 189</p>
<ul style="list-style-type: none"> ▪ Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.(7.1c) 	<p>SE/TE: 190, 192-193, 214, 229</p> <p>TE Only: 174, 175</p>
Unit 2 Electricity and Magnetism	
Unit Overview:	
Students will understand characteristics and properties of electricity and magnetism. They will also understand the relationship between electricity and magnetism. The focus will be on simple circuits, conductivity and magnetic force.	
Key Ideas:	
PE. Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.	
PE. Key Idea 4: Energy exists in many forms, and when these forms change energy is conserved.	
PE. Key Idea 5 (PE): Energy and matter interact through forces that result in changes in motion.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PE: 3.1c, e, f, 4.1a-e, g, 5.1e, 5.2a, b)</i>	
<ul style="list-style-type: none"> ▪ Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.(4.1a) 	<p>SE/TE: 2, 8, 9, 10, 14, 15, 32, 78-79, 93, 95, 110</p> <p>TE Only: 1G-1H</p>
<ul style="list-style-type: none"> ▪ Energy can be transferred from one place to another.(4.1b) 	<p>SE/TE: 28, 29, 30, 31, 59, 79, 81, 82, 88, 90, 91, 93, 94, 95, 103, 111</p> <p>TE Only: 35d, 78, 82, 92B, 95b, 97b, 111b, 111d, 111e</p>
<ul style="list-style-type: none"> ▪ Some materials transfer energy better than others (heat and electricity).(4.1c) 	<p>SE/TE: 34-35, 80, 82-85, 87, 88, 99-100, 106-109</p> <p>TE Only: 35b, 35c, 78D, 91b</p>

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<ul style="list-style-type: none"> ▪ Energy and matter interact: water is evaporated by the Sun’s heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; dark colors may absorb light, light colors may reflect light.(4.1d) 	<p>SE/TE: 18, 26-27, 36, 79, 81, 87, 91, 92, 93, 94, 96-97, 111</p> <p>TE Only: 78, 92B, 95a, 95b</p>
<ul style="list-style-type: none"> ▪ Electricity travels in a closed circuit.(4.1e) 	<p>SE/TE: 90, 91, 92, 96-97, 102, 104</p> <p>TE Only: 92B, 95a, 111d</p>
<ul style="list-style-type: none"> ▪ Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.(3.1c) 	<p>SE/TE: 51, 60, 61, 80, 88, 106-109, 233, 309</p> <p>TE Only: 111b, 111g</p>
<ul style="list-style-type: none"> ▪ The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.(3.1e) 	<p>SE/TE: 80, 82-85, 88, 352, 353</p> <p>TE Only: 78G-78H, 86B, 103a</p>
<ul style="list-style-type: none"> ▪ Objects and/or materials can be sorted or classified according to their properties.(3.1f) 	<p>SE/TE: 14, 33, 80, 88, 91</p> <p>TE Only: 20, 103b, 105b, 111b</p>
<ul style="list-style-type: none"> ▪ Magnetism is a force that may attract or repel certain materials.(5.1e) 	<p>SE/TE: 352, 353</p> <p>TE Only: 78G-78H</p>
<ul style="list-style-type: none"> ▪ The forces of gravity and magnetism can affect objects through gases, liquids, and solids.(5.2a) 	<p>SE/TE: 50, 55, 60, 71-72, 135, 140, 258</p> <p>TE Only: 46G-46H, 78G-78H</p>
<ul style="list-style-type: none"> ▪ The force of magnetism on objects decreases as distance increases.(5.2b) 	<p>Interactive Science addresses this Major Understanding in Grade 3, Lesson 1.2 (How does force affect motion?).</p>
<ul style="list-style-type: none"> ▪ Interactions with forms of energy can be either helpful or harmful.(4.1g) 	<p>SE/TE: 32, 78, 89, 95</p> <p>TE Only: 78C, 78D, 86B, 86, 91a, 92B</p>

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Unit 3 Properties of Water	
Unit Overview:	
Students observe and describe properties of materials, using appropriate tools. Students describe chemical and physical changes, including changes in states of matter with an emphasis on water.	
Key Ideas:	
PE. Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.	
PE. Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.	
PE. Key Idea 4: Energy exists in many forms, and when these forms change energy is conserved.	
LE. Key Idea 6: Plants and animals depend on each other and their physical environment.	
NYS SCIENCE STANDARDS	
MAJOR UNDERSTANDINGS:	
<i>Quoted from New York State Performance Indicators (PE: 2.1c, 3.1a-f, 3.2a-c, 4.1d, LE:6.2c)</i>	
<ul style="list-style-type: none"> ▪ Matter takes up space and has mass. Two objects cannot occupy the same place at the same time.(3.1a) 	Interactive Science addresses this Major Understanding in Grade 5, Lesson 1.1 (What makes up matter?).
<ul style="list-style-type: none"> ▪ Matter has properties (color, hardness, odor, sound, taste, etc.) that can be observed through the senses.(3.1b) 	SE/TE: 178-181, 272, 275 TE Only: 272B, 277a, 277b
<ul style="list-style-type: none"> ▪ Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.(3.1c) 	SE/TE: 178-181, 272 TE Only: 272B, 277a, 277b
<ul style="list-style-type: none"> ▪ Measurements can be made with standard metric units and nonstandard units.(Note: Exceptions to the metric system usage are found in meteorology.)(3.1d) 	SE/TE: 309, 311, EM1 TE Only: 296C
<ul style="list-style-type: none"> ▪ The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism).Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.(3.1e) 	SE/TE: 364-365 TE Only: 296C, 365d

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<ul style="list-style-type: none"> ▪ Water is recycled by natural processes on Earth.(2.1c) <ul style="list-style-type: none"> – evaporation: changing of water (liquid) into water vapor (gas) – condensation: changing of water vapor (gas) into water (liquid) – precipitation: rain, sleet, snow, hail – runoff: water flowing on Earth’s surface – groundwater: water that moves downward into the ground 	<p>SE/TE: 272, 273, 274, 275, 276, 277, 285, TE Only: 272B, 277a, 277b</p>
<ul style="list-style-type: none"> ▪ Matter exists in three states: solid, liquid, gas.(3.2a) <ul style="list-style-type: none"> – Solids have a definite shape and volume. – Liquids do not have a definite shape but have a definite volume. – Gases do not hold their shape or volume. 	<p>SE/TE: 273, 274-275, 277</p>
<ul style="list-style-type: none"> ▪ Temperature can affect the state of matter of a substance.(3.2b) 	<p>SE/TE: 272, 273, 275, 314 TE Only: 272B, 277c, 314B, 321a</p>
<ul style="list-style-type: none"> ▪ Changes in the properties or materials of objects can be observed and described.(3.2c) 	<p>SE/TE: 178-181, 272, 274-275, 276 TE Only: 272B, 277a, 277b</p>
<ul style="list-style-type: none"> ▪ Heat energy from the Sun powers the water cycle (See Physical Science Key Idea 2.) (LE: 6.2c) 	<p>SE/TE: 272, 273, 274, 277 TE Only: 272B, 277a, 277b, 287a</p>
<ul style="list-style-type: none"> ▪ Objects and/or materials can be sorted or classified according to their properties.(3.1f) ▪ 	<p>TE Only: 164, 296C</p>
<ul style="list-style-type: none"> ▪ Energy and matter interact: water is evaporated by the Sun’s heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; dark colors may absorb light, light colors may reflect light.(4.1d) 	<p>SE/TE: 272, 273, 274, 277, 353 TE Only: 272B, 287a</p>

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Unit 4 Interactions of Air, Water, and Land	
Unit Overview:	
The water cycle, weather, erosion, deposition, and extreme natural events involve interactions among air, water, and land.	
Key Ideas:	
PE. Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.	
NYS SCIENCE STANDARDS	
MAJOR UNDERSTANDINGS:	
<i>Quoted from New York State Performance Indicators (PE: 2.1c-e)</i>	
<ul style="list-style-type: none"> ▪ Erosion and deposition result from the interaction among air, water, and land.(2.1d) <ul style="list-style-type: none"> – Interaction between air and water breaks down Earth materials. – Pieces of Earth material may be moved by air, water, wind, and gravity. – Pieces of Earth material will settle or deposit on land or in the water in different places. – Soil is composed of broken-down pieces of living and nonliving Earth material. 	<p>SE/TE: 254, 255, 256, 257, 258, 259, 285, 286, 290-293</p> <p>TE Only: 254B, 259a, 259b, 287b, 295a</p>
<ul style="list-style-type: none"> ▪ Water is recycled by natural processes on Earth.(2.1c) <ul style="list-style-type: none"> – Evaporation: changing of water (liquid) into water vapor (gas) – Condensation: changing of water vapor (gas) into water (liquid). – precipitation: rain, sleet, snow, hail – runoff: water flowing on Earth’s surface – groundwater: water that moves downward into the ground 	<p>SE/TE: 272, 273, 274, 275, 276, 277, 285,</p> <p>TE Only: 272B, 277a, 277b</p>
<ul style="list-style-type: none"> ▪ Extreme natural events (floods, fires, earthquakes, volcanic eruptions, hurricanes, tornadoes, and other severe storms) may have positive or negative impacts on living things.(2.1e) 	<p>SE/TE: 260, 261, 262, 263, 264, 265, 285, 287, 295</p> <p>TE Only: 260B, 265a, 265b</p>

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Grade 5	
Unit 1 The Nature of Science	
Unit Overview:	
This unit provides students with an introduction to the scientific method including inquiry. The purpose of the unit is to practice the steps. Students learn best designing and conducting investigations as an ongoing process that will be practiced throughout the study of all other units.	
Key Ideas:	
S.I. Key Idea 1: The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.	
S.I. Key Idea 2: Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.	
S.I. Key Idea 3: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.	
NYS SCIENCE STANDARDS	
MAJOR UNDERSTANDINGS:	
<i>Quoted from New York State Performance Indicators (S 1.1 a-c; 1.2a; 1.32.1b-d; 2.2b-e 2.3 b, c; 3.1a, b; 3.2a-e)</i>	
<ul style="list-style-type: none"> ▪ Formulate questions about natural phenomena.(S1.1a) 	SE/TE: 94-97, 98, 190-193, 308-311, 312, 313, 316, 323 TE Only: 41a, 95, 133a, 179a, 191, 243a, 297a, 309
<ul style="list-style-type: none"> ▪ Identify appropriate references to investigate a question.(S1.1b) 	SE/TE: 4, 56, 104, 146, 200, 260, 318-319, 364-365, 382 TE Only: 99a-99e, 195a-195d, 313a-313d
<ul style="list-style-type: none"> ▪ Refine and clarify questions so that they are subject to scientific investigation.(S1.1c) 	SE/TE: 94-97, 98, 190-193, 308-311, 312, 313, 316, 323, 325 TE Only: 41a, 95, 133a, 179a, 191, 243a, 297a, 309
<ul style="list-style-type: none"> ▪ Independently formulate a hypothesis.(S1.2a) 	SE/TE: 194, 325, 333 TE Only: 41d, 83d, 133d, 179d, 243d, 297d, 349d, 389d
<ul style="list-style-type: none"> ▪ Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by other.(1.3) 	SE/TE: 16, 22, 28, 34, 74, 78, 102, 114, 126, 158, 198, 230, 264, 276, 284, 290, 328, 336, 344, 362, 368, 380 TE Only: 16B, 21a, 22B, 27a, 28B, 34B, 74B, 77a, 78B, 81a, 99c, 114B, 119a, 126B, 131a, 158B, 165a, 216B, 230B, 235a, 264B, 269a, 276B, 284B, 289a, 290B, 295a, 328B, 335a, 343a, 344B, 347a, 362B, 368B, 373c, 380B, 381a

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<ul style="list-style-type: none"> ▪ Conduct an experiment designed by others.(S2.1b) 	<p>SE/TE: 1, 2, 13, 20, 16, 22, 25, 28, 30, 34, 36, 38, 40-41, 53, 54, 64, 66, 69, 74, 76, 78, 80, 82-83, 101, 102, 111, 114, 118, 120, 122, 126, 128, 132-133, 143, 144, 156, 158, 162, 168, 174, 176, 178-179, 197, 198, 208, 213, 216, 221, 227, 224, 230, 234, 236, 240, 242-243, 257, 258, 264, 267, 272, 276, 282, 284, 287, 290, 292, 296-297, 315, 316, 325, 328, 330, 336, 342, 344, 346, 348-349, 361, 362, 368, 371, 378, 380, 383, 388-389</p>
<ul style="list-style-type: none"> ▪ Design and conduct an experiment to test a hypothesis.(S2.1c) 	<p>SE/TE: 194, 312, 325, 329, 332-333</p> <p>TE Only: 41d, 83d, 133d, 179d, 243d, 297d, 349d, 389d</p>
<ul style="list-style-type: none"> ▪ Use appropriate tools and conventional techniques to solve problems about the natural world, including: measuring, observing, describing, classifying and sequencing.(S2.1d) 	<p>SE/TE: 322-323, 328, 339, 370-371</p> <p>TE Only: 22B, 34B, 66B, 74B, 77a, 126B, 230B, 235a, 276B, 283a, 336B, 368B, 373a</p>
<ul style="list-style-type: none"> ▪ Design scientific investigations (e.g., observing, describing, and comparing; collecting samples, seeking more information, conducting a controlled experiment, discovering new objects or phenomena; making models).(S2.2b) 	<p>SE/TE: 98, 99, 312, 332-333</p> <p>TE Only: 41d, 83d, 133d, 179d, 243d, 297d, 349d, 389d</p>
<ul style="list-style-type: none"> ▪ Design a simple controlled experiment.(S2.2c) 	<p>SE/TE: 334-335</p> <p>TE Only: 41d, 83a, 83d, 133d, 179d, 243d, 297d, 349d, 389d</p>
<ul style="list-style-type: none"> ▪ Identify independent variables (manipulated), dependent variables (responding), and constant in a simple controlled experiment.(S2.2d) 	<p>SE/TE: 18, 22, 34, 66, 74, 94, 98, 126, 190, 230, 276, 308, 329, 332, 336, 351-354, 368</p> <p>TE Only: 95, 99d, 191, 309</p>
<ul style="list-style-type: none"> ▪ Choose appropriate sample size and number of trials.(S2.2e) 	<p>SE/TE: 331</p>

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<ul style="list-style-type: none"> ▪ Conduct a scientific investigation. (S2.3b) 	<p>SE/TE: 1, 40-41, 53, 66, 82-83, 98, 99, 101, 102, 132-133, 143, 178-179, 194, 197, 242-243, 257, 296-297, 315, 328, 348-349, 361, 388-389</p> <p>TE Only: 41a, 41b, 41c, 41d, 51a, 73a, 83a, 83b, 83c, 83d, 93a, 99d, 133a, 133b, 133c, 133d, 141a, 179a, 179b, 179c, 179d, 189a, 241a, 243a, 243b, 243c, 243d, 255a, 297a, 297b, 297c, 297d, 307a, 349d, 389d</p>
<ul style="list-style-type: none"> ▪ Collect quantitative and qualitative data. (S2.3c) 	<p>SE/TE: 2, 40, 83, 102, 114, 120, 126, 133, 174, 178, 198, 216, 297, 328, 336, 337, 344, 349, 362, 389</p>
<ul style="list-style-type: none"> ▪ Organize results, using appropriate graphs, diagrams, data tables, and other models to show relationships. (3.1a) 	<p>SE/TE: 2, 102, 120, 198, 216, 224, 236, 258, 284, 328, 336, 344, 362, 380</p> <p>TE Only: 120B, 125a, 216B, 223a, 224B, 229a, 236B, 241a, 284B, 289a, 328B, 335a, 336B, 343a, 344B, 347a, 362B, 380B, 387a</p>
<ul style="list-style-type: none"> ▪ Generate and use scales, create legends, and appropriately label axes. (3.1b) 	<p>SE/TE: 7, 104-107, 282</p> <p>TE Only: 99b, 99c, 153, 313b</p>
<ul style="list-style-type: none"> ▪ Accurately describe the procedures used and the data gathered. (S3.2a) 	<p>SE/TE: 66, 192, 329, 334, 338, 351-354</p> <p>TE Only: 41a, 41d, 73a, 83a, 83d, 133a, 133d, 179a, 179d, 243a, 243d, 297a, 297d, 349a, 349d, 389a, 389d</p>
<ul style="list-style-type: none"> ▪ Identify sources of error and the limitations of data collected. (S3.2b) 	<p>SE/TE: 334-335, 338</p> <p>TE Only: 388</p>

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Unit 2 Changes in the Surface of the Planet	
Unit Overview:	
The purpose of this unit is to study the components of the lithosphere and the processes by which it will change over time. Through scientific inquiry, students may analyze data, explain using models and draw conclusions about events that change the surface of the Earth, and its consequences.	
Key Ideas:	
PS. Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Performance Indicators (PS. 2.1e, g-i; 2.2a, c, f-h)</i>	
<ul style="list-style-type: none"> ▪ Rocks are composed of minerals. Only a few rock-forming minerals make up most of the rock on Earth. Minerals are identified on the basis of physical properties such as streak, hardness, and reaction to acid.(2.1e) 	Interactive Science addresses this Major Understanding in Grade 4, Lesson 6.1 (How are minerals classified?).
<ul style="list-style-type: none"> ▪ Rocks are classified according to their method of formation. The three classes of rocks are sedimentary, metamorphic, and igneous. Most rocks show characteristics that give clues to their formation conditions.(2.2g) 	Interactive Science addresses this Major Understanding in Grade 4, Lesson 6.2 (How are rocks classified?).
<ul style="list-style-type: none"> ▪ The rock cycle model shows how types of rock or rock material may be transformed from one type of rock to another.(2.2h) 	Interactive Science addresses this Major Understanding in Grade 4, Lesson 6.2 (How are rocks classified?).
<ul style="list-style-type: none"> ▪ The dynamic processes that wear away Earth’s surface include weathering and erosion.(2.1g) 	SE/TE: 236, 237, 238, 239, 240, 241 TE Only: 236B, 241a, 241b
<ul style="list-style-type: none"> ▪ The process of weathering breaks down rocks to form sediment. Soil consists of sediment, organic material, water, and air.(2.1h) 	SE/TE: 237, 238, 239, 240, 241 TE Only: 241a
<ul style="list-style-type: none"> ▪ Erosion is the transport of sediment. Gravity is the driving force behind erosion. Gravity can act directly or through agents such as moving water, wind, and glaciers.(2.1i) 	SE/TE: 236, 237, 238, 239, 240, 241 TE Only: 236B, 241a, 241b

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<ul style="list-style-type: none"> ▪ The interior of Earth is hot. Heat flow and movement of material within Earth cause sections of Earth’s crust to move. This may result in earthquakes, volcanic eruption, and the creation of mountains and ocean basins.(2.2a) 	Interactive Science addresses this Major Understanding in Grade 4, Lesson 6.4 (How can Earth’s surface change rapidly?)
<ul style="list-style-type: none"> ▪ Folded, tilted, faulted, and displaced rock layers suggest past crustal movement.(2.2c) 	Interactive Science addresses this Major Understanding in Grade 4, Lesson 6.4 (How can Earth’s surface change rapidly?)
<ul style="list-style-type: none"> ▪ Plates may collide, move apart, or slide past one another. Most volcanic activity and mountain building occur at the boundaries of these plates, often resulting in earthquakes.(2.2f) 	Interactive Science addresses this Major Understanding in Grade 4, Lesson 6.4 (How can Earth’s surface change rapidly?)
Unit 3 Food and Nutrition	
Unit Overview:	
The purpose of this unit is for students to learn how food, which is the main source of nutrients and energy, affects their growth and development. This unit follows up in the study of healthy foods and nutrition as per the expectations in the <i>Elementary Level Core Curriculum for Science</i> .	
Key Ideas:	
LE. Key Idea 4: The continuity of life is sustained through reproduction and development.	
LE. Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<i>Quoted from New York State Elementary Core Curriculum Performance Indicators (LE. 4.2a, b) (Elementary LE. 5.2e, g; 5.3a, b)</i>	
<ul style="list-style-type: none"> ▪ Human need a variety of healthy foods, exercise, and rest in order to grow and maintain good health.(5.3a) 	SE/TE: 363 TE Only: 323
<ul style="list-style-type: none"> ▪ Good health habits include hand washing and personal cleanliness; avoiding harmful substances (including alcohol, tobacco, illicit drugs); eating a balanced diet; engaging in regular exercise.(5.3b) 	TE Only: 323, 331
<ul style="list-style-type: none"> ▪ The health, growth, and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat, and sunlight.(5.2g) 	SE/TE: 102, 130, 132-133, 151, 331 TE Only: 100G-100H, 150, 195a

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<ul style="list-style-type: none"> ▪ Particular animal characteristics are influenced by changing environmental conditions including: fat storage in winter, coat thickness in winter, camouflage, shedding of fur.(5.2e) 	<p>SE/TE: 123, 125, 172, 173</p>
<ul style="list-style-type: none"> ▪ Growth is the process by which plants and animals increase in size.(4.2a) 	<p>SE/TE: 126, 127, 128, 129, 130, 131, 132-133, 158</p> <p>TE Only: 126B, 131a, 133b</p>
<ul style="list-style-type: none"> ▪ Food supplies the energy and materials necessary for growth and repair.(4.2b) 	<p>SE/TE: 130, 151, 156</p> <p>TE Only: 195a</p>
Unit 4 Exploring Ecosystems	
Unit Overview:	
<p>The purpose of this unit is for students to identify components of ecosystems, classify organisms by how they obtain energy, and how living and nonliving things depend upon each other for survival and life processes. Through explorations, students will analyze data, explain using models, and draw conclusions about ecosystems and how human decisions impact life within the ecosystems.<i>[Refer to Appendix A for the Humane Treatment of Animals and Conservation Day]</i></p>	
Key Ideas:	
LE. Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.	
LE. Key Idea 6: Plants and animals depend on each other and their physical environment.	
LE. Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.	
NYS SCIENCE STANDARDS	
Major Understandings:	
<p><i>Quoted from New York State Performance Indicators (3.2a, 5.1c-e; 5.2a, 6.1a,b, 6.2a, 7.1a 7.2b-d)</i></p>	
<ul style="list-style-type: none"> ▪ A population consists of all individuals of a species that are found together at a given place and time. Populations in one place form a community. The community and the physical factors with which it interacts compose an ecosystem.(7.1a) 	<p>SE/TE: 164, 167</p> <p>TE Only: 142C</p>
<ul style="list-style-type: none"> ▪ All organisms require energy to survive. The amount of energy needed and the method for obtaining this energy vary among cells. Some cells use oxygen to release the energy stored in food.(5.1c) 	<p>SE/TE: 151, 156, 157, 158, 160, 186</p> <p>TE Only: 155</p>

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<ul style="list-style-type: none"> ▪ The methods for obtaining nutrients vary among organisms. Producers, such as green plants, use light energy to make their food. Consumers, such as animals, take in energy-rich foods.(5.1d) 	<p>SE/TE: 159, 160, 181-184</p> <p>TE Only: 143, 158B, 165b</p>
<ul style="list-style-type: none"> ▪ Photosynthesis is carried on by green plants and other organisms containing chlorophyll. In this process, the Sun’s energy is converted into and stored as chemical energy in the form of sugar. The quantity of sugar molecules increases in green plants during photosynthesis in the presence of sunlight.(6.2a) 	<p>SE/TE: 37, 112, 151, 154, 155, 157, 181-184, 185</p> <p>TE Only: 142, 157b, 195c</p>
<ul style="list-style-type: none"> ▪ Herbivores obtain energy from plants. Carnivores obtain energy from animals. Omnivores obtain energy from both plants and animals. Decomposers, such as bacteria and fungi, obtain energy by consuming wastes and/or dead organisms.(5.1e) 	<p>SE/TE: 159, 160, 161, 162-163, 181-184, 195</p> <p>TE Only: 143, 158B, 187b, 195a</p>
<ul style="list-style-type: none"> ▪ Food provides molecules that serve as fuel and building material for all three organisms. All living things, including plants, must release energy from their food, using it to carry on their life processes.(5.2a) 	<p>SE/TE: 151, 152, 158, 162-163</p> <p>TE Only: 100, 165a, 165b</p>
<ul style="list-style-type: none"> ▪ Energy flows through ecosystems in one direction, usually from the Sun, through producers to consumers and then to decomposers. This process may be visualized with food chains or energy pyramids.(6.1a) 	<p>SE/TE: 151, 159, 162, 181-184</p> <p>TE Only: 142, 143, 158B, 165b, 187b, 195a</p>
<ul style="list-style-type: none"> ▪ Food webs identify feeding relationships among producers, consumers, and decomposers in an ecosystem.(6.1b) 	<p>SE/TE: 159, 163, 181-184, 195</p> <p>TE Only: 143, 195a</p>
<ul style="list-style-type: none"> ▪ In all environments, organisms with similar needs may compete with one another for resources.(3.2a) 	<p>SE/TE: 164, 167, 170, 181-184</p> <p>TE Only: 166B, 173b</p>

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<ul style="list-style-type: none"> ▪ The environment may be altered through the activities of organisms. Alterations are sometimes abrupt. Some species may replace others over time, resulting in long-term gradual changes (ecological succession). (7.2b) 	<p>SE/TE: 167, 169, 175-177, 195</p> <p>TE Only: 142G-142H, 166B, 171, 173b, 176, 177b, 187b</p>

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Grades 3-5 Cross-Cutting Concepts	
Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.	
<ul style="list-style-type: none"> ▪ Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. 	<p>Grade 3 SE/TE: 10, 64-65, 94-97, 102, 154, 184-185, 264, 276-277, 289 TE Only: 152, 265a</p> <p>Grade 4 SE/TE: 18, 19, 80, 136, 252-253, 258, 260, 261, 272-277, 281-284 TE Only: 111e, 111f, 227, 229c, 260B, 265a, 272B, 295b, 295d</p> <p>Grade 5 SE/TE: 116, 122, 126-127, 198, 205-209, 313, 348-349 TE Only: 256, 257, 313a, 313d, 348</p>
<ul style="list-style-type: none"> ▪ Patterns of change can be used to make predictions. 	<p>Grade 3 SE/TE: 12, 102, 248 TE Only: 99b, 246, 289a, 289b</p> <p>Grade 4 SE/TE: 62, 64, 108, 136 TE Only: 62B</p> <p>Grade 5 SE/TE: 198, 313 TE Only: 133c, 243c</p>
<ul style="list-style-type: none"> ▪ Patterns can be used as evidence to support an explanation. 	<p>Grade 3 SE/TE: 75, 289 TE Only: 99b, 247</p> <p>Grade 4 SE/TE: 106-109 TE Only: 111e, 174, 229c, 295d</p> <p>Grade 5 SE/TE: 64, 156, 313, 348-349 TE Only: 257, 313d</p>

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<p>Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.</p>	
<ul style="list-style-type: none"> ▪ Cause and effect relationships are routinely identified, tested, and used to explain change. 	<p>Grade 3 SE/TE: 2, 26-27, 41, 47, 71, 90, 94-97, 116, 216, 248 TE Only: 75a, 99c</p> <p>Grade 4 SE/TE: 87, 88, 91, 256, 276 TE Only: 1, 78, 93, 111e, 174, 230, 295a</p> <p>Grade 5 SE/TE: 102, 167, 190-193, 236, 238, 312 TE Only: 52, 142G-142H, 313d</p>
<ul style="list-style-type: none"> ▪ Events that occur together with regularity might or might not be a cause and effect relationship. 	<p>Grade 3 TE Only: 11, 38</p> <p>Grade 4 SE/TE: 260-261, 263, 264 TE Only: 230D</p> <p>Grade 5 SE/TE: 237, 404</p>
<p>Scale, Proportion, and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.</p>	
<ul style="list-style-type: none"> ▪ Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. 	<p>Grade 3 SE/TE: 104-107, 222-223, 265, 302-303, 306, 326-327 TE Only: 207</p> <p>Grade 4 SE/TE: 230, 256, 257, 258, 259, 260, 261, 262, 263, 264, 277 TE Only: 229c, 260B, 279</p> <p>Grade 5 SE/TE: 11, 9, 12-13, 43-46, 80, 103, 109, 117, 118, 119, 125, 167, 238, 280, 293 TE Only: 142G-142H, 173a</p>

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<ul style="list-style-type: none"> ▪ Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. 	<p>Grade 3 SE/TE: 104, 106, 267, 268, 322, EM1 TE Only: 99a, 245c, 325</p> <p>Grade 4 SE/TE: 28, 30, 278-279, 311, EM1 TE Only: 28B, 279a, 279b, 295a</p> <p>Grade 5 SE/TE: 2, 19, 24, 43-46, 64, 178, 194, 217, 230, 280, 336, 339, 397, EM1 TE Only: 1I, 179a</p>
<p>Systems and System Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.</p>	
<ul style="list-style-type: none"> ▪ A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. 	<p>Grade 3 SE/TE: 84, 230, 354, 355, 364 TE Only: 1G-1H, 229a</p> <p>Grade 4 SE/TE: 59, 178-181, 183, 219, 220, 221, 228 TE Only: xlvi-xlvii, 112, 174G-174h, 182B</p> <p>Grade 5 SE/TE: 111, 144, 211, 265 TE Only: 142, 196</p>
<ul style="list-style-type: none"> ▪ A system can be described in terms of its components and their interactions. 	<p>Grade 3 SE/TE: 4, 197, 204-209, 214, 215, 228-229, 230, 235, 236 TE Only: 1G-1H, 196G-196H, 196, 209b, 229a, 229c, 229d</p> <p>Grade 4 SE/TE: 178-181, 183, 219, 220, 221, 228 TE Only: xlvi-xlvii, 112, 174G-174H, 182B</p> <p>Grade 5 SE/TE: 111, 144, 159-167, 185, 187, 265, 276-283, 284-289 TE Only: 142, 158B, 196, 313a</p>

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Energy and Matter: Flows, Cycles, and Conservation: Tracking energy and matter flows into, out of, and within systems helps one understand their system’s behavior.	
<ul style="list-style-type: none"> ▪ Matter is made of particles. 	<p>Grade 3 SE/TE: 67, 72, 77</p> <p>Grade 4 SE/TE: 82, 87 TE Only: 78C, 78G, 78H</p> <p>Grade 5 SE/TE: 8, 9, 12-13, 15 TE Only: 1C, 1D, 1G-1H, 8B, 15b, 99a</p>
<ul style="list-style-type: none"> ▪ Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. 	<p>Grade 3 SE/TE: 24, 211, 212-213, 214-215, 231, 233 TE Only: 25b, 50</p> <p>Grade 4 SE/TE: 4-7, 10, 93, 105</p> <p>Grade 5 SE/TE: 2, 9 TE Only: 1C, 99b</p>
<ul style="list-style-type: none"> ▪ Energy can be transferred in various ways and between objects. 	<p>Grade 3 SE/TE: 40, 42-45, 51, 55, 67, 68, 69, 72, 76, 77, 78, 79, 80, 81, 82, 98 TE Only: 38G-38H, 38, 56, 57a, 69b, 81a</p> <p>Grade 4 SE/TE: 28, 29, 30, 31, 59, 79, 81, 82, 88, 90, 91, 93, 94, 95, 103, 111, 154 TE Only: 78, 82, 92B, 95b, 97b, 111b, 111d, 111e</p> <p>Grade 5 SE/TE: 10, 11, 26, 151, 162 TE Only: 142, 143, 150B, 158B, 163</p>

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Structure and Function: The way an object is shaped or structured determines many of its properties and functions.	
<ul style="list-style-type: none"> ▪ Different materials have different substructures, which can sometimes be observed. 	<p>Grade 3 SE/TE: 125, 126, 128, 130, 240-241 TE Only: 151b, 327a</p> <p>Grade 4 SE/TE: 136, 138, 139, 140, 141</p> <p>Grade 5 SE/TE: 109, 110, 112, 113, 151-153, 154-157</p>
<ul style="list-style-type: none"> ▪ Substructures have shapes and parts that serve functions. 	<p>Grade 3 SE/TE: 4, 118-119, 125, 126, 128, 130, 136, 140-141, 164, 240-241 TE Only: 117, 124, 149a, 151b</p> <p>Grade 4 SE/TE: 136, 138, 139, 140, 141, 170, 177, 187 TE Only: xlvi-xlvii, 113, 137, 171a, 229a</p> <p>Grade 5 SE/TE: 110, 111, 112, 152-153, 172</p>
Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.	
<ul style="list-style-type: none"> ▪ Change is measured in terms of differences over time and may occur at different rates. 	<p>Grade 3 SE/TE: 2, 10, 209, 215, 216, 217, 218, 220, 221, 222, 260, 264, 265 TE Only: 196G-196H, 204, 209a, 223b, 246D, 246G-246H</p> <p>Grade 4 SE/TE: 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 280, 287, 295 TE Only: 230G-230H, 260B, 265a, 265b, 279, 295d, 229c</p> <p>Grade 5 SE/TE: 118, 119, 166, 167-173, 186, 189, 237-241 TE Only: 100C, 142G-142H, 173a</p>

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<ul style="list-style-type: none"> ▪ Some systems appear stable, but over long periods of time will eventually change. 	<p>Grade 3 SE/TE: 209, 215, 216, 217, 218, 220, 226, 237, 260 TE Only: 196G-196H, 224b, 246D</p> <p>Grade 4 SE/TE: 261 TE Only: 229c, 230G-230H</p> <p>Grade 5 SE/TE: 118, 119, 168, 240, 241</p>

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Grades 3-5 Engineering Design	
Asking Questions and Defining Problems: Asking questions and defining problems in 3–5 builds on K–2 experiences and progresses to specifying qualitative relationships.	
Ask questions about what would happen if a variable is changed.	<p>Grade 3 SE/TE: 102, 240-241, 305 TE Only: 97</p> <p>Grade 4 SE/TE: 224-227 TE Only: 97c, 295a</p> <p>Grade 5 SE/TE: 230 TE Only: 230B, 315</p>
Identify scientific (testable) and non-scientific (non-testable) questions.	<p>Grade 3 SE/TE: 286-287, 298-300 TE Only: 27a, 27d, 83a, 229a, 277a, 290G-290H, 327a, 363a</p> <p>Grade 4 SE/TE: 106, 305, 339 TE Only: 69a, 97a, 107, 111c, 161a, 213a, 279a, 291, 293, 331a, 365a</p> <p>Grade 5 SE/TE: 94-97, 98, 190-193, 308-311, 312, 316, 323 TE Only: 41a, 95, 133a, 179a, 191, 243a, 297a, 309</p>
Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.	<p>Grade 3 SE/TE: 94-97, 102, 240, 286-287, 298-300, 310 TE Only: 39, 99c</p> <p>Grade 4 SE/TE: 305, 307, 315, 316, 338 TE Only: 47, 111c</p> <p>Grade 5 SE/TE: 94-97, 98, 190-193, 308-311, 312, 313, 316, 323 TE Only: 41a, 95, 133a, 179a, 191, 243a, 297a, 309</p>

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Use prior knowledge to describe problems that can be solved.	<p>Grade 3 SE/TE: 4, 42, 104, 156, 200, 250, 294, 342, 358</p> <p>Grade 4 SE/TE: 14, 50, 82, 116, 178, 234, 300, 346, 357</p> <p>Grade 5 SE/TE: 4, 56, 104, 146, 200, 260, 318, 364, 383</p>
Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.	<p>Grade 3 SE/TE: 4-7, 40, 42-45, 104-107, 156-159, 200-203, 250-252, 292, 294-297, 340, 342-344, 346-349, 350, 356-361, 362-363, 374-379</p> <p>Grade 4 SE/TE: 4-7, 50-53, 80, 82-85, 92-93, 96-97, 116-119, 142-145, 178-181, 234-237, 278-279, 300-303, 330-331, 344, 346-348, 350-355, 356-363, 364, 374-379</p> <p>Grade 5 SE/TE: 4-7, 54, 56-59, 98-100, 104-107, 146-149, 200-203, 260-263, 318-321, 362, 364-367, 368, 368-373, 374-379, 380, 380-387, 388-389, 398-403, 404</p>
Developing and Using Models: Modeling in 3–5 builds on the K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.	
Identify limitations of models.	<p>Grade 3 SE/TE: 40, 160, 216, 224, 270, 308, 312, 362-363, 380 TE Only: 245a, 308B</p> <p>Grade 4 SE/TE: 142, 146, 244, 250, 265, 272, 320, 356 TE Only: 203, 111e, 111g, 147a, 253a, 296G-296H</p> <p>Grade 5 SE/TE: 54, 120, 195, 198, 236, 258, 284, 290, 296, 297, 313, 330, 380, 388, 404 TE Only: 99a, 195a, 195c, 196, 279, 284, 313a</p>

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Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events.	<p>Grade 3 SE/TE: 362-363</p> <p>Grade 4 SE/TE: 176, 188, 272, 278-279 TE Only: 111e, 111g, 229b, 272B, 279b</p> <p>Grade 5 TE Only: 195c</p>
Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.	<p>Grade 3 SE/TE: 40, 160, 224, 312, 380 TE Only: 245a</p> <p>Grade 4 SE/TE: 50-53, 142, 178, 228, 244, 250, 265, 266, 356 TE Only: 111e, 142B, 147a, 253a, 266b, 271a</p> <p>Grade 5 SE/TE: 179, 195, 236, 258, 290, 296-297, 313 TE Only: 15, 99a, 143, 195a, 273, 290B, 295a, 297b, 313a</p>
Develop and/or use models to describe and/ or predict phenomena. Develop a diagram or simple physical prototype to convey a proposed object, tool, or process.	<p>Grade 3 SE/TE: 216, 270, 312 TE Only: 196, 245a</p> <p>Grade 4 SE/TE: 50-53, 111, 134, 146, 188, 228, 264, 265, 272, 294, 364-365 TE Only: 87, 111g, 113, 193a, 264, 277a, 295c, 295d</p> <p>Grade 5 SE/TE: 120, 195, 224, 282, 313 TE Only: 54, 125a, 143, 195a, 195c, 197, 236B</p>

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Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system.	<p>Grade 3 SE/TE: 160, 270, 312, 362-363</p> <p>Grade 4 SE/TE: 136, 188, 212-213, 224-227, 272, 278-279 TE Only: 111g, 113, 188B, 203, 213b, 213c, 231a, 229b, 229d, 231a, 277a</p> <p>Grade 5 SE/TE: 4-7, 264, 290, 308-311 TE Only: 195a, 264B</p>
Planning and Carrying Out an Investigation: 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.	<p>Grade 3 SE/TE: 4-7, 40, 42-45, 104-107, 156-159, 200-203, 250-252, 292, 294-297, 340, 342-344, 350, 356-361, 362-363, 374-379</p> <p>Grade 4 SE/TE: 4-7, 50-53, 80, 82-85, 92-93, 96-97, 116-119, 142-145, 178-181, 234-237, 278-279, 300-303, 330-331, 344, 346-348, 350-355, 356-363, 364, 374-379</p> <p>Grade 5 SE/TE: 4-7, 54, 56-59, 104-107, 146-149, 200-203, 260-263, 318-321, 362, 364-367, 368, 374-379, 380-387, 388-389, 398-403, 404</p>

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Evaluate appropriate methods and/or tools for collecting data.	<p>Grade 3 SE/TE: 266, 267, 268, 269, 311, 320, 321, 326 TE Only: 266B, 320B, 325a</p> <p>Grade 4 SE/TE: 308, 309, 310, 311, 314, 319 TE Only: 227, 313a, 321a</p> <p>Grade 5 SE/TE: 2, 40, 83, 114, 120, 126, 133, 174, 178, 198, 216, 297, 328, 336, 344, 349, 362, 389 TE Only: 41a, 41b, 83a, 83b, 133a, 133b, 179a, 179b, 243a, 243b, 297a, 297b, 349a, 349b, 389a, 389b</p>
Make observations and/ or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.	<p>Grade 3 SE/TE: 26-27, 42-45, 94-97, 98, 102, 106, 140-141, 216, 228-229, 245, 286-287, 362-363 TE Only: 83a, 99a, 99d, 141a, 266B</p> <p>Grade 4 SE/TE: 28, 68-69, 80, 136, 160-161, 194, 292, 319 TE Only: 28B, 111a, 111c, 231, 295a</p> <p>Grade 5 SE/TE: 16, 22, 28, 34, 74, 78, 102, 114, 126, 158, 198, 230, 264, 276, 284, 290, 328, 336, 344, 362, 368, 380 TE Only: 16B, 21a, 22B, 27a, 28B, 34B, 74B, 77a, 78B, 81a, 99c, 114B, 119a, 126B, 131a, 158B, 165a, 216B, 230B, 235a, 264B, 269a, 276B, 284B, 289a, 290B, 295a, 328B, 335a, 343a, 344B, 347a, 362B, 368B, 373c, 380B, 381a</p>

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Make predictions about what would happen if a variable changes.	<p>Grade 3 SE/TE: 27, 102 TE Only: 97</p> <p>Grade 4 SE/TE: 68-69 TE Only: 69b, 109</p> <p>Grade 5 SE/TE: 230 TE Only: 315, 230B</p>
Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success.	<p>Grade 3 SE/TE: 4-7, 340, 356, 362-363 TE Only: 356B</p> <p>Grade 4 SE/TE: 364-365 TE Only: 111d</p> <p>Grade 5 SE/TE: 5, 120, 236, 276, 364-367 TE Only: 125a, 241a, 361</p>
Analyzing and Interpreting Data: Analyzing data on 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/or various graphical displays (bar graphs, pictographs and/ or pie charts) to reveal patterns that indicate relationships.	<p>Grade 3 SE/TE: 96, 97, 102, 276-277, 228-229, 289, 314 TE Only: 99b, 99c, 141a, 245b, 245c, 245d, 245g, 277a, 289a, 319a, 327a</p> <p>Grade 4 SE/TE: 68-69, 84, 85, 106-109, 224-227, 278, 290-293, 325, 380 TE Only: 69a, 97a, 111a, 279a, 196, 213a</p> <p>Grade 5 SE/TE: 2, 102, 120, 133a, 179a, 178-179, 198, 216, 224, 236, 258, 284, 286, 305, 313a, 313b, 313d, 328, 336, 344, 350, 362, 380, 404 TE Only: 1, 83a, 99b, 120B, 125a, 216B, 223a, 224B, 229a, 236B, 241a, 284B, 289a, 328B, 335a, 336B, 343a, 344B, 347a, 362B, 380B, 387a</p>

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Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation.	<p>Grade 3 SE/TE: 97, 98, 276-277, 289, 342-345 TE Only: 99b, 245c, 245e</p> <p>Grade 4 SE/TE: 68-69, 85, 108, 224-227, 278-279, 317, 329 TE Only: 111a, 295b</p> <p>Grade 5 SE/TE: 2, 178-179, 342, 348-349, 404 TE Only: 1, 99b, 350</p>
Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings. Analyze data to refine a problem statement or the design of a proposed object, tool, or process.	<p>Grade 3 SE/TE: 7, 97, 167, 184-185, 286-287, 294-297, 320, 362-363 TE Only: 73, 83a, 141a, 153, 248, 286, 327a, 363a</p> <p>Grade 4 SE/TE: 148, 226, 290-293, 322, 327 TE Only: 111f, 153a, 176, 213a, 279a, 293, 329a</p> <p>Grade 5 SE/TE: 96-97, 102, 193, 310, 320, 362 TE Only: 133a, 179a, 243a, 349a</p>
Use data to evaluate and refine design solutions.	<p>Grade 3 SE/TE: 7, 45, 107, 159, 203, 252-253, 297, 345, 361</p> <p>Grade 4 SE/TE: 7, 53, 85, 119, 181, 237, 303, 349, 357, 363</p> <p>Grade 5 SE/TE: 7, 59, 106-107, 149, 203, 263, 321, 367, 385</p>

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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.	
Decide if qualitative or quantitative data are best to determine whether a proposed object or tool meets criteria for success.	<p>Grade 4 SE/TE: 94 TE Only: 111a</p> <p>Grade 5 SE/TE: 388-389 TE Only: 1I, 361</p>
Organize simple data sets to reveal patterns that suggest relationships.	<p>Grade 3 SE/TE: 106, 276-277, 289 TE Only: 247, 289a</p> <p>Grade 4 SE/TE: 28, 68-69, 106-109, 278-279, 290-293 TE Only: 28B, 111e</p> <p>Grade 5 SE/TE: 132-133 TE Only: 83a, 99b, 133a, 297c, 305, 313a</p>
Describe, measure, estimate, and/or graph quantities (e.g., area, volume, weight, time) to address scientific and engineering questions and problems.	<p>Grade 3 SE/TE: 4-7, 26-27, 106, 200-203, 250-253, 258 TE Only: 56, 99a, 99d</p> <p>Grade 4 SE/TE: 34-35, 68-69, 85, 176, 278-279, 290-293 TE Only: 196, 295a</p> <p>Grade 5 SE/TE: 19, 24, 43-46, 69, 209, 284, 339, 342, 348-349 TE Only: 2, 21b, 99a, 99b, 284B, 289a</p>

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Create and/or use graphs and/or charts generated from simple algorithms to compare alternative solutions to an engineering problem	<p>Grade 4 SE/TE: 69-69, 325 TE Only: 229d</p> <p>Grade 5 SE/TE: 4-7, 56-59, 146-149</p>
Constructing Explanations and Defining 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.	
Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard). Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem.	<p>Grade 3 SE/TE: 120, 122, 176, 195, 209, 228-229, 328 TE Only: 99b, 121a, 127a, 196E, 245d, 245g, 269a</p> <p>Grade 4 SE/TE: 35, 36, 178-181, 212-213, 321, 341, 386 TE Only: 79, 111e, 174, 230</p> <p>Grade 5 SE/TE: 98, 156, 195, 348-349 TE Only: 1, 53, 83a, 99b, 142C, 195b</p>
Identify the evidence that supports particular points in an explanation.	<p>Grade 3 SE/TE: 76, 102, 116, 176, 216, 307 TE Only: 38, 51, 54, 73, 81a, 99b, 116B, 121a, 216B, 245b, 245d, 245g</p> <p>Grade 4 SE/TE: 293, 321, 326 TE Only: 1, 78, 111a, 111e, 111g, 174, 231, 295d</p> <p>Grade 5 SE/TE: 64, 98, 195 TE Only: 1, 53, 83a, 99a, 99b, 100, 152, 195b</p>

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Apply scientific ideas to solve design problems. Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.	<p>Grade 3 SE/TE: 4-7, 42-45, 104-107, 156-159, 200-203, 250-252, 292, 294-297 Skills Handbook: P2.1, 340, 342-344, 346-349, 350, 356-361, 362-363, 374-379</p> <p>Grade 4 SE/TE: 4-7, 50-53, 82-85, 116-119, 178-181, 234-237, 300-303, 330-331, 344, 346-348, 350-355, 356-363, 364, 374-379</p> <p>Grade 5 SE/TE: 4-7, 54, 56-59, 104-107, 146-149, 200-203, 260-263, 318-321, 362, 364-367, 368, 368-373, 374-379, 380-387, 388-389, 398-403, 404</p>
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).	
Compare and refine arguments based on an evaluation of the evidence presented.	<p>Grade 3 TE Only: 197, 245g, 245h</p> <p>Grade 4 TE Only: 113, 175, 229a</p> <p>Grade 5 TE Only: 195b</p>
Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.	<p>Grade 3 TE Only: 245f, 289c</p> <p>Grade 4 TE Only: 94, 175, 229a</p> <p>Grade 5 TE Only: 99e, 195b, 213c</p>
Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.	<p>Grade 3 TE Only: 245f</p> <p>Grade 5 TE Only: 99a, 195c</p>

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Construct and/or support an argument with evidence, data, and/or a model.	<p>Grade 3 SE/TE: 98, 216, 244, 245, 288 TE Only: 197, 216B, 245f, 245g, 289c</p> <p>Grade 4 TE Only: 113, 175, 198</p> <p>Grade 5 TE Only: 1, 53, 99e, 101, 195b, 313c, 257</p>
Use data to evaluate claims about cause and effect.	<p>Grade 3 SE/TE: 98, 216, 244, TE Only: 197, 216B, 245f, 245h</p> <p>Grade 4 SE/TE: 214 TE Only: 175, 230</p> <p>Grade 5 SE/TE: 236, 237 TE Only: 236B</p>
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.	<p>Grade 3 SE/TE: 7, 45, 107, 159, 203, 252-253, 297, 345, 361 TE Only: 245h, 289c</p> <p>Grade 4 SE/TE: 7, 53, 85, 119, 181, 237, 303, 349, 357, 363, 380</p> <p>Grade 5 SE/TE: 7, 59, 106-107, 149, 203, 263, 321, 367, 385 TE Only: 195d</p>

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<p align="center">New York City Science Scope and Sequence for Grades K-5</p>	<p align="center">Interactive Science ©2016</p>
<p>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.</p>	
<p>Read and comprehend Grade-appropriate complex texts and/or other reliable media to summarize and obtain scientific and technical ideas and describe how they are supported by evidence.</p>	<p>Grade 3 SE/TE: 28, 37, 130, 186, 219, 285, 313, 319, 337, 355, 364, 373 TE Only: xlvii, 24, 55, 68, 73, 74, 79, 114, 165, 175, 182, 186, 219, 245b, 289c</p> <p>Grade 4 SE/TE: 27, 31, 36, 42, 45, 66, 70, 77, 95, 98, 105, 141, 151, 153, 162, 170, 173, 190, 211, 214, 223, 229, 251, 277, 280, 289, 306, 313, 321, 332, 339, 341, 373, 380 TE Only: 60, 111a, 111f, 175, 229a, 265a</p> <p>Grade 5 SE/TE: 39, 42, 48, 51, 84, 93, 99, 134, 141, 176, 177, 180, 189, 221, 226, 244, 255, 271, 275, 298, 305, 307, 333, 350, 359, 377, 390, 397 TE Only: 11, 12, 99a, 99b, 99c, 195a, 195d, 313a, 313b, 313d</p>
<p>Compare and/or combine across complex texts and/or other reliable media to support the engagement in other scientific and/or engineering practices.</p>	<p>Grade 3 SE/TE: 98, 99, 244, 245, 288, 289, 380 TE Only: 99a, 99b, 99c, 99d, 245a, 245b, 245c, 245d, 245e, 245f, 245g, 245h, 289a, 289b, 289c</p> <p>Grade 4 SE/TE: 110, 111, 228, 229, 294, 295, 380 TE Only: 32, 89, 111a, 111b, 111c, 111e, 111f, 175, 229d</p> <p>Grade 5 SE/TE: 98-99, 194-195, 312-313, 404 TE Only: 99a, 99b, 99c, 99d, 99e, 195a, 195b, 195c, 195d, 313a, 313b, 313c, 313d</p>

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<p>Combine information in written text with that contained in corresponding tables, diagrams, and/ or charts to support the engagement in other scientific and/or engineering practices.</p>	<p>Grade 3 SE/TE: 137, 167, 219, 264, 265, 317, 335, 360 TE Only: 79</p> <p>Grade 4 SE/TE: 18, 66, 103, 197, 264, 324, 325 TE Only: 111f, 229c, 229d, 295b, 295d</p> <p>Grade 5 SE/TE: 213, 219, 280, 341, 350 TE Only: 99a, 99b, 99c, 99d, 99e, 195a, 195b, 195c, 195d, 313a, 313b, 313c, 313d, 320</p>
<p>Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.</p>	<p>Grade 3 SE/TE: 4-5, 42, 104-105, 156, 157, 200-201, 250-251, 294-295, 342-343, 358 TE Only: 55</p> <p>Grade 4 SE/TE: 4, 50-52, 82-83, 116-117, 178, 234-235, 300-301, 346-347, 357, 358 TE Only: 111a, 111c, 111e, 140, 175, 229d</p> <p>Grade 5 SE/TE: 4, 56, 104, 146, 200, 260, 318-319, 364-365, 382 TE Only: 99a, 99b, 99c, 99d, 99e, 130, 195a, 195b, 195c, 195d, 196, 313a, 313b, 313c, 313d</p>

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<p>Communicate scientific and/or technical information orally and/ or in written formats, including various forms of media as well as tables, diagrams, and charts.</p>	<p>Grade 3 SE/TE: 7, 22, 40, 45, 52, 76, 91, 102, 107, 158, 198, 203, 252, 266, 292, 297, 314-319, 327, 340, 345, 350, 360 TE Only: xlvii-xlviii, 24, 52, 55, 61, 68, 73, 111, 136, 165, 179, 186, 207, 215, 245e, 245f, 289a, 289b, 245g, 289c, 355</p> <p>Grade 4 SE/TE: 6, 22, 53, 85, 110, 111, 119, 148, 181, 220, 228, 229, 237, 279, 294, 295, 303, 321, 331, 344, 349, 356, 357, 362, 380 TE Only: 32, 60, 86, 94, 111a, 111b, 111c, 111d, 111f, 111g, 140, 161a, 175, 184, 196, 205, 242, 262, 279a, 295a, 295c, 295d, 313</p> <p>Grade 5 SE/TE: 7, 22, 41, 59, 66, 78, 98, 99, 106, 149, 158, 176, 194, 195, 198, 202, 224, 230, 243, 262, 312, 313, 320, 349, 356, 366, 380, 389, 404 TE Only: 11, 99a, 99c, 99d, 99e, 108, 110, 153, 157, 170, 195a, 195b, 195c, 195d, 196, 239, 241, 313a, 313b</p>