



# Science Curriculum K - 5

Banded K - 2 and 3 - 5

Ogdensburg School District

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## **Rationale**

Ogdensburg Borough Public School creates a foundation for students to understand the world around them. Understanding the world and universe occurs as students work collaboratively. Providing experiences that lead to curiosity and inquiry offers the opportunity for students to ask questions, develop tests, examine results, and evaluate scientific ideas. First-hand experiences are integral for students to develop students' efficacy in their understanding of the world and universe.

## **Mission**

Ogdensburg Borough Public School students will possess an understanding of scientific concepts and processes required for personal decision-making, participation in civic life, and preparation for careers in STEM fields (upon choice).

## **Vision**

Ogdensburg Borough Public School prepares students to become scientifically literate individuals who can effectively:

- Apply scientific thinking, skills, and understanding to real-world phenomena and problems;
- Engage in systems thinking and modeling to explain phenomena and to give a context for the ideas to be learned;
- Conduct investigations, solve problems, and engage in discussions;
- Discuss open-ended questions that focus on the strength of the evidence used to generate claims;
- Read and evaluate multiple sources, including science-related articles and web-based resources to gain knowledge about science problems and solutions and develop well-reasoned claims; and
- Communicate ideas through journal articles, reports, and presentations that explain and argue.

## Scientific and Engineering Practices - All Grades

<b>Asking Questions and Defining Problems</b>	<ul style="list-style-type: none"> <li>● A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world works and which can be empirically tested.</li> <li>● Engineering questions clarify problems to determine criteria for successful solutions and identify constraints to solve problems about the designed world.</li> <li>● Both scientists and engineers also ask questions to clarify the ideas of others</li> </ul>
<b>Planning and Carrying Out Investigations</b>	<ul style="list-style-type: none"> <li>● Scientists and engineers plan and carry out investigations in the field or laboratory, working collaboratively as well as individually. Their investigations are systematic and require clarifying what counts as data and identifying variables or parameters.</li> <li>● Engineering investigations identify the effectiveness, efficiency, and durability of designs under different conditions.</li> </ul>
<b>Analyzing and Interpreting Data</b>	<ul style="list-style-type: none"> <li>● Scientific investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists use a range of tools—including tabulation, graphical interpretation, visualization, and statistical analysis—to identify the significant features and patterns in the data. Scientists identify sources of error in the investigations and calculate the degree of certainty in the results. Modern technology makes the collection of large data sets much easier, providing secondary sources for analysis.</li> <li>● Engineering investigations include analysis of data collected in the tests of designs. This allows comparison of different solutions and determines how well each meets specific design criteria—that is, which design best solves the problem within given constraints. Like scientists, engineers require a range of tools to identify patterns within data and interpret the results. Advances in science make analysis of proposed solutions more efficient and effective.</li> </ul>
<b>Developing and Using Models</b>	<ul style="list-style-type: none"> <li>● A practice of both science and engineering is to use and construct models as helpful tools for representing ideas and explanations. These tools include diagrams, drawings, physical replicas, mathematical representations, analogies, and computer simulations.</li> <li>● Modeling tools are used to develop questions, predictions and explanations; analyze and identify flaws in systems; and communicate ideas. Models are used to build and revise scientific explanations and proposed engineered systems.</li> <li>● Measurements and observations are used to revise models and designs.</li> </ul>
<b>Constructing</b>	<ul style="list-style-type: none"> <li>● The products of science are explanations and the products of engineering are solutions.</li> </ul>

<b>Explanations and Designing Solutions</b>	<ul style="list-style-type: none"> <li>• The goal of science is the construction of theories that provide explanatory accounts of the world. A theory becomes accepted when it has multiple lines of empirical evidence and greater explanatory power of phenomena than previous theories.</li> <li>• The goal of engineering design is to find a systematic solution to problems that is based on scientific knowledge and models of the material world. Each proposed solution results from a process of balancing competing criteria of desired functions, technical feasibility, cost, safety, aesthetics, and compliance with legal requirements. The optimal choice depends on how well the proposed solutions meet criteria and constraints.</li> </ul>
<b>Engaging in Argument from Evidence</b>	<ul style="list-style-type: none"> <li>• Argumentation is the process by which explanations and solutions are reached.</li> <li>• In science and engineering, reasoning and argument based on evidence are essential to identifying the best explanation for a natural phenomenon or the best solution to a design problem.</li> <li>• Scientists and engineers use argumentation to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to identify strengths and weaknesses of claims.</li> </ul>
<b>Using Mathematics and Computational Thinking</b>	<ul style="list-style-type: none"> <li>• In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; statistically analyzing data; and recognizing, expressing, and applying quantitative relationships.</li> <li>• Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Statistical methods are frequently used to identify significant patterns and establish correlational relationships.</li> </ul>
<b>Obtaining, Evaluating, and Communicating Information</b>	<ul style="list-style-type: none"> <li>• Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate.</li> <li>• Critiquing and communicating ideas individually and in groups is a critical professional activity.</li> <li>• Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations as well as orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to acquire information that is used to evaluate the merit and validity of claims, methods, and design.</li> </ul>

# BAND K - 2

## Kindergarten

### PACING GUIDE

Unit 1 Earth Systems	10 days to start and then ongoing
Unit 2 Motion and Stability: Forces and Interactions	15 days
Unit 3 Energy	15 days
Unit 4 From Molecules to Organisms: Structures & Processes	20 days
Unit 5 Earth and Human Activity	15 days
Engineering Design	Coincides with Units 1 to 5

<b>ENDURING UNDERSTANDING:</b>	<p>Students develop an understanding of patterns and variations in local weather and the use of weather forecasting to prepare for and respond to severe weather. The crosscutting concepts of patterns; cause and effect; interdependence of science, engineering, and technology; and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for the Core Ideas. Students are expected to demonstrate grade-appropriate proficiency in asking questions, analyzing and interpreting data, and obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p> <p>Different strengths or directions of pushes and pulls on an object exist.</p> <p>Plants and animals need different things to survive, and there is a relationship between their needs and where they live.</p> <p>There are patterns and variations in local weather, and the purpose of weather forecasting to prepare for, and respond to, severe weather.</p>
<b>ESSENTIAL QUESTIONS:</b>	<p>What do you notice in the world around you and in your community?</p> <p>Can tools be used for multiple purposes?</p> <p>Does weather have patterns?</p> <p>How does energy move through objects?</p>

	<p>What happens if you push or pull an object harder?</p> <p>Where do animals live and why do they live there?</p> <p>What is the weather like today and how is it different from yesterday?</p>
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<b>ASSESSMENTS:</b>	<p><b>FORMATIVE:</b></p> <p><b>SUMMATIVE:</b></p> <p><b>BENCHMARK:</b></p>
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## Kindergarten

<p><b>Core Ideas</b></p> <ul style="list-style-type: none"> <li>● Pushes and pulls can have different strengths and directions. (K-PS2-1),(K-PS2-2)</li> <li>● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2) PS2.B:</li> <li>● When objects touch or collide, they push on one another and can change motion. (K-PS2-1) PS3.C:</li> <li>● A bigger push or pull makes things speed up or slow down more quickly. (secondary to K-PS2-1) ETS1.A:</li> <li>● A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. (secondary to K-PS2-2)</li> <li>● Sunlight warms Earth’s surface. (K-PS3-1),(K-PS3-2)</li> <li>● All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)</li> <li>● Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)</li> <li>● Plants and animals can change their environment. (K-ESS2-2)</li> </ul>	<p><b>Crosscutting Concepts</b></p> <ul style="list-style-type: none"> <li>● Simple tests can be designed to gather evidence to support or refute student ideas about causes. (K-PS2-1),(K-PS2-2), (K-ESS3-2),(K-ESS3-3)</li> <li>● Scientists use different ways to study the world. (K-PS2-1)</li> <li>● Events have causes that generate observable patterns. (K-PS3-1),(K-PS3-2)</li> <li>● Patterns in the natural world and human designed world can be observed and used as evidence. (K-LS1-1)</li> <li>● Systems in the natural and designed world have parts that work together. (K-ESS2-2),(K-ESS3-1)</li> <li>● Scientists look for patterns and order when making observations about the</li> </ul>
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- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (secondary to K-ESS2-2)
- Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)
- Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. (K-ESS3-2)
- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (K-ESS3- 3)
- Asking questions, making observations, and gathering information are helpful in thinking about problems. (secondary to K-ESS3-2)
- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (secondary to K-ESS3-3)
- A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2- ETS1-1)
- Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2- ETS1-1)
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2- ETS1-1)
- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions, such as climate change, to other people. (K-2-ETS1-2)
- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

world. (K-LS1-1)

- Events have causes that generate observable patterns. (K-ESS3-2), (K-ESS3-3)
- People encounter questions about the natural world every day. (K-ESS3-2)
- People depend on various technologies in their lives; human life would be very different without technology. (K-ESS3-2)
- The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)



# Kindergarten

## Science and Engineering Practices

- With guidance, plan and conduct an investigation in collaboration with peers. (K-PS2-1)
- Analyze data from tests of an object or tool to determine if it works as intended. (K-PS2-2, K-2-ETS1-3)
- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (K-PS3-1)
- Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. (K-PS3-2)
- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1, K-ESS2-1)
- Construct an argument with evidence to support a claim. (K-ESS2-2)
- Ask questions based on observations to find more information about the designed world. (K-ESS3-2, K-2-ETS1-1)
- Use a model to represent relationships in the natural world. (K-ESS3-1)
- Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2)
- Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)
- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

# Kindergarten

## PERFORMANCE EXPECTATIONS

### Motion and Stability: Forces and Interactions

P-S2-1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

P-S2-2 Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull.

- Design simple tests to gather evidence to support or refute ideas about cause and effect relationships
- Conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
- Analyze data to determine whether a solution works as intended to change speed or direction of an object

	(tools such as ramps, paths, obstructions)
<b>Connections to NJSLs – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)</li> <li>• W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS2-1)</li> <li>• SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)</li> </ul>
<b>Connections to NJSLs – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (K-PS2-1)</li> <li>• K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)</li> <li>• K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of/less of” the attribute, and describe the difference. (K-PS2-1)</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Energy</b></p> <p>P-S3-1 Make observations to determine the effect of sunlight on Earth’s surface</p> <p>P3-2 Design and build a structure that will reduce the warming effect of sunlight on Earth’s surface</p>
<b>Connections to NJSLs – English Language Arts</b>	W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1), (K-PS3-2)
<b>Connections to NJSLs – Mathematics</b>	• K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of/less of” the attribute, and describe the difference. (K-PS3-1), (K-PS3-2)
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>From Molecules to Organisms: Structures and Processes</b></p> <p>LS1-1 Describe patterns of what plants and animals need to survive</p>
<b>Connections to NJSLs – English Language Arts</b>	• W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS-1)
<b>Connections to NJSLs – Mathematics</b>	• K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of/less of” the attribute, and describe the difference. (K-LS-1)
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Earth Systems</b></p> <p>ESS2-1 Use and share observations of local weather conditions to describe patterns over time.</p>

	ESS2-2 Construct an argument supported by evidence for how plants and animals can change the environment to meet their needs.
<b>Connections to NJSLs – English Language Arts</b>	<p>W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS-1)</p> <ul style="list-style-type: none"> <li>• RL.K.1 With prompting and support, ask and answer questions about key details in a text (e.g., who, what, where, when, why, how). (K-ESS2-2)</li> <li>• W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)</li> <li>• W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2- 2)</li> <li>• W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-ESS2-1)</li> </ul>
<b>Connections to NJSLs – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (K-ESS2-1)</li> <li>• MP.4 Model with mathematics. (K-ESS2-1)</li> <li>• K.CC.A Know number names and the count sequence. (K-ESS2-1)</li> <li>• K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)</li> <li>• K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Earth and Human Activity</b></p> <p>ESS3-1 Represent the relationship between the needs of different plants and animals and the places they live</p> <p>ESS3-3 Identify solutions that will reduce the impact of humans on the land, water, and/or other living things in the local environment</p> <p>ESS3-2 Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</p> <ul style="list-style-type: none"> <li>-- Identify severe weather that occurs in New Jersey</li> <li>-- Describe how to respond to weather events and tools that can be used</li> <li>-- Explain how communities react during severe weather (flooding, winds, downed trees or power lines, hurricane, tornado)</li> </ul>
<b>Connections to NJSLs – English Language Arts</b>	<ul style="list-style-type: none"> <li>• W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS-1)</li> <li>• RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)</li> </ul>

	<ul style="list-style-type: none"> <li>• W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS3- 3)</li> <li>• SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)</li> <li>• SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)</li> </ul>
<b>Connections to NJSLs – Mathematics</b>	<p>MP.2 Reason abstractly and quantitatively. (K-ESS2-1)</p> <ul style="list-style-type: none"> <li>• MP.4 Model with mathematics. (K-ESS2-1) • K.CC Know number names and the count sequence. (K-ESS2-1)</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Engineering Design</b></p> <p>ETS1-1 Ask questions, make observations, and gather information about a situation people want to change e.g., <i>climate change</i>) to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p> <ul style="list-style-type: none"> <li>-- Observe patterns in cause and effect relationships <ul style="list-style-type: none"> <li>-- Make observations (first hand or online) to collect data and make comparisons</li> <li>-- Make observations to determine the effect of sunlight on Earth’s surface (warmer/ cooler temperature) (examine sand, soil, rocks, water)</li> <li>-- Describe how shape and stability of structures relate to their function</li> <li>-- Use tools and materials to design a structure that reduces the warming effect of sunlight on an area</li> <li>-- Analyze data about the new tool to compare strengths and weaknesses</li> </ul> </li> </ul> <p>ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>
<b>Connections to NJSLs – English Language Arts</b>	<p>RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)</p> <ul style="list-style-type: none"> <li>• W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)</li> </ul>

<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.5 Use appropriate tools strategically. (1-PS4-4)</li> <li>• MP.2 Reason abstractly and quantitatively. (K-2-ETS1-1), (K-2-ETS1-3) • MP.4 Model with mathematics. (K-2-ETS1-1), (K-2-ETS1-3) • MP.5 Use appropriate tools strategically. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1), (K-2-ETS1-3)</li> </ul>
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## Kindergarten

Interdisciplinary Connections		
<p><b>MATH</b></p> <ul style="list-style-type: none"> <li>• <b>MP.2</b> Reason abstractly and quantitatively. (K-PS2-1)</li> <li>• <b>MP.4</b> Model with mathematics. (K-ESS2-1)</li> <li>• MP.5 Use appropriate tools strategically. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• <b>K.MD.A.1</b> Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)</li> <li>• <b>K.MD.A.2</b> Directly compare two objects with a measurable attribute in common, to see which object has “more of/less of” the attribute, and describe the difference. (K-PS2-1)</li> <li>• <b>K.MD.B.3</b> Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)</li> <li>• <b>K.CC.A</b> Know number names and the count sequence. (K-ESS2-1)</li> </ul>	<p><b>ELA</b></p> <ul style="list-style-type: none"> <li>• <b>RI.K.1</b> With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)</li> <li>• RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)</li> <li>• <b>W.K.7</b> Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS2-1)</li> <li>• <b>W.K.1</b> Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)</li> <li>• <b>W.K.2</b> Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2- 2)</li> <li>• <b>W.2.6</b> With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• <b>W.2.8</b> Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1), (K-2-ETS1-3)</li> </ul>	<p><b>SOCIAL STUDIES</b></p> <p>Veterans Day Thanksgiving Presidents Occupations in the community Martin Luther King</p> <p><b>ART</b></p> <p>Fine motor skill practice Mixing primary colors</p> <p><b>PHYSICAL ED</b></p> <p>Go Noodle 27 minutes per week activity</p> <p><b>HEALTH</b></p> <p>Dental health Eating habits Hand washing</p>

- **SL.K.3** Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)
- **SL.K.5** Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3- 1)

## Kindergarten

<p><b>MATERIALS and RESOURCES:</b></p> <ul style="list-style-type: none"> <li>● Video Tools: YouTube, QR Codes: QR Code Generator Game-based</li> <li>● Communicative Tools: SeeSaw</li> <li>● Authentic listening and reading sources that provides data</li> <li>● ESGI</li> <li>● Let's Find Out</li> <li>● Science materials (not restricted to) <ul style="list-style-type: none"> <li>○ Scales</li> <li>○ Measuring tools</li> <li>○ Weights</li> <li>○ Magnets</li> </ul> </li> </ul>	<p><b>INSTRUCTIONAL STRATEGIES</b></p> <ul style="list-style-type: none"> <li>● Reinforcing effort</li> <li>● Provide recognition</li> <li>● Cooperative learning</li> <li>● Cues, Questions, Organizers</li> <li>● Orally Summarizing</li> <li>● Generating &amp; testing hypotheses</li> <li>● Student practice</li> <li>● Individualized instruction</li> <li>● Effective feedback</li> <li>● Presenting learning goals/ objectives</li> <li>● Authentic learning</li> <li>● Adapting to learning styles</li> <li>● Conferencing</li> <li>● Activate prior knowledge</li> <li>● Investigations</li> <li>● Flexible classrooms</li> <li>● Graphic organizers</li> <li>● Identifying similarities and differences</li> <li>● Learning centers</li> <li>● Modeling</li> <li>● Music/ songs</li> <li>● Peer teaching</li> <li>● Project -based learning</li> <li>● Reading aloud</li> <li>● Sharing opinions</li> </ul>	<p><b>Technology Connections</b></p> <p><b>8.1.2.A.1</b> basic features of tech</p> <p><b>8.1.2.C.1</b> age appropriate activities</p> <p><b>8.1.2.D.1</b> Understanding ownership of print and non-print</p> <p><b>8.1.2.E.1</b> Explore digital</p>	<p><b>21st C 9.1 Finance</b></p> <ul style="list-style-type: none"> <li>● <b>9.1.4.B.1</b> needs/ wants</li> <li>● <b>9.1.4.B.2</b> financial goals (age appropriate)</li> <li>● <b>9.1.4.B.5</b> earn</li> </ul> <p><b>21st C 9.2 Career Ready Practices</b></p> <ul style="list-style-type: none"> <li>● <b>9.2.4.A.1</b> occupations</li> <li>● <b>9.2.4.A.2</b> life roles</li> <li>● <b>9.2.4.A.3</b> non and traditional careers</li> <li>●</li> <li>● <b>CRP1</b> responsible citizen</li> <li>● <b>CRP3</b> Personal health</li> <li>● <b>CRP4</b> Communicate clearly</li> <li>● <b>CRP8</b> Solving problem</li> <li>● <b>CRP10</b> career paths</li> <li>● <b>CRP11</b> enhance with tech</li> </ul>
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	<ul style="list-style-type: none"> <li>● Student choice</li> <li>● Think- Pair- Share</li> <li>● Rubrics</li> <li>● Varied texts</li> </ul>		
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## Kindergarten

<b>MODIFICATIONS -SPECIAL NEEDS, 504</b>	<b>STUDENTS AT RISK OF FAILURE</b>	<b>GIFTED AND TALENTED</b>	<b>ELL Modifications</b>
<ul style="list-style-type: none"> <li>● Pair visual prompts with verbal presentations</li> <li>● Ask students to restate information, directions, and assignments.</li> <li>● Provide opportunities for repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide preferential seating to be mutually determined by the student and teacher</li> <li>● Accommodate student requests to use a computer to complete assignments.</li> <li>● Establish expectations for completing assignments, routine, and behavior</li> </ul>	<ul style="list-style-type: none"> <li>● Ask students to restate information, directions, and assignments.</li> <li>● Provide opportunities for repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide preferential seating to be mutually determined by the student and teacher</li> <li>● Provide extra books/ materials for home.</li> <li>● Assign a peer helper in the class setting</li> <li>● Provide oral reminders and check student work during independent work time</li> <li>● Encourage student to look over work</li> <li>● Provide regular parent/ school communication</li> <li>● Establish expectations for routine, behavior, academics</li> </ul>	<ul style="list-style-type: none"> <li>● Use advanced supplementary / reading materials</li> <li>● Use authentic resources to promote a deeper understanding of culture.</li> <li>● Provide opportunities for open-ended, self-directed activities</li> <li>● Encourage the use of creativity</li> <li>● Provide opportunities to develop depth and breadth of knowledge in the subject area (examples: create drawings/illustrations, use of music, create poems/songs, write opinion letters, create videos/stories/comic strips, etc.) Conduct research and provide presentations of cultural topics.</li> <li>● Provide tiered reading materials</li> </ul>	<ul style="list-style-type: none"> <li>● Seat student near teacher</li> <li>● Print clearly</li> <li>● Do not use cursive</li> <li>● Give directions in print &amp; orally</li> <li>● Print keywords, page numbers, homework, deadlines on the board</li> <li>● Incorporate visuals</li> <li>● Avoid slang or colloquial sayings,</li> <li>● Avoid complex sentence structure</li> <li>● Use questions that need one word answers</li> <li>● Be ready to give additional instructions on complex tasks</li> <li>● Adjust assignments so student writes less</li> <li>● Provide simpler questions to answer</li> <li>● Expect fewer spelling words</li> <li>● Provide extra time as necessary</li> <li>● Provide graphic organizers</li> <li>● Provide an ELL dictionary</li> <li>● Provide books on tape or CD</li> <li>● Provide wall charts of key concepts</li> <li>● Provide a word wall</li> </ul>

<ul style="list-style-type: none"> <li>Send extra resources home, as available</li> </ul>			<ul style="list-style-type: none"> <li>Provide models of docs such as Homework, projects</li> </ul>
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# Grade 1

## PACING GUIDE

Unit 1 Waves and their Applications in Technologies for Information Transfer	20 days
Unit 2 From Molecules to Organisms: Structure and Processes	15 days
Unit 3 Heredity: Inheritance and Variation of Traits	25 days
Unit 4 Earth's Place in the Universe	25 days
Engineering and Design	Simultaneous with Units 1 to 4

<b>ENDURING UNDERSTANDING:</b>	<p>There are patterns in the objects in the sky which can be observed, described, and predicted.</p> <p>Plants and animals use their parts to help them survive, grow, and meet needs. Parents help offspring survive.</p> <p>A relationship exists between sound and vibrating materials. Light helps to see objects.</p> <p>Apply knowledge of light and sound to engage in engineering design to solve problems involving communication with light and sound.</p> <p>There is a relationship between sound and vibrating materials.</p> <p>Light travels from place to place.</p> <p>Plants and animals use their external parts to help them survive, grow, and meet their needs.</p> <p>Students show proficiency in analyzing and interpreting data while planning and carrying out investigations.</p> <p>Students demonstrate proficiency in obtaining, evaluating, and communicating information and explanations.</p> <p>Students sketch ideas and make models to shape ideas.</p> <p>Students plan and carry out investigations, construct explanations, and design solutions.</p> <p>Students show proficiency in constructing explanations, designing solutions, asking questions, defining problems and developing and using models.</p>
<b>ESSENTIAL QUESTIONS:</b>	<ul style="list-style-type: none"> <li>What happens when materials vibrate?</li> <li>What happens when there is no light?</li> <li>How are parents and their children similar and different?</li> </ul>



	<ul style="list-style-type: none"> <li>• How do animals and plants adjust to their environment?</li> <li>• How do plants and animals survive, grow, and meet their needs?</li> <li>• Do any plants and animals have similar external parts to live in their environment?</li> <li>• Are sounds all around us?</li> <li>• What initiates sound?</li> <li>• How do the improvements in communication aid humanity?</li> <li>• What objects are in the sky and how do they seem to move?</li> <li>• How does land change and what are some things that cause the change?</li> <li>• What are different kinds of land and bodies of water?</li> <li>• How do properties of materials relate to their use?</li> <li>• How many types of living things live in a place?</li> </ul>
<b>ASSESSMENTS:</b>	<p><b>FORMATIVE:</b></p> <p><b>SUMMATIVE:</b></p> <p><b>BENCHMARK:</b></p>

## Grade 1

<p><b>Core Ideas</b></p> <ul style="list-style-type: none"> <li>• Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)</li> <li>• Objects can be seen if light is available to illuminate them or if they give off their own light. (1-PS4-2)</li> <li>• Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (1- PS4-3)</li> <li>• People use a variety of devices to communicate over long distances</li> <li>• All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)</li> <li>• Adult plants and animals can have young. In many kinds of animals, parents and the</li> </ul>	<p><b>Crosscutting Concepts</b></p> <ul style="list-style-type: none"> <li>• Simple tests can be designed to gather evidence to support or refute student ideas about causes. (1-PS4-1),(1-PS4-2),(1-PS4-3)</li> <li>• People depend on various technologies in their lives; human life would be very different without technology. (1-PS4-4)</li> <li>• Science investigations begin with a question. (1-PS4-1)</li> <li>• Scientists use different ways to study the world. (1-PS4-1)</li> <li>• Patterns in the natural world can be</li> </ul>
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<p>offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)</p> <ul style="list-style-type: none"> <li>• Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)</li> <li>• Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. (1- LS3-1)</li> <li>• Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)</li> <li>• Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1- ESS1-1)</li> <li>• Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2)</li> <li>• A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)</li> <li>• Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)</li> <li>• Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)</li> <li>• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (K-2-ETS1-2)</li> <li>• Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K2-ETS1-3)</li> </ul>	<p>observed, used to describe phenomena, and used as evidence. (1-LS1-2), (1-LS3-1), (1-ESS1-1), (1-ESS1-2)</p> <ul style="list-style-type: none"> <li>• The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)</li> <li>• Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (1-LS1-1)</li> <li>• Scientists look for patterns and order when making observations about the world. (1-LS1-2)</li> <li>• Science assumes natural events happen today as they happened in the past. (1-ESS1-1)</li> <li>• Many events are repeated. (1- ESS1-1)</li> </ul>
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<b>Science and Engineering Practices</b>
<ul style="list-style-type: none"> <li>• Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. (1-PS4-1), (1- PS4-3)</li> <li>• Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-PS4-2, (1-LS3-1, 1-ESS1-2)</li> <li>• Use tools and materials provided to design a device that solves a specific problem or a solution to a specific problem. (1-PS4-4, 1-LS1-1)</li> <li>• Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1)</li> <li>• Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.</li> </ul>

(1-LS1-2)

- Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2- ETS1-1)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)
- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)
- Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

# Grade 1

<b>PERFORMANCE EXPECTATIONS</b>	<b>Waves and their Applications in Technologies for Information Transfer</b> <ul style="list-style-type: none"><li>• 1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]</li><li>• 1-PS4-2 Make observations to construct an evidence-based account that objects can be seen only when illuminated. [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]</li><li>• 1-PS4-3 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror). The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.]</li><li>• 1-PS4-4 Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.]</li></ul>
<b>Connections to NJSLs – English Language Arts</b>	<ul style="list-style-type: none"><li>• W.1.2 Write informative/explanatory texts in which students name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)</li><li>• W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1), (1-PS4-2), (1-PS4-3), (1-PS4- 4)</li><li>• W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1), (1-PS4-2), (1-PS4-3)</li></ul>

	<ul style="list-style-type: none"> <li>• SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1), (1-PS4-2), (1-PS4-3)</li> </ul>
<b>Connections to NJSLS – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.5 Use appropriate tools strategically. (1-PS4-4)</li> <li>• 1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)</li> <li>• 1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>From Molecules to Organisms: Structure and Processes</b></p> <ul style="list-style-type: none"> <li>• 1-LS3-1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.]</li> </ul>
<b>Connections to NJSLS – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.1.1 Ask and answer questions about key details in a text. (1-LS3-1)</li> <li>• W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS3-1)</li> <li>• W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)</li> </ul>
<b>Connections to NJSLS – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (1-LS3-1)</li> <li>• MP.5 Use appropriate tools strategically. (1-LS3-1)</li> <li>• 1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Heredity: Inheritance and Variation of Traits</b></p> <ul style="list-style-type: none"> <li>• 1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of</li> </ul>
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	<p>the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]</p> <ul style="list-style-type: none"> <li>• 1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]</li> </ul>
<b>Connections to NJSLS – English Language Arts</b>	<ul style="list-style-type: none"> <li>• W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1), (1-ESS1-2)</li> <li>• W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1), (1-ESS1-2)</li> </ul>
<b>Connections to NJSLS – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.5 Use appropriate tools strategically. (1-PS4-4)</li> <li>• 1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)</li> <li>• 1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Earth’s Place in the Universe</b></p> <p>1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]</p> <ul style="list-style-type: none"> <li>• 1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]</li> </ul>
<b>Connections to NJSLS – English Language Arts</b>	<ul style="list-style-type: none"> <li>• W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1), (1-ESS1-2)</li> </ul>

	<ul style="list-style-type: none"> <li>• W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1), (1-ESS1-2)</li> </ul>
<b>Connections to NJSLS – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.5 Use appropriate tools strategically. (1-PS4-4)</li> <li>• 1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)</li> <li>• 1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Engineering Design</b></p> <ul style="list-style-type: none"> <li>• ETS1-1 Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.</li> <li>• K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</li> <li>• K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</li> </ul>
<b>Connections to NJSLS – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)</li> <li>• W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)</li> </ul>
<b>Connections to NJSLS – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.5 Use appropriate tools strategically. (1-PS4-4)</li> <li>• MP.2 Reason abstractly and quantitatively. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• MP.4 Model with mathematics. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• MP.5 Use appropriate tools strategically. (K-2-ETS1-1), (K-2-ETS1-3)</li> </ul>

- 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1), (K-2-ETS1-3)

# Grade 1

## Interdisciplinary Connections

### MATH

- **MP.5** Use appropriate tools strategically. (1-PS4-4)
- **MP.4** Model with mathematics. (K-2-ETS1-1), (K-2-ETS1-3)
- **MP.2** Reason abstractly and quantitatively. (1-LS3-1)
- **1.MD.A.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)
- **1.MD.A.2** Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)
- **1.NBT.B.3** Compare two two-digit numbers based on the meanings of the tens and one digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ . (1-LS1-2)
- **1.NBT.C.4** Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning uses. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones;

### ELA

- **W.1.2** Write informative/explanatory texts in which students name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)
- **W.1.7** Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1), (1-PS4-2), (1-PS4-3), (1-PS4-4)
- **W.1.8** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1), (1-PS4-2), (1-PS4-3)
- **W.2.6** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1), (K-2-ETS1-3)
- **W.2.8** Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1), (K-2-ETS1-3)
- **SL.1.1** Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1), (1-PS4-2), (1-PS4-3)
- **SL.2.5** Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)

<p>and sometimes it is necessary to compose a ten. (1-LS1-2)</p> <ul style="list-style-type: none"> <li>● <b>1.NBT.C.5</b> Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. (1-LS1-2)</li> <li>● <b>1.NBT.C.6</b> Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (1-LS1-2)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>RL.1.1</b> Ask and answer questions about key details in a text. (1-LS1-2)</li> <li>● <b>RL.1.2</b> Identify the main topic and retell key details of a text. (1-LS1-2)</li> <li>● <b>RL.1.10</b> With prompting and support, read and comprehend stories and poetry at grade level text complexity or above. (1-LS1-2)</li> <li>● <b>RI.1.1</b> Ask and answer questions about key details in a text. (1-LS3-1)</li> <li>● <b>RI.2.1</b> Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)</li> </ul>	
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## Grade 1

<p><b>MATERIALS and RESOURCES:</b></p> <ul style="list-style-type: none"> <li>● <a href="#">Eat Like a Bird!</a></li> <li>● <a href="#">The Dynamic Trio</a></li> <li>● <a href="#">Our Super Star</a></li> <li>● <a href="#">Patterns of Daylight</a></li> <li>● <a href="#">Observing the Sun</a></li> <li>● <a href="#">Assessing Light Knowledge</a></li> <li>● Teacher Pay Teachers materials</li> <li>● Online Speaking/Recording Tools: SeeSaw</li> <li>● Video Tools: YouTube, QR Codes: QR Code Generator, Game-based, Go Noodle,</li> <li>● Authentic listening and reading sources that provides data</li> </ul>	<p><b>INSTRUCTIONAL STRATEGIES</b></p> <ul style="list-style-type: none"> <li>● Reinforcing effort</li> <li>● Provide recognition</li> <li>● Cooperative learning</li> <li>● Cues, Questions, Organizers</li> <li>● Verbal summarizing</li> <li>● Generating &amp; testing hypotheses</li> <li>● Student practice</li> <li>● Individualized instruction</li> <li>● Effective feedback</li> <li>● Presenting learning goals/ objectives</li> <li>● Authentic learning</li> <li>● Adapting to learning styles</li> <li>● Conferencing</li> <li>● Activate prior knowledge</li> <li>● Investigations</li> <li>● Graphic organizers</li> <li>● Identifying similarities and differences</li> <li>● Learning centers</li> <li>● Modeling</li> </ul>	<p><b>Technology Connections</b></p> <p><b>8.1.2.A.4</b> QR codes for virtual trips</p> <p><b>8.1.2.C.1</b> work with students in different school</p> <p>In different state</p> <p><b>8.1.2.D.1</b> ownership of written material</p>	<p><b>21st C 9.1 Finance</b></p> <ul style="list-style-type: none"> <li>● <b>9.1.4.B.1</b> wants and needs</li> <li>● <b>9.1.4B.3</b> budgets</li> <li>● <b>9.1.4.B.4</b> expenses</li> <li>● <b>9.1.4.B.5</b> ways to save</li> <li>● <b>9.1.4.D.1</b> ways to save</li> <li>● <b>9.1.4.E.1</b> consumer decisions</li> <li>● <b>9.1.4.F.2</b> volunteering</li> </ul> <p><b>21st C 9.2 Career Ready Practices</b></p> <ul style="list-style-type: none"> <li>● <b>9.2.4.A.1</b> why we work</li> <li>● <b>9.2.4.A.2</b> life roles</li> <li>● <b>9.2.4.A.4</b> elementary foundation for career</li> </ul> <p><b>CRP1</b> citizenship  <b>CRP2</b> academic skills  <b>CRP3</b> personal health</p>
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<ul style="list-style-type: none"> <li>● Lab materials</li> <li>● Science Studies Weekly</li> <li>● Time for Kids</li> <li>● Scholastic News</li> <li>● Core Clicks</li> </ul>	<ul style="list-style-type: none"> <li>● Music/ songs</li> <li>● Peer teaching</li> <li>● Project -based learning</li> <li>● Reading aloud</li> <li>● Debate</li> <li>● Word walls</li> <li>● Think- Pair- Share</li> <li>● Rubrics</li> <li>● Varied texts</li> </ul>		<p><b>CRP4</b> communication  <b>CRP5</b> environment decisions and impact  <b>CRP6</b> creativity and innovation  <b>CRP8</b> critical thinking  <b>CRP9</b> integrity and ethics  <b>CRP10</b> career paths  <b>CRP11</b> enhance with tech</p>
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## Grade 1

<p><b>MODIFICATIONS -SPECIAL NEEDS, 504</b></p> <ul style="list-style-type: none"> <li>● Pair visual prompts with verbal presentations</li> <li>● Ask students to restate information, directions, and assignments.</li> <li>● Provide opportunities for use of repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide copy of class notes</li> <li>● Provide preferential seating</li> <li>● Establish expectations for correct spelling on assignments.</li> <li>● Provide extra textbooks for home.</li> </ul>	<p><b>STUDENTS AT RISK OF FAILURE</b></p> <ul style="list-style-type: none"> <li>● Ask students to restate information, directions, and assignments.</li> <li>● Provide opportunities for use of repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide copy of class notes</li> <li>● Provide preferential seating</li> <li>● Establish expectations for correct spelling on assignments.</li> <li>● Assign a peer helper in the class setting</li> <li>● Provide oral reminders and check student work during independent work time</li> <li>● Assist student with long and short term planning of assignments</li> </ul>	<p><b>GIFTED AND TALENTED</b></p> <ul style="list-style-type: none"> <li>● Encourage the use of creativity</li> <li>● Provide opportunities to develop depth and breadth of knowledge in the subject area (examples: create drawings/illustrations, use of music, create poems/songs, write opinion letters, create videos/stories/comic strips, etc.)</li> <li>● Provide independent work supporting ELA curriculum with alternate types of products</li> </ul>	<p><b>ELL Modifications</b></p> <ul style="list-style-type: none"> <li>● Seat student near teacher</li> <li>● Print clearly</li> <li>● Do not use cursive</li> <li>● Give directions in print &amp; orally</li> <li>● Print keywords, page numbers, homework, deadlines on the board</li> <li>● Incorporate visuals</li> <li>● Avoid slang or colloquial sayings,</li> <li>● Avoid complex sentence structure</li> <li>● Use questions that need one word answers</li> <li>● Be ready to give additional instructions on complex tasks</li> <li>● Adjust assignments so student writes less</li> <li>● Provide simpler questions to answer</li> <li>● Expect fewer spelling words</li> <li>● Provide extra time as necessary</li> <li>● Provide graphic organizers</li> <li>● Provide an ELL dictionary</li> </ul>
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	<ul style="list-style-type: none"> <li>Encourage student to proofread assignments and tests</li> </ul>		<ul style="list-style-type: none"> <li>Provide books on tape or CD</li> <li>Provide wall charts of key concepts</li> <li>Provide a word wall</li> <li>Provide models of docs such as Homework, projects</li> </ul>
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## Grade 2

### PACING GUIDE

Unit 1 Matter and Matter’s Interactions	20 days
Unit 2 Ecosystems: Interactions, Energy, Dynamics (LS2-1, LS2-2)	20 days
Unit 3 Ecosystems: Interactions, Energy, Dynamics (LS4-1)	15 days
Unit 4 Earth’s Place in the Universe	15 days
Unit 5 Earth’s Systems	20 days
Engineering and Design	Simultaneous with Units 1 to 5

## Grade 2

<b>ENDURING UNDERSTANDING:</b>	<p>Understand what plants need to grow and how plants depend on animals for seed dispersal and pollination.</p> <p>Compare the diversity of life in different habitats.</p> <p>Understand that materials can be classified.</p> <p>Analyze and construct explanations for how materials react.</p> <p>Use information and models to identify and represent the shapes and kinds of land and bodies of water on Earth.</p> <p>Recognize that wind and water can alter the environment.</p> <p>Identify different shapes and types of bodies of water and of land.</p>
<b>ESSENTIAL QUESTIONS:</b>	<ul style="list-style-type: none"> <li>How does the diversity of plants and animals compare among different habitats?</li> <li>What do plants need to live and grow?</li> <li>How can we sort objects into groups that have similar patterns?</li> </ul>

	<ul style="list-style-type: none"> <li>• What should the three little pigs have used to build their houses?</li> <li>• In what ways can an object made of a small set of pieces be disassembled and made into a new object?</li> <li>• Can all changes caused by heating or cooling be reversed?</li> <li>• How can we identify where water is found on Earth and if it is solid or liquid?</li> <li>• In what way can you represent the shapes and kinds of land and bodies of water in an area?</li> <li>• What evidence can we find to prove that Earth events can occur at different speeds?</li> <li>• In what ways do humans slow or prevent wind or water from changing the shape of the land?</li> <li>• How do the properties of materials relate to their use?</li> <li>• How many types of living things live in a place?</li> </ul>
<b>ASSESSMENTS:</b>	<b>FORMATIVE:</b> <b>SUMMATIVE:</b> <b>BENCHMARK:</b>

## Grade 2

<p><b>Core Ideas</b></p> <ul style="list-style-type: none"> <li>• Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1)</li> <li>• Different properties are suited to different purposes. (2- PS1-2),(2-PS1-3)</li> <li>• A great variety of objects can be built up from a small set of pieces. (2-PS1-3)</li> <li>• Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4)</li> <li>• Plants depend on water and light to grow. (2-LS2-1)</li> <li>• Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)</li> <li>• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to 2-LS2-2)</li> <li>• There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)</li> <li>• Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)</li> <li>• Wind and water can change the shape of the land. (2- ESS2-1)</li> <li>• Maps show where things are located. One can map the shapes and kinds of land</li> </ul>	<p><b>Crosscutting Concepts</b></p> <ul style="list-style-type: none"> <li>• Patterns in the natural and human designed world can be observed. (2-PS1-1), (2-ESS2-2), (2-ESS2-3)</li> <li>• Events have causes that generate observable patterns. (2-PS1-4), (2-LS2-1)</li> <li>• Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2)</li> <li>• Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2-PS1-3)</li> <li>• Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (2-PS1-2)</li> <li>• Scientists search for cause and effect relationships to explain natural events. (2-PS1-4)</li> </ul>
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<p>and water in any area. (2-ESS2- 2)</p> <ul style="list-style-type: none"> <li>• Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3)</li> <li>• A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)</li> <li>• Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1)</li> <li>• Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)</li> <li>• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (K-2-ETS1-2)</li> <li>• Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)</li> </ul>	<ul style="list-style-type: none"> <li>• The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2), (K-2-ETS1-2)</li> <li>• Scientists look for patterns and order when making observations about the world. (2-LS4-1)</li> <li>• Things may change slowly or rapidly. (2-ESS1-1), (2-ESS2-1)</li> <li>• Developing and using technology has impacts on the natural world. (2-ESS2-1)</li> <li>• Scientists study the natural and material world. (2-ESS2-1)</li> </ul>
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<b>Science and Engineering Practices</b>	
<ul style="list-style-type: none"> <li>• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1, 2-LS2-1)</li> <li>• Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2, K-2-ETS1-3)</li> <li>• Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2-PS1-3, 2-LS4-1)</li> <li>• Construct an argument with evidence to support a claim. (2- PS1-4)</li> <li>• Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2, K-2-ETS1-2)</li> <li>• Make observations from several sources to construct an evidence based account for natural phenomena. (2-ESS1-1)</li> <li>• Develop a model to represent patterns in the natural world. (2- ESS2-2)</li> <li>• Compare multiple solutions to a problem. (2-ESS2-1)</li> <li>• 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. (2- ESS2-3)</li> <li>• Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2- ETS1-1)</li> <li>• Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)</li> </ul>	

## Grade 2

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Matter and Matter’s Interactions</b></p> <ul style="list-style-type: none"> <li>• • 2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their</li> </ul>
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	<p>observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]</p> <ul style="list-style-type: none"> <li>• 2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]</li> <li>• 2-PS1-3 Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. [Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]</li> <li>• 2-PS1-3 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. [Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.]</li> </ul>
<p><b>Connections to NJSLs – English Language Arts</b></p>	<ul style="list-style-type: none"> <li>• RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)</li> <li>• RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-PS1-4) New Jersey Department of Education June 2020 37</li> <li>• RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-PS1-4)</li> <li>• RI.2.8 Describe how reasons support specific points the author makes in a text. (2-PS1-2), (2-PS1-4)</li> <li>• W.2.1 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. (2-PS1-4)</li> </ul>
<p><b>Connections to NJSLs – Mathematics</b></p>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (2-PS1-2)</li> <li>• MP.4 Model with mathematics. (2-PS1-1), (2-PS1-2)</li> <li>• MP.5 Use appropriate tools strategically. (2-PS1-2)</li> <li>• 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (2-PS1-1),(2-PS1-2)</li> </ul>

<p><b>PERFORMANCE EXPECTATIONS</b></p>	<p><b>Ecosystems: Interactions, Energy, Dynamics (2-1, 2-2)</b></p> <ul style="list-style-type: none"> <li>• 2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow. [Assessment</li> </ul>
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	<p>Boundary: Assessment is limited to testing one variable at a time.]</p> <ul style="list-style-type: none"> <li>• 2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants</li> </ul>
<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS2-1) \</li> <li>• W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-LS2-1)</li> <li>• SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-LS2-2)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (2-LS2-1)</li> <li>• MP.4 Model with mathematics. (2-LS2-1), (2-LS2-2)</li> <li>• MP.5 Use appropriate tools strategically. (2-LS2-1)</li> <li>• 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (2-LS2-2)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Ecosystems: Interactions, Energy, Dynamics (4-1)</b></p> <ul style="list-style-type: none"> <li>• • 2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.]</li> </ul>
<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS4-1)</li> <li>• W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-LS4-1)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (2-LS4-1)</li> <li>• MP.4 Model with mathematics. (2-LS4-1)</li> <li>• 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (2-LS4-1)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<b>Earth's Place in the Universe</b> <ul style="list-style-type: none"> <li>• 2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.]</li> </ul>
<b>Connections to NJSLs – English Language Arts</b>	<ul style="list-style-type: none"> <li>• W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS4-1)</li> <li>• RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-ESS1-1)</li> <li>• RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-ESS1-1)</li> <li>• W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS1-1)</li> <li>• W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-ESS1-1)</li> <li>• W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-ESS1-1)</li> <li>• SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media. (2-ESS1-1)</li> </ul>
<b>Connections to NJSLs – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (2-ESS1-1)</li> <li>• MP.4 Model with mathematics. (2-ESS1-1)</li> <li>• 2.NBT.A Understand place value. (2-ESS1-1)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<b>Earth's Systems</b> <ul style="list-style-type: none"> <li>• • 2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]</li> <li>• 2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.</li> <li>• 2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid</li> </ul>
<b>Connections to NJSLs – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-ESS2-1)</li> </ul>

	<ul style="list-style-type: none"> <li>• RI.2.9 Compare and contrast the most important points presented by two texts on the same topic. (2-ESS2-1)</li> <li>• W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS2-3)</li> <li>• W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-ESS2-3)</li> <li>• SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-ESS2-2)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• 2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)</li> <li>• 2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. (2-ESS2-1)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Engineering Design</b></p> <ul style="list-style-type: none"> <li>• K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.</li> <li>• K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</li> <li>• K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</li> </ul>
<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)</li> <li>• W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1), (K-2-ETS1-3)</li> <li>• SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)</li> </ul>



**Connections to NJSL –  
Mathematics**

- MP.5 Use appropriate tools strategically. (1-PS4-4)
- MP.2 Reason abstractly and quantitatively. (K-2-ETS1-1), (K-2-ETS1-3)
- MP.4 Model with mathematics. (K-2-ETS1-1), (K-2-ETS1-3)
- MP.5 Use appropriate tools strategically. (K-2-ETS1-1), (K-2-ETS1-3)
- 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1), (K-2-ETS1-3)

## Grade 2

### Interdisciplinary Connections

**MATH**

- **MP.2** Reason abstractly and quantitatively. (2-PS1-2, 2-ESS1-1, K-2-ETS1-1, K-2-ETS1-3)
- **MP.4** Model with mathematics. (2-PS1-1, 2-PS1-2, 2-ESS1-1)
- **MP.5** Use appropriate tools strategically. (2-PS1-2, K-2-ETS1-1, K-2-ETS1-3)
- **2.MD.D.10** Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (2-PS1-1),(2-PS1-2)
- **2.NBT.A** Understand place value. (2-ESS1-1)
- **2.NBT.A.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)
- **2.MD.B.5** Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and

**ELA**

- **RI.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)
- **RI.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-PS1-4) New Jersey Department of Education June 2020 37
- **RI.2.3** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-PS1-4, 2-ESS2-1)
- **RI.2.8** Describe how reasons support specific points the author makes in a text. (2-PS1-2), (2-PS1-4)
- **RI.2.9** Compare and contrast the most important points presented by two texts on the same topic. (2-ESS2-1)
- **W.2.1** Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. (2-PS1-4, 2-ESS1-1)
- **W.2.6** With guidance and support from adults, use a variety

<p>equations with a symbol for the unknown number to represent the problem. (2-ESS2-1)</p> <ul style="list-style-type: none"> <li>● <b>2.MD.D.10</b> Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1), (K-2-ETS1-3)</li> </ul>	<p>of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS1-1, 2-ESS2-3, K-2-ETS1-1, K-2-ETS1-3 )</p> <ul style="list-style-type: none"> <li>● <b>W.2.7</b> Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS2-1, 2-ESS1-1, 2-LS4-1)</li> <li>● <b>W.2.8</b> Recall information from experiences or gather information from provided sources to answer a question. (2-LS2-1, 2-ESS1-1, 2-ESS2-3)</li> <li>● <b>SL.2.2</b> Recount or describe key ideas or details from a text read aloud or information presented orally or through other media. (2-ESS1-1)</li> <li>● <b>SL.2.5</b> Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-LS2-2, 2-ESS2-2, K-2-ETS1-2)</li> </ul>	
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## Grade 2

<p><b>MATERIALS and RESOURCES:</b></p> <ul style="list-style-type: none"> <li>● <a href="#">Do Plants Need Sunlight?</a></li> <li>● <a href="#">What Do Plants Need?</a></li> <li>● <a href="#">Building and Testing a Vanilla Plant Pollinator</a></li> <li>● <a href="#">Improving Our Vanilla Bean Pollinators</a></li> <li>● <a href="#">Two Scoops are Better Than One</a></li> <li>● <a href="#">The Bug Chicks</a></li> <li>● <a href="#">Properties of Materials and Everyday Uses</a></li> <li>● <a href="#">Matter Song</a></li> <li>● <a href="#">Game: Properties of Matter</a></li> <li>● <a href="#">Shakin' Up the Classroom</a></li> <li>● <a href="#">Thousands of Tiny Pieces</a></li> <li>● <a href="#">Take It Apart, Put It Together</a></li> </ul>	<p><b>INSTRUCTIONAL STRATEGIES</b></p> <ul style="list-style-type: none"> <li>● Reinforcing effort</li> <li>● Provide recognition</li> <li>● Cooperative learning</li> <li>● Cues, Questions, Organizers</li> <li>● Verbal summarizing</li> <li>● Generating &amp; testing hypotheses</li> <li>● Student practice</li> <li>● Individualized instruction</li> <li>● Effective feedback</li> <li>● Presenting learning goals/objectives</li> <li>● Authentic learning</li> <li>● Adapting to learning styles</li> <li>● Conferencing</li> </ul>	<p><b>Technology Connections</b></p> <p><b>8.1.5.A.1</b> digital tools</p> <p><b>8.1.5.A.2</b> format documents</p> <p><b>8.1.5.A.3</b> graphic organizer</p> <p><b>8.1.5.D.1</b> copyrights</p> <p><b>8.1.5.D.3</b> cybersafety</p> <p><b>8.1.5.D.4</b> digital citizenship</p> <p><b>8.1.5.E.1</b> digital tools for research</p> <p><b>8.1.5.F.1</b> digital tools to analyze data</p>	<p><b>21st C 9.1 Finance</b></p> <ul style="list-style-type: none"> <li>● <b>9.1.4.B.5</b> ways to save</li> <li>● <b>9.1.4.D.1</b> ways to save</li> <li>● <b>9.1.4.E.1</b> consumer decisions</li> </ul> <p><b>21st C 9.2 Career Ready Practices</b></p> <ul style="list-style-type: none"> <li>● <b>9.2.4.A.1</b> why we work</li> <li>● <b>9.2.4.A.2</b> life roles</li> </ul> <p><b>CRP1</b> citizen  <b>CRP2</b> academic skills  <b>CRP5</b> environmental</p>
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<ul style="list-style-type: none"> <li>• <a href="#">Magic School Bus Bakes in a Cake</a></li> <li>• <a href="#">Science of Macaroni Salad</a></li> <li>• <a href="#">How Can Water Change the Shape of the Land?</a></li> <li>• <a href="#">Finding Erosion at Our School</a></li> <li>• Khan Academy</li> <li>• NASA for Kids</li> <li>• Scholastic Science</li> <li>• Studies Weekly</li> <li>• Mystery Science</li> <li>• Manipulatives</li> <li>• Lab materials</li> <li>• Video Tools: YouTube,</li> <li>• Authentic listening and reading sources that provide data and support for speaking and writing prompts.</li> <li>• Scott Foresman Science Text</li> </ul>	<ul style="list-style-type: none"> <li>• Activate prior knowledge</li> <li>• Investigations</li> <li>• Graphic organizers</li> <li>• Identifying similarities and differences</li> <li>• Learning centers</li> <li>• Modeling</li> <li>• Music/ songs</li> <li>• Peer teaching</li> <li>• Project -based learning</li> <li>• Reading aloud</li> <li>• Debate</li> <li>• Word walls</li> <li>• Think- Pair- Share</li> <li>• Rubrics</li> <li>• Varied texts</li> </ul>		<p>decisions</p> <p><b>CRP6</b> creativity/innovation</p> <p><b>CRP8</b> critical thinking</p> <p><b>CRP4</b> communicate clearly</p> <p><b>CRP10</b> careers</p> <p><b>CRP11</b> enhance with tech</p>
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## Grade 2

<p><b>MODIFICATIONS -SPECIAL NEEDS, 504</b></p> <ul style="list-style-type: none"> <li>• Pair visual prompts with verbal presentations</li> <li>• Ask students to restate information, directions, and assignments.</li> <li>• Provide opportunities for repetition and practice</li> <li>• Model skills / techniques to be mastered.</li> <li>• Provide extended time to complete class work</li> </ul>	<p><b>STUDENTS AT RISK OF FAILURE</b></p> <ul style="list-style-type: none"> <li>• Ask students to restate information, directions, and assignments.</li> <li>• Provide opportunities for repetition and practice</li> <li>• Model skills / techniques to be mastered.</li> <li>• Provide extended time to complete class work</li> <li>• Provide preferential seating</li> <li>• Accommodate student requests to use a computer to complete assignments.</li> <li>• Establish expectations for</li> </ul>	<p><b>GIFTED AND TALENTED</b></p> <ul style="list-style-type: none"> <li>• Use advanced supplementary / reading materials</li> <li>• Use of authentic resources to promote a deeper understanding of culture.</li> <li>• Encourage the use of creativity</li> <li>• Provide opportunities to develop depth and breadth of knowledge in the subject area (examples: create drawings/illustrations, use of music, create</li> </ul>	<p><b>ELL Modifications</b></p> <ul style="list-style-type: none"> <li>• Seat student near teacher</li> <li>• Print clearly</li> <li>• Do not use cursive</li> <li>• Give directions in print &amp; orally</li> <li>• Print keywords, page numbers, homework, deadlines on the board</li> <li>• Incorporate visuals</li> <li>• Avoid slang or colloquial sayings,</li> <li>• Avoid complex sentence structure</li> <li>• Use questions that need one word answers</li> <li>• Be ready to give additional</li> </ul>
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<ul style="list-style-type: none"> <li>● Provide copy of class notes</li> <li>● Provide preferential seating</li> <li>● Establish expectations for correct spelling on assignments.</li> </ul>	<p>punctuation</p> <ul style="list-style-type: none"> <li>● Assign a peer helper in the class setting</li> <li>● Provide oral reminders and check student work during independent work time</li> <li>● Assist student with long and short term planning of assignments</li> <li>● Encourage student to proofread assignments and tests</li> <li>● Provide regular parent/school communication</li> </ul>	<p>poems/songs, write opinion letters, create videos/stories/comic strips, etc.)</p>	<p>instructions on complex tasks</p> <ul style="list-style-type: none"> <li>● Adjust assignments so student writes less</li> <li>● Provide simpler questions to answer</li> <li>● Expect fewer spelling words</li> <li>● Provide extra time as necessary</li> <li>● Provide graphic organizers</li> <li>● Provide an ELL dictionary</li> <li>● Provide books on tape or CD</li> <li>● Provide wall charts of key concepts</li> <li>● Provide a word wall</li> <li>● Provide models of docs such as Homework, projects</li> </ul>
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# BAND 3 - 5

## Grade 3

### PACING GUIDE

Unit 1 Motion and Stability: Forces and Interactions	10 days
Unit 2 From Molecules to Organisms: Structures and Processes	15 days
Unit 3 Ecosystems: Interactions, Energy, and Dynamics	15 days
Unit 4 Heredity: Inheritance and Variation of Traits	15 days
Unit 5 Biological Evolution: Unity and Diversity	10 days
Unit 6 Earth's Systems	15 days
Unit 7 Earth and Human Activity	10 days
Engineering and Design	10 days

# Grade 3

<b>ENDURING UNDERSTANDING:</b>	<p>Patterns of change can be used to make predictions.</p> <p>People record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.</p> <p>Climate describes the range of an area's typical weather conditions and the extent to which those conditions vary over the years</p> <p>Science investigations use a variety of methods, tools, and techniques.</p> <p>Cause and effect relationships are routinely identified, tested, and used to explain change.</p> <p>Objects in contact exert forces on each other.</p> <p>An object at rest has multiple forces acting on it.</p> <p>Patterns of change can be used to make predictions.</p> <p>Electric and magnetic forces between a pair of objects do not require that the objects be in contact.</p> <p>Sizes of forces depend on the properties of the objects.</p> <p>Inherited traits are inherited naturally.</p> <p>Many characteristics are inherited from parents.</p> <p>Different organisms vary in how they look and function because they have different inherited information.</p> <p>Characteristics, which can range from diet to learning, result from an individual's interaction with the environment.</p> <p>Characteristics involve both inheritance and environment.</p> <p>Differences in characteristics in the same species provide advantages in survival, finding mates, and reproducing.</p> <p>Organisms and their habitat make up a system in which the parts depend on each other.</p> <p>Identify cause-and-effect relationships in order to explain change.</p> <p>Observable phenomena exist for long and short periods.</p> <p>Some plants and animals are extinct.</p> <p>Fossils provide evidence about organisms from long ago and their environments.</p>
<b>ESSENTIAL QUESTIONS:</b>	<ul style="list-style-type: none"><li>• Can we predict the kind of weather that we will see in the spring, summer, autumn, or winter?</li><li>• How can climates in different regions of the world be described?</li><li>• How can we protect people from natural hazards such as flooding, fast wind, or lightning?</li><li>• Can we use patterns that we observed to predict the future?</li><li>• What are the relationships between electrical and magnetic forces?</li></ul>

	<ul style="list-style-type: none"> <li>• How can we use our understanding about magnets to solve problems?</li> <li>• What kinds of traits are passed from parent to offspring?</li> <li>• What environmental factors might influence the traits of a specific organism?</li> <li>• Do all living things have the same life cycle?</li> <li>• Are there advantages to being different?</li> <li>• What are the stages of an organism's life cycle?</li> <li>• In a particular habitat, why do some organisms survive well, some survive less well, and some cannot survive at all?</li> <li>• What do fossils tell us about the organisms and the environments in which they lived?</li> <li>• What happens to the plants and animals when the environment changes?</li> </ul>
<b>ASSESSMENTS:</b>	<b>FORMATIVE:</b> <b>SUMMATIVE:</b> <b>BENCHMARK:</b>

## Grade 3

<p><b>Core Ideas</b></p> <ul style="list-style-type: none"> <li>• Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (3-PS2-1)</li> <li>• The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (3-PS2-2)</li> <li>• Objects in contact exert forces on each other. (3-PS2-1)</li> <li>• Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. (3-PS2-3),(3-PS2-4)</li> <li>• Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)</li> <li>• Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size (Note: Moved from K–2). (3-LS2-1)</li> <li>• Many characteristics of organisms are inherited from their parents. (3-LS3-1) Other</li> </ul>	<p><b>Crosscutting Concepts</b></p> <ul style="list-style-type: none"> <li>• Patterns of change can be used to make predictions. (3-PS2-2), (3-LS1-1), . (3-ESS2-1), (3-ESS2-2)</li> <li>• Cause and effect relationships are routinely identified, tested, and used to explain change. (3-PS2-1), (3-PS2-3), (3-LS2- 1), (3-LS3-2), (3-LS4- 2), (3-LS4-3), (3-ESS3-1)</li> <li>• Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. (3-PS2-4)</li> <li>• Similarities and differences in patterns can be used to sort and classify natural phenomena.</li> </ul>
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characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)

- Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)
- Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1) The environment also affects the traits that an organism develops. (3-LS3-2)
- The environment also affects the traits that an organism develops. (3-LS3-2)
- When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)
- Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (3-LS4-1)
- Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)
- Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)
- For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)
- Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)
- Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)
- Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)
- A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1)
- Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)
- Research on a problem, such as climate change, should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)

(3-LS3-1)

- Science findings are based on recognizing patterns. (3-PS2-2, 3-LS1-1)
- Science investigations use a variety of methods, tools, and techniques. (3-PS2-1)
- Observable phenomena exist from very short to very long time periods. (3-LS4-1)
- A system can be described in terms of its components and their interactions. (3-LS4-4)
- Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-4)
- Science assumes consistent patterns in natural systems. (3-LS4-1)
- Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-ESS3-1, 3-5-ETS1-1)
- Science affects everyday life. (3-ESS3-1)
- People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)



- At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)
- Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5- ETS1-3)
- Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3)

### Science and Engineering Practices

- Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3,3-PS2-3)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4, 3-PS2-4)
- 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. (3-PS2-1, 3-5-ETS1-3)
- 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. (3-PS2-2)
- Develop models to describe phenomena. (3-LS1-1, 3-LS4-3)
- Construct an argument with evidence, data, and/or a model. (3- LS2-1)
- Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1, 3-LS4-1)
- Use evidence (e.g., observations, patterns) to support an explanation. (3-LS3-2, 3-LS4-2)
- 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. (3-LS4-4. 3-ESS3-1)
- Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. (3-ESS2-1)
- Obtain and combine information from books and other reliable media to explain phenomena. (3- ESS2-2)
- 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. (3-5-ETS1-1)
- Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3-5-ETS1-2)

## Grade 3

### PERFORMANCE EXPECTATIONS

### Motion and Stability: Forces and Interactions

- 3-PS2-1 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced

	<p>forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving and/or balanced forces pushing on a box from both sides will not produce any motion at all. Qualitative and conceptual, but not quantitative addition of forces, are used at this level.</p> <ul style="list-style-type: none"> <li>• 3-PS2-2 Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.]</li> <li>• 3-PS2-3 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper. Examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paper clips, and the force exerted by one magnet versus the force exerted by two magnets.</li> <li>• 3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets. [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]</li> </ul>
<p><b>Connections to NJSLS – English Language Arts</b></p>	<ul style="list-style-type: none"> <li>• RI.3.1 Ask and answer questions and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-1), (3-PS2-3)</li> <li>• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-PS2- 3)</li> <li>• RI.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text. (3-PS2-3)</li> <li>• W.3.7 Conduct short research projects that build knowledge about a topic. (3-PS2-1), (3-PS2-2)</li> <li>• W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-PS2-1), (3-PS2-2)</li> <li>• SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3)</li> </ul>
<p><b>Connections to NJSLS – Mathematics</b></p>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (3-PS2-1)</li> <li>• MP.5 Use appropriate tools strategically. (3-PS2-1)</li> <li>• 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-PS2-1)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>From Molecules to Organisms: Structures and Processes</b></p> <ul style="list-style-type: none"> <li>• 3-LS1-1 Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.]</li> </ul>
<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (3-LS1-1)</li> <li>• SL.3.5 Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details. (3-LS1-1)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.4 Model with mathematics. (3-LS1-1)</li> <li>• 3.NBT Number and Operations in Base Ten (3-LS1-1)</li> <li>• 3.NF Number and Operations—Fractions (3-LS1-1)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Ecosystems: Interactions, Energy, and Dynamics</b></p> <ul style="list-style-type: none"> <li>• 3-LS2-1 Construct an argument that some animals form groups that help members survive.</li> </ul>
<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)</li> <li>• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS2- 1)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.4 Model with mathematics. (3-LS2-1)</li> <li>• 3.NBT Number and Operations in Base Ten (3-LS2-1)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Heredity: Inheritance and Variation of Traits</b></p> <ul style="list-style-type: none"> <li>• 3-LS3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings.]</li> </ul>
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	<p>Emphasis is on organisms other than humans.]</p> <ul style="list-style-type: none"> <li>• 3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]</li> </ul>
<p><b>Connections to NJSLS – English Language Arts</b></p>	<ul style="list-style-type: none"> <li>• RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)</li> <li>• RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1), (3-LS3-2)</li> <li>• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3- 1), (3-LS3-2)</li> <li>• W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1), (3-LS3-2)</li> <li>• SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1), (3-LS3-2)</li> </ul>
<p><b>Connections to NJSLS – Mathematics</b></p>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (3-LS3-1), (3-LS3-2)</li> <li>• MP.4 Model with mathematics. (3-LS3-1), (3-LS3-2)</li> <li>• 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, on which the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1), (3-LS3-2)</li> </ul>

<p><b>PERFORMANCE EXPECTATIONS</b></p>	<p><b>Biological Evolution: Unity and Diversity</b></p> <ul style="list-style-type: none"> <li>• 3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.]</li> <li>• 3-LS4-2 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]</li> </ul>
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	<ul style="list-style-type: none"> <li>• 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]</li> <li>• 3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.]</li> </ul>
<p><b>Connections to NJSLs – English Language Arts</b></p>	<ul style="list-style-type: none"> <li>• RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)</li> <li>• RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1), (3-LS3-2)</li> <li>• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3- 1), (3-LS3-2)</li> <li>• W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1), (3-LS3-2)</li> <li>• SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1), (3-LS3-2)</li> </ul>
<p><b>Connections to NJSLs – Mathematics</b></p>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (3-LS3-1), (3-LS3-2)</li> <li>• MP.4 Model with mathematics. (3-LS3-1), (3-LS3-2)</li> <li>• 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1), (3-LS3-2)</li> </ul>

<p><b>PERFORMANCE EXPECTATIONS</b></p>	<p><b>Earth’s Systems</b></p> <ul style="list-style-type: none"> <li>• 3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.]</li> <li>• 3-ESS2-1 Obtain and combine information to describe climates in different regions of the world.</li> </ul>
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<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)</li> <li>• RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1), (3-LS3-2)</li> <li>• RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3- 1), (3-LS3-2)</li> <li>• W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1), (3-LS3-2)</li> <li>• SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1), (3-LS3-2)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (3-LS3-1), (3-LS3-2)</li> <li>• MP.4 Model with mathematics. (3-LS3-1), (3-LS3-2)</li> <li>• 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot on which the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1), (3-LS3-2)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Earth and Human Activity</b></p> <p>3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of climate change and/or a weather-related hazard. [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]</p>
<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)</li> <li>• W.3.7 Conduct short research projects that build knowledge about a topic. (3-ESS3-1)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (3-LS3-1), (3-LS3-2)</li> <li>• MP.4 Model with mathematics. (3-LS3-1), (3-LS3-2)</li> </ul>

<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Engineering Design</b></p>
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	<ul style="list-style-type: none"> <li>• 3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</li> <li>• 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</li> <li>• 3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</li> </ul>
<b>Connections to NJSL – English Language Arts</b>	<ul style="list-style-type: none"> <li>• RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)</li> <li>• RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)</li> <li>• RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)</li> <li>• W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>• W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work and provide a list of sources. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>• W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1), (3-5-ETS1-3)</li> </ul>
<b>Connections to NJSL – Mathematics</b>	<ul style="list-style-type: none"> <li>• MP.2 Reason abstractly and quantitatively. (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)</li> <li>• MP.4 Model with mathematics. (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)</li> <li>• MP.5 Use appropriate tools strategically. (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)</li> <li>• 3-5.OA Operations and Algebraic Thinking (3-5-ETS1-1), (3-5-ETS1-2)</li> </ul>

## Grade 3

<b>Interdisciplinary Connections</b>		
<b>Math</b> <ul style="list-style-type: none"> <li>• <b>MP.2</b> Reason abstractly and quantitatively. (3-PS2-1), (3-LS3-2), (3-5-ETS1-1), (3-5-ETS1-2),</li> </ul>	<b>ELA</b> <ul style="list-style-type: none"> <li>• <b>RI.3.1</b> Ask and answer questions and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-1), (3-PS2-3) (3-LS1-1), . (3-LS2-1)</li> </ul>	

<p>(3-5-ETS1-3)</p> <ul style="list-style-type: none"> <li>● <b>MP.4</b> Model with mathematics. (3-LS1-1), (3-LS2-1), (3-LS3-1), (3-LS3-2), (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)</li> <li>● <b>MP.5</b> Use appropriate tools strategically. (3-PS2-1), (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)</li> <li>● <b>3.MD.A.2</b> Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-PS2-1)</li> <li>● <b>3.MD.B.4</b> Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1), (3-LS3-2)</li> <li>● <b>3.NBT</b> Number and Operations in Base Ten (3-LS1-1), (3-LS2-1)</li> <li>● <b>3.NF</b> Number and Operations—Fractions (3-LS1-1)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>RI.3.2</b> Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1), (3-LS3-2)</li> <li>● <b>RI.3.3</b> Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-PS2-3), (3-LS2-1), (3-LS3-1), (3-LS3-2)</li> <li>● <b>RI.3.8</b> Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text. (3-PS2-3)</li> <li>● <b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)</li> <li>● <b>RI.5.7</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)</li> <li>● <b>RI.5.9</b> Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)</li> <li>● <b>W.3.2</b> Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1), (3-LS3-2)</li> <li>● <b>W.3.7</b> Conduct short research projects that build knowledge about a topic. (3-PS2-1), (3-PS2-2), (3-ESS3-1)</li> <li>● <b>W.3.8</b> Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-PS2-1), (3-PS2-2)</li> <li>● <b>W.5.7</b> Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>● <b>W.5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work and provide a list of sources. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>● <b>W.5.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>● <b>SL.3.3</b> Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3)</li> <li>● <b>SL.3.4</b> Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1), (3-LS3-2)</li> <li>● <b>SL.3.5</b> Create engaging audio recordings of stories or poems that</li> </ul>	
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demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.  
(3-LS1-1)

## Grade 3

<p><b>MATERIALS and RESOURCES:</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Robo Arm</a></li> <li>• <a href="#">Examining Magnetic Force Field</a></li> <li>• <a href="#">Guppies Galore</a></li> <li>• <a href="#">Let's Hear It for Ladybugs</a></li> <li>• <a href="#">Simply Butterflies</a></li> <li>• <a href="#">Insects that Work Together</a></li> <li>• <a href="#">Battle at Kruger</a></li> <li>• <a href="#">Biomes of North America</a> desert</li> <li>• <a href="#">Biomes of North America</a> Deciduous Forest</li> <li>• <a href="#">Biomes of North America</a> Rainforest</li> <li>• <a href="#">Biomes of North America</a> Prairie</li> <li>• <a href="#">Biomes of North America</a> Tundra</li> <li>• <a href="#">Biomes of North America</a> Boreal Forest</li> <li>• <a href="#">Biomes of North America</a> Ocean</li> <li>• <a href="#">Biomes of North America</a> Estuary</li> <li>• <a href="#">Mass Environmental Change</a></li> <li>• Khan Academy</li> <li>• NASA for Kids</li> <li>• Scholastic Science</li> <li>• Studies Weekly</li> <li>• Gizmos</li> <li>• Mystery Science</li> <li>• NJ History/ Kids</li> <li>• Manipulatives</li> <li>• Lab materials</li> </ul>	<p><b>INSTRUCTIONAL STRATEGIES</b></p> <ul style="list-style-type: none"> <li>• Reinforcing effort</li> <li>• Provide recognition</li> <li>• Cooperative learning</li> <li>• Cues, Questions, Organizers</li> <li>• Summarizing (or note taking)</li> <li>• Generating &amp; testing hypotheses</li> <li>• Student practice</li> <li>• Individualized instruction</li> <li>• Effective feedback</li> <li>• Presenting learning goals/ objectives</li> <li>• Authentic learning</li> <li>• Adapting to learning styles</li> <li>• Conferencing</li> <li>• Activating prior knowledge</li> <li>• Investigations</li> <li>• Graphic organizers</li> <li>• Guest speakers</li> <li>• Identifying similarities and differences</li> <li>• Learning centers</li> <li>• Modeling</li> <li>• Music/ songs</li> <li>• Peer teaching</li> <li>• Project -based learning</li> <li>• Reading aloud</li> <li>• Think- Pair- Share</li> <li>• Rubrics</li> <li>• Varied texts</li> </ul>	<p><b>Technology Connections</b></p> <p><b>8.1.5.A.1</b> digital tools</p> <p><b>8.1.5.A.2</b> format documents</p> <p><b>8.1.5.A.3</b> graphic organizer</p> <p><b>8.1.5.D.1</b> copyrights</p> <p><b>8.1.5.D.3</b> cybersafety</p> <p><b>8.1.5.D.4</b> digital citizenship</p> <p><b>8.1.5.E.1</b> digital tools for research</p> <p><b>8.1.5.F.1</b> digital tools to analyze data</p>	<p><b>21st C 9.1 Finance</b></p> <ul style="list-style-type: none"> <li>• 9.1.4.B.5 earn and save</li> <li>• 9.1.4.D.1 how to save</li> <li>• 9.1.4.E.1 consumer decisions</li> </ul> <p><b>21st C 9.2 Career Ready Practices</b></p> <ul style="list-style-type: none"> <li>• 9.2.4.A.1 careers</li> <li>• 9.2.4.A.2 life roles</li> </ul> <p><b>CRP1</b> citizen</p> <p><b>CRP2</b> academic skills</p> <p><b>CRP5</b> environmental decisions</p> <p><b>CRP6</b> creativity/innovation</p> <p><b>CRP8</b> critical thinking</p> <p><b>CRP4</b> clear communication</p> <p><b>CRP7</b> valid research</p> <p><b>CRP10</b> careers</p> <p><b>CRP11</b> enhancement through technology</p>
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<ul style="list-style-type: none"> <li>• Newsela</li> <li>• Video Tools: YouTube,</li> <li>• E-Portfolios: Google Drive,</li> <li>• Authentic listening and reading sources that provide data and support for speaking and writing prompts.</li> <li>• Scott Foresman Science Text</li> </ul>			
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## Grade 3

<p><b>MODIFICATIONS -SPECIAL NEEDS, 504</b></p> <ul style="list-style-type: none"> <li>• Pair visual prompts with verbal presentations</li> <li>• Ask students to restate information, directions, and assignments.</li> <li>• Provide opportunities for repetition and practice</li> <li>• Model skills / techniques to be mastered.</li> <li>• Provide extended time to complete class work</li> <li>• Provide copy of class notes</li> <li>• Provide preferential seating</li> <li>• Establish expectations for punctuation</li> </ul>	<p><b>STUDENTS AT RISK OF FAILURE</b></p> <ul style="list-style-type: none"> <li>• Ask students to restate information, directions, and assignments.</li> <li>• Provide opportunities for repetition and practice</li> <li>• Model skills / techniques to be mastered.</li> <li>• Provide extended time to complete class work</li> <li>• Provide copy of class notes</li> <li>• Provide preferential seating</li> <li>• Accommodate student requests to use a computer to complete assignments.</li> <li>• Establish expectations for punctuation</li> <li>• Assign a peer helper in the class setting</li> <li>• Provide oral reminders and check student work during independent work time</li> <li>• Assist student with long and short term planning of assignments</li> </ul>	<p><b>GIFTED AND TALENTED</b></p> <ul style="list-style-type: none"> <li>• Thematic topics for discussion and research: families &amp; communities, science and technology, beauty and aesthetics, contemporary life, global challenges, personal and public identities.</li> <li>• Use of technological devices to gain access to online resources in order to research and explore current events and cultural practices. Use advanced supplementary / reading materials</li> <li>• Use of authentic resources to promote a deeper understanding of culture.</li> <li>• Opportunities for open-ended, self-directed activities</li> <li>• Communication outside the language classroom for travel, study, work, and/or interviews with community members.</li> <li>• Encourage the use of creativity</li> </ul>	<p><b>ELL Modifications</b></p> <ul style="list-style-type: none"> <li>• Seat student near teacher</li> <li>• Print clearly</li> <li>• Do not use cursive</li> <li>• Give directions in print &amp; orally</li> <li>• Print keywords, page numbers, homework, deadlines on the board</li> <li>• Incorporate visuals</li> <li>• Avoid slang or colloquial sayings,</li> <li>• Avoid complex sentence structure</li> <li>• Use questions that need one word answers</li> <li>• Be ready to give additional instructions on complex tasks</li> <li>• Adjust assignments so student writes less</li> <li>• Provide simpler questions to answer</li> <li>• Expect fewer spelling words</li> <li>• Provide extra time as necessary</li> <li>• Provide graphic organizers</li> </ul>
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	<ul style="list-style-type: none"> <li>• Encourage student to proofread assignments and tests</li> <li>• Provide regular parent/school communication</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunities to develop depth and breadth of knowledge in the subject area (examples: create drawings/illustrations, use of music, create poems/songs, write opinion letters, create videos/stories/comic strips, etc.) Conduct research and provide presentations of cultural topics.</li> <li>• Surveys designed to generate and analyze data to be used in discussion.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide an ELL dictionary</li> <li>• Provide books on tape or CD</li> <li>• Provide wall charts of key concepts</li> <li>• Provide a word wall</li> <li>• Provide models of docs such as Homework, projects</li> </ul>
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# Grade 4

## PACING GUIDE

Unit 1 Weathering and Erosion (4-ESS2-1, 4-ESS1-1)	10 days
Unit 2 Earth Processes (4-ESS2-2, 4-ESS3-2, 3-5-ETS1-2, 3-5-ETS1-3)	10 days
Unit 3 Structures and Functions (4-LS1-1)	10 days
Unit 4 How Organisms Process Information (4-LS1-2, 4-PS4-2)	10 days
Unit 5 Transfer of Energy (4-PS3-2, 4-ESS3-1)	15 days
Unit 6 Force and Motion (4-PS3-1, 4-PS3-3)	15 days
Unit 7 Using Engineering Design with Force and Motion Systems (4-PS3-4, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)	15 days
Unit 8 Waves and Information (4-PS4-1, 4-PS4-3, 3-5-ETS1-2, 3-5-ETS1-3)	15 days

<b>ENDURING UNDERSTANDING:</b>	<p>Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.</p> <p>Rainfall helps to shape the land and affects the types of living things found in a region.</p> <p>Living things affect the physical characteristics of their regions.</p> <p>Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes.</p> <p>Presence and location of certain fossil types indicate the order in which rock layers were formed.</p> <p>Maps can help locate different land and water features.</p> <p>Mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns.</p> <p>Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans.</p>
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	<p>Engineers improve existing technologies or develop new ones to increase benefits, decrease known risks, and meet societal demands.</p> <p>Humans cannot eliminate the hazards, but they can take steps to reduce their impacts.</p> <p>Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.</p> <p>A system can be described in terms of its components and their interactions.</p> <p>Different sense receptors are specialized for particular kinds of information which may be then processed by the animal's brain.</p> <p>An object can be seen when light reflected from its surface enters the eyes.</p> <p>Energy can be transferred.</p> <p>There are various ways that energy can be transferred.</p> <p>Energy is present in sound, light, or heat.</p> <p>There are many ways that energy can transfer between objects.</p> <p>When objects collide, the contact forces energy so as to change the objects' motion.</p> <p>Examine constraints for electric circuits in vehicles, lights, and passive solar energy.</p> <p>Waves are regular patterns of motion.</p> <p>Tests are designed to identify failure points.</p>
<p><b>ESSENTIAL QUESTIONS:</b></p>	<ul style="list-style-type: none"> <li>● What are waves and what are some things they can do?</li> <li>● How can water, ice, wind, and vegetation change the land?</li> <li>● What patterns of Earth's features can be determined with the use of a map?</li> <li>● How do internal and external structures support the survival, growth, behavior, and reproduction of plants and animals?</li> <li>● How can evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation be observed or measured?</li> <li>● What can rock formations tell us about the past?</li> <li>● What can maps tell us about the features of the world?</li> <li>● In what ways can the impacts of natural Earth processes on humans be reduced?</li> <li>● How do internal and external parts of plants and animals help them to survive, grow, behave, and reproduce?</li> <li>● How do animals receive and process different types of information from their environment in order to respond appropriately?</li> <li>● What happens when light from an object enters the eye?</li> <li>● How does energy mover?</li> <li>● From what natural resources are energy and fuels derived?</li> <li>● How does the use of natural resources affect the environment?</li> </ul>

	<ul style="list-style-type: none"> <li>• What is the relationship between the speed of an object and its energy?</li> <li>• In what ways does energy change when objects collide?</li> <li>• How can scientific ideas be applied to design, test, and refine a device that converts energy from one form to another?</li> <li>• How can we use waves to gather and transmit information?</li> </ul>
<b>ASSESSMENTS:</b>	<b>FORMATIVE:</b> <b>SUMMATIVE:</b> <b>BENCHMARK:</b>

## Grade 4

<p><b>Core Ideas</b></p> <ul style="list-style-type: none"> <li>• The faster a given object is moving, the more energy it possesses. (4- PS3-1)</li> <li>• Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-2),(4-PS3-3)</li> <li>• Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. (4-PS3-2),(4-PS3-3)</li> <li>• Light also transfers energy from place to place. (4-PS3-2)</li> <li>• Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-2),(4- PS3-4)</li> <li>• When objects collide, the contact forces transfer energy so as to change the objects' motions. (4-PS3-3)</li> <li>• Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach.(4-PS4- 1)</li> <li>• Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks). (4-PS4-1)</li> <li>• An object can be seen when light reflected from its surface enters the eyes. (4-PS4-2)</li> <li>• Digitized information. High-tech devices can transmit over long distances without significant degradation (such as computers or cell phones), and can receive and decode information—convert it from digitized form to voice—and vice versa. (4-PS4-3)</li> <li>• Plants and animals have both internal and external structures that serve various functions in</li> </ul>	<p><b>Crosscutting Concepts</b></p> <ul style="list-style-type: none"> <li>• Energy can be transferred in various ways and between objects. (4-PS3-1),(4-PS3-2),(4-PS3-3),(4-PS3-4)</li> <li>• Similarities and differences in patterns can be used to sort and classify natural phenomena. (4-PS4-1), (4-PS4-3)</li> <li>• Cause and effect relationships are routinely identified, tested, and used to explain change. (4-PS4-2), (4-ESS2-1)</li> <li>• A system can be described in terms of its components and their interactions. (4-LS1-1),(4-LS1-2)</li> <li>• Patterns can be used as evidence to support an explanation. (4-ESS1-1), (4-ESS2-2)</li> </ul>
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growth, survival, behavior, and reproduction. (4-LS1-1)

- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)
- Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)
- Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1)
- The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2)
- Living things affect the physical characteristics of their regions. (4-ESS2-1)
- Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. (4-ESS3-1)
- A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4-ESS3-2)

## Grade 4

### Science and Engineering Practices

- Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. (4-PS3-3)
- Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. (4-PS3-2), (4-ESS2-1)
- Use evidence (e.g., measurements, observations, patterns) to construct an explanation. (4-PS3-1)
- Apply scientific ideas to solve design problems. (4-PS3-4)
- Develop a model using an analogy, example, or abstract representation to describe a scientific principle. (4-PS4-1)
- Develop a model to describe phenomena. (4-PS4-2)
- Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.

(4-PS4-3), (4-ESS3-2)

- Use a model to test interactions concerning the functioning of a natural system. (4-LS1-2)
- Construct an argument with evidence, data, and/or a model. (4-LS1-1)
- Identify the evidence that supports particular points in an explanation. (4-ESS1-1)
- Analyze and interpret data to make sense of phenomena using logical reasoning. (4-ESS2-2)
- Obtain and combine information from books and other reliable media to explain phenomena. (4-ESS3-1)

## Grade 4

<b>PERFORMANCE EXPECTATIONS</b>	<b>Weathering and Erosion</b> 4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. -- Examine the angle of slope for the movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing water, cycles of heating and cooling, volume of water flow. 4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
<b>PERFORMANCE EXPECTATIONS</b>	<b>Earth Processes</b> 4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features. -- Examine topographic maps of Earth's land and ocean floor as well as mountains, volcanoes, and earthquakes. -- Analyze maps to describe features such as topographic maps of earth's land, ocean floor, mountains, continental boundaries, volcanoes and earthquakes. 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans -- Design an earthquake-resistant building. -- Design a method for monitoring volcanic activity. -- Support an explanation using patterns as evidence. 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. 3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.



<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Structure and Function</b></p> <p>4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p> <ul style="list-style-type: none"> <li>-- Examine thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>How Organisms Process Information</b></p> <p>4-LS1-2 Use a model to describe the ways that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.</p> <p>4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</p>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Transfer of Energy</b></p> <p>4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <ul style="list-style-type: none"> <li>-- Energy is present whenever sound, light, or heat are present.</li> <li>-- Energy can be transferred by electric current.</li> </ul> <p>4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p> <ul style="list-style-type: none"> <li>-- Renewable energy resources could include wind energy, water behind dams, sunlight.</li> <li>-- Non-renewable energy resources are fossil fuels and fissile materials.</li> <li>-- Dams, surface mining, air pollution could cause loss of habitat.</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Force and Motion</b></p> <p>4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.</p> <p>4-PS3-3 Ask questions and predict outcomes about the changes in energy that occur when objects collide.</p>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Using Engineering Design with Force and Motion Systems</b></p> <p>4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</p> <ul style="list-style-type: none"> <li>-- Electric circuits convert electrical energy into motion energy of a vehicle, light, or sound.</li> <li>-- A solar heater converts light into heat.</li> <li>-- Engineers improve existing technologies or develop new ones to increase benefits for society.</li> </ul> <p>3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for</p>

	<p>success and constraints on materials, time, or cost.</p> <p>3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p>3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p> <p>-- Plan and conduct collaborative investigations to produce data in tests where variables are controlled.</p>
<p><b>PERFORMANCE EXPECTATIONS</b></p>	<p><b>Waves and Information</b></p> <p>4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and to show that waves can cause objects to move.</p> <p>-- Examine diagrams, analogies, and physical models to illustrate wavelength and amplitude of waves.</p> <p>4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information.</p> <p>-- Examine drums sending codes through sound waves.</p> <p>-- Examine the use of Morse Code to send messages.</p> <p>3-5-EST1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p>-- Develop a model for waves to describe amplitude and wavelength.</p> <p>3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>

## Grade 4

<p><b>Interdisciplinary Connections</b></p>		
<p><b>Math</b></p> <ul style="list-style-type: none"> <li>• <b>MP.2</b> Reason abstractly and quantitatively. (4-ESS1-1), (4-ESS2-1), (4-ESS3-1),</li> </ul>	<p><b>ELA</b></p> <ul style="list-style-type: none"> <li>• <b>RI.4.1</b> Refer to details and examples in a text when explaining what the text says explicitly and</li> </ul>	

(4-ESS3-2)

- **MP.4** Model with mathematics. (4-PS4-1), (4-PS4-2), (4-ESS1-1), (4-ESS2-1), (4-ESS3-1), (4-ESS3-2)
- **MP.5** Use appropriate tools strategically. (4-ESS2-1)
- **4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4-PS4-1), (4-PS4-2)
- **4.G.A.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded across the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. (4-LS1-1)
- **4.OA.A.1** Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4-ESS3-1), (4-ESS3-2)
- **4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4-PS3-4)
- **4.MD.A.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a

when drawing inferences from the text. (4-PS3-1), (4-PS4-3), (4-ESS3-2)

- **RI.4.3** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. (4-PS3-1)
- **RI.4.7** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. (4-ESS2-2)
- **RI.4.9** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-PS3-1), (4-PS4-3), (4-ESS3-2)
- **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)
- **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)
- **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)
- **W.4.1** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (4-LS1-1)
- **W.4.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (4-PS3-1)
- **W.4.7** Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-PS3-2), (4-PS3-3), (4-PS3-4), (4-ESS1-1), (4-ESS2-1), (4-ESS3-1)

<p>smaller unit. Record measurement equivalents in a two-column table. (4-ESS1-1), (4-ESS2-1)</p> <ul style="list-style-type: none"> <li>● 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4-ESS2-1), (4-ESS2-2)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>W.4.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources. (4-PS3-1), (4-PS3-2), (4-PS3-3), (4-PS3-4), (4-ESS1-1), (4-ESS3-1)</li> <li>● <b>W.4.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research. (4-PS3-1), (4-ESS1-1), (4-ESS3-1)</li> <li>● <b>W.5.7</b> Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>● <b>W.5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work and provide a list of sources. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>● <b>W.5.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1), (3-5-ETS1-3)</li> <li>● <b>SL.4.5</b> Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes. (4-PS4-1), (4-PS4-2), (4-LS1-2)</li> </ul>	
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## Grade 4

<p><b>MATERIALS and RESOURCES:</b></p> <ul style="list-style-type: none"> <li>● <a href="#">Glaciers, Water and Wind</a></li> <li>● <a href="#">Bill Nye Video- Erosion</a></li> <li>● <a href="#">Gary's Sand Journal</a></li> <li>● <a href="#">Explaining Glaciers</a></li> </ul>	<p><b>INSTRUCTIONAL STRATEGIES</b></p> <ul style="list-style-type: none"> <li>● Reinforcing effort</li> <li>● Provide recognition</li> <li>● Cooperative learning</li> <li>● Cues, Questions, Organizers</li> </ul>	<p><b>Technology Connections</b></p> <p>8.1.5.A.1 digital tools</p> <p>8.1.5.A.2 format documents</p>	<p><b>21st C 9.1 Finance</b></p> <ul style="list-style-type: none"> <li>● 9.1.4.B.5 earn and save</li> <li>● 9.1.4.D.1 how to save</li> </ul>
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<ul style="list-style-type: none"> <li>● <a href="#">Coastal Erosion</a></li> <li>● <a href="#">Engineering for the Three Little Pigs</a></li> <li>● <a href="#">Jell-o Earthquake</a></li> <li>● <a href="#">Getting the Right Angle</a></li> <li>● <a href="#">Animal Mouth Structures</a></li> <li>● <a href="#">Pinhole Cameras and Eyes</a></li> <li>● <a href="#">Time to Think</a></li> <li>● <a href="#">Wind Generator</a></li> <li>● <a href="#">Thermal Energy Transfer</a></li> <li>● <a href="#">Spool Racers</a></li> <li>● <a href="#">Force and Motion</a></li> <li>● <a href="#">High Powered Paper Rocket</a></li> <li>● <a href="#">Sound of Silence</a></li> <li>● <a href="#">Energy Makes Things Happen</a></li> <li>● Khan Academy</li> <li>● NASA for Kids</li> <li>● Scholastic Science</li> <li>● Studies Weekly</li> <li>● Gizmos</li> <li>● Mystery Science</li> <li>● NJ History/ Kids</li> <li>● Manipulatives</li> <li>● Lab materials</li> <li>● Newsela</li> <li>● Video Tools: YouTube,</li> <li>● E-Portfolios: Google Drive,</li> <li>● Authentic listening and reading sources that provide data and support for speaking and writing prompts.</li> <li>● Scott Foresman Science Text</li> </ul>	<ul style="list-style-type: none"> <li>● Summarizing (or note taking)</li> <li>● Generating &amp; testing hypotheses</li> <li>● Student practice</li> <li>● Individualized instruction</li> <li>● Effective feedback</li> <li>● Presenting learning goals/ objectives</li> <li>● Authentic learning</li> <li>● Adapting to learning styles</li> <li>● Conferencing</li> <li>● Activate prior knowledge</li> <li>● Investigations</li> <li>● Graphic organizers</li> <li>● Guest speakers</li> <li>● Identifying similarities and differences</li> <li>● Modeling</li> <li>● Music/ songs</li> <li>● Peer teaching</li> <li>● Project -based learning</li> <li>● Reading aloud</li> <li>● Think- Pair- Share</li> <li>● Rubrics</li> <li>● Varied texts</li> </ul>	<p>8.1.5.A.3 graphic organizer</p> <p>8.1.5.D.1 copyrights</p> <p>8.1.5.D.3 cybersafety</p> <p>8.1.5.D.4 digital citizenship</p> <p>8.1.5.E.1 digital tools for research</p> <p>8.1.5.F.1 digital tools to analyze data</p>	<ul style="list-style-type: none"> <li>● 9.1.4.E.1 consumer decisions</li> </ul> <p><b>21st C 9.2 Career Ready Practices</b></p> <ul style="list-style-type: none"> <li>● 9.2.4.A.1 careers</li> <li>● 9.2.4.A.2 life roles</li> </ul> <p><b>CRP1</b> citizenship</p> <p><b>CRP2</b> academic skills</p> <p><b>CRP5</b> environmental decisions</p> <p><b>CRP6</b> creativity/innovation</p> <p><b>CRP8</b> critical thinking</p> <p><b>CRP4</b> communicating clearly</p> <p><b>CRP7</b> valid research</p> <p><b>CRP10</b> careers</p> <p><b>CRP11</b> enhancement through technology</p>
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## Grade 4

<p><b>MODIFICATIONS</b> <b>-SPECIAL NEEDS, 504</b></p> <ul style="list-style-type: none"> <li>● Pair visual prompts</li> </ul>	<p><b>STUDENTS AT RISK OF FAILURE</b></p> <ul style="list-style-type: none"> <li>● Ask students to restate information, directions, and</li> </ul>	<p><b>GIFTED AND TALENTED</b></p> <ul style="list-style-type: none"> <li>● Thematic topics for discussion and research</li> </ul>	<p><b>ELL Modifications</b></p> <ul style="list-style-type: none"> <li>● Seat student near teacher</li> <li>● Print clearly</li> </ul>
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<p>with verbal presentations</p> <ul style="list-style-type: none"> <li>● Ask students to restate information, directions, and assignments.</li> <li>● Provide opportunities for repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide copy of class notes</li> <li>● Provide preferential seating</li> <li>● Establish expectations for punctuation</li> </ul>	<p>assignments.</p> <ul style="list-style-type: none"> <li>● Provide opportunities for repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide copy of class notes</li> <li>● Provide preferential seating</li> <li>● Accommodate student requests to use a computer to complete assignments.</li> <li>● Establish expectations for punctuation</li> <li>● Assign a peer helper in the class setting</li> <li>● Provide oral reminders and check student work during independent work time</li> <li>● Assist student with long and short term planning of assignments</li> <li>● Encourage student to proofread assignments and tests</li> <li>● Provide regular parent/ school communication</li> </ul>	<ul style="list-style-type: none"> <li>● Use of technological devices to gain access to online resources in order to research and explore current events and cultural practices.</li> <li>● Use of advanced supplementary / reading materials</li> <li>● Use of authentic resources to promote a deeper understanding of culture.</li> <li>● Opportunities provided for open-ended activities</li> <li>● Encourage the use of creativity</li> <li>● Opportunities provided to develop depth and breadth of knowledge in the subject area (examples: create drawings/illustrations, use of music, create poems/songs, write opinion letters, create videos/stories/comic strips, etc.)</li> <li>● Opportunities to conduct research and deliver presentations of cultural topics.</li> </ul>	<ul style="list-style-type: none"> <li>● Do not use cursive</li> <li>● Give directions in print &amp; orally</li> <li>● Print keywords, page numbers, homework, deadlines on the board</li> <li>● Incorporate visuals</li> <li>● Avoid slang or colloquial sayings,</li> <li>● Avoid complex sentence structure</li> <li>● Use questions that need one word answers</li> <li>● Be ready to give additional instructions on complex tasks</li> <li>● Adjust assignments so student writes less</li> <li>● Provide simpler questions to answer</li> <li>● Expect fewer spelling words</li> <li>● Provide extra time as necessary</li> <li>● Provide graphic organizers</li> <li>● Provide an ELL dictionary</li> <li>● Provide books on tape or CD</li> <li>● Provide wall charts of key concepts</li> <li>● Provide a word wall</li> <li>● Provide models of docs such as Homework, projects</li> </ul>
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## Grade 5

### PACING GUIDE

Unit 1 Matter and its Interactions (5-PS1-1, 5-PS1-2, 5-PS1-3, 5-PS1-4)	20 days
Unit 2 Motion and Stability: Forces and Interactions (5-PS2-1)	20 days

Unit 3 Energy (5-PS3-1)	20 days
Unit 4 From Molecules to Organisms: Structures and Processes (5-LS1-1)	20 days
Unit 5 Ecosystems: Interactions, Energy, and Dynamics (5-LS2-1)	30 days
Unit 6 Earth's Place in the Universe (5-ESS1-1, 5-RSS1-2)	20 days
Unit 7 Earth's Systems (5-ESS2-1, 5-ESS2-2)	15 days
Unit 8 Earth and Human Activity (5-ESS3-1)	15 days
Engineering Design (3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)	Throughout units 1 - 8

## Grade 5

<b>ENDURING UNDERSTANDING:</b>	<p>Matter is made of particles too small to be seen through a model.</p> <p>Regardless of the type of change that matter undergoes, the total weight of matter is conserved.</p> <p>The mixing of two or more substances results in new substances.</p> <p>The geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p>Describe and graph the data to provide evidence about the distribution of water on Earth.</p> <p>Plants get the materials they need for growth chiefly from air and water.</p> <p>The movement of matter among plants, animals, decomposers, and the environment and that energy in animals' food was once energy from the sun.</p> <p>Patterns occur with daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>
<b>ESSENTIAL QUESTIONS:</b>	<ul style="list-style-type: none"> <li>● When matter changes, does its weight change?</li> <li>● How much water can be found in different places on Earth?</li> <li>● Can new substances be created by combining other substances?</li> <li>● How does matter cycle through ecosystems?</li> <li>● Where does the energy in food come from and what is it used for?</li> <li>● How do lengths and directions of shadows or relative lengths of day and night change from day to day?</li> <li>● How does the appearance of some stars change in different seasons?</li> <li>●</li> </ul>

<b>ASSESSMENTS:</b>	<b>FORMATIVE:</b>
	<b>SUMMATIVE:</b>
	<b>BENCHMARK:</b>

## Grade 5

<p><b>Core Ideas</b></p> <ul style="list-style-type: none"> <li>● Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)</li> <li>● The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)</li> <li>● Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)</li> <li>● When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)</li> <li>● No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)</li> <li>● The gravitational force of Earth acting on an object near Earth’s surface pulls that object toward the planet’s center. (5-PS2-1)</li> <li>● The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5- PS3-1)</li> <li>● Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)</li> <li>● Plants acquire their material for growth chiefly from air and water. (5-LS1-1)</li> <li>● The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms</li> </ul>	<p><b>Crosscutting Concepts</b></p> <ul style="list-style-type: none"> <li>● Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4, 5-PS2-1)</li> <li>● Natural objects exist from the very small to the immensely large. (5- PS1-1)</li> <li>● Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1-2), (5-PS1-3)</li> <li>● Science assumes consistent patterns in natural systems. (5- PS1-2)</li> <li>● Energy can be transferred in various ways and between objects. (5-PS3-1)</li> <li>● Matter is transported into, out of, and within systems. (5-LS1-1)</li> <li>● A system can be described in terms of its components and their interactions. (5-LS2-1)</li> <li>● Science explanations describe the mechanisms for natural events. (5- LS2-1)</li> </ul>
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(both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2- 1)

- Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)
- The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)
- The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5- ESS1-2)
- Earth’s major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth’s surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)
- Nearly all of Earth’s available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)
- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1)
- Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5- ETS1-1)
- Research on a problem, such as climate change, should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
- At whatever stage, communicating with peers about proposed solutions is an important

- Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5-ESS1-2)
- Natural objects exist from the very small to the immensely large. (5-ESS1-1)
- Standard units are used to measure and describe physical quantities such as weight and volume. (5- ESS2-2)
- A system can be described in terms of its components and their interactions. (5-ESS2-1, 5-ESS3-1)
- Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)
- People’s needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)
- Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3-5-ETS1-2)

part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)

- Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5-ETS1-3)

## Grade 5

### Science and Engineering Practices

- Develop a model to describe phenomena. (5-PS1-1, 5-LS2-1)
- Use models to describe phenomena. (5-PS3-1)
- Develop a model using an example to describe a scientific principle (5-ESS2-1)
- Plan and carry out investigations to answer questions and include investigations that control variables and provide evidence to support explanations or design solutions.
- Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (5-PS1-4)
- Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (5-PS1-3)
- Measure and graph quantities such as weight to address scientific and engineering questions and problems. (5-PS1-2)
- Support an argument with evidence, data, or a model. (5-PS2- 1, 5-LS1-1, 5-ESS1-1)
- Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5- ESS1-2)
- Mathematical and computational thinking in 3 - 5 builds on K - 2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.
- Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2)
- Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)
- 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. (3-5-ETS1-1)
- 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. (3-5-ETS1-3)

## Grade 5

### PERFORMANCE EXPECTATIONS

### Matter and its Interactions

5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen.

	<ul style="list-style-type: none"> <li>-- evidence to support the model could include air expanding a ball, air compressed in a syringe, sugar dissolved in water</li> </ul> <p>5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.</p> <ul style="list-style-type: none"> <li>-- Include phase changes, dissolving and mixing</li> </ul> <p>5-PS1-3 Make observations and measurements to identify materials based on their properties.</p> <ul style="list-style-type: none"> <li>-- Possible materials to identify may include baking soda, metals, minerals, liquids</li> <li>-- Properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, magnetic forces, solubility</li> </ul> <p>5-PS1-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.</p>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Motion and Stability: Forces and Interaction</b></p> <p>5-PS2-1 Support an argument that the gravitational force exerted by Earth on objects is directed down.</p> <ul style="list-style-type: none"> <li>-- “Down” references pointing to the center of the Earth</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Energy</b></p> <p>5-PS3-1 Use models to describe that energy in animals’ food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.</p> <ul style="list-style-type: none"> <li>-- Models could include diagrams and flowcharts.</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>From Molecules to Organisms: Structures and Processes</b></p> <p>5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.</p> <ul style="list-style-type: none"> <li>-- Emphasize that plant matter comes mostly from air and water, not soil.</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Ecosystems: Interactions, Energy, and Dynamics</b></p> <p>5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <ul style="list-style-type: none"> <li>-- Matter that is not food is changed by plants into matter that is food.</li> <li>-- Systems could include organisms, ecosystems, Earth</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Earth’s Place in the Universe</b></p> <p>5-ESS1-1 Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</p>

	<ul style="list-style-type: none"> <li>-- Measure relative distances of stars.</li> </ul> <p>5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p> <ul style="list-style-type: none"> <li>-- Patterns can include the position and motion of Earth with respect to the sun and selected stars that are visible in particular months.</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Earth's Systems</b></p> <p>5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <ul style="list-style-type: none"> <li>-- Include the influence of the ocean on ecosystems, landform shape, and climate.</li> <li>-- Include the influence of mountain ranges on winds and clouds in the atmosphere.</li> <li>-- The geosphere, hydrosphere, atmosphere, and biosphere are each a system.</li> </ul> <p>5-ESS2-2 Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</p> <ul style="list-style-type: none"> <li>-- Limit to oceans, lakes, rivers, glaciers, ground water, and polar ice caps</li> </ul>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Earth and Human Activity</b></p> <p>5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources, environment, and address climate change issues</p>
<b>PERFORMANCE EXPECTATIONS</b>	<p><b>Engineering Design</b></p> <p>3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p>3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>

## Grade 5

<b>Interdisciplinary Connections</b>		
<b>MATH</b>	<b>ELA</b>	
<ul style="list-style-type: none"> <li>• Use measurements</li> </ul>	<ul style="list-style-type: none"> <li>• Read, analyze, and interpret information from nonfiction text,</li> </ul>	

- Analyze data
- Reason abstractly
- Reason quantitatively
- **MP.2** Reason abstractly and quantitatively. (5-LS1-1)
- **MP.4** Model with mathematics. (5-LS1-1)
- **MP.5** Use appropriate tools strategically. (5-LS1-1)
- **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. (5-LS1- 1)
- **1.NBT.B.3** Compare two two-digit numbers based on the meanings of the tens and one digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ . (1-LS1-2)
- **1.NBT.C.4** Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning uses. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. (1-LS1-2)
- **1.NBT.C.5** Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. (1-LS1-2)
- **1.NBT.C.6** Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (1-LS1-2)
- **5.G.A.2** Represent real world and mathematical

charts, graphs, diagrams, timelines, and interactive elements on the internet.

- **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-PS2-1)
- **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-PS2-1)
- **W.5.1** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-PS2-1)
- **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-PS3-1)
- **RI.5.8** Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). (5-ESS1-1)
- **SL.5.5** Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-PS3-1)
- **RL.1.1** Ask and answer questions about key details in a text. (1-LS1-2)
- **RL.1.2** Identify the main topic and retell key details of a text. (1-LS1-2)
- **RL.1.10** With prompting and support, read and comprehend stories and poetry at grade level text complexity or above. (1-LS1-2)
- **W.1.7** Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS1-1)
- **RL.1.1** Ask and answer questions about key details in a text. (1-LS1-2)
- **RL.1.2** Identify the main topic and retell key details of a text. (1-LS1-2) •
- **RL.1.10** With prompting and support, read and comprehend stories and poetry at grade-level text complexity or above. (1-LS1-2)
- **W.1.7** Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use

<p>problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS1-2)</p> <ul style="list-style-type: none"> <li>● <b>1.MD.A.2</b> Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)</li> </ul>	<p>them to write a sequence of instructions). (1-LS1-1)</p> <ul style="list-style-type: none"> <li>● <b>W.5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS2-2)</li> <li>● <b>SL.1.1</b> Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1), (1-PS4-2), (1-PS4-3)</li> </ul>	
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## Grade 5

<p><b>MATERIALS and RESOURCES:</b> Holt <a href="#">Gizmo</a> Teacher Pay Teachers materials</p> <ul style="list-style-type: none"> <li>● Presentation: Google Slides, Prezi,</li> <li>● Video Tools: YouTube, Game-based</li> <li>● Response Tools: Kahoot!, Socrative</li> <li>● Communicative Tools: Google Apps for Education</li> <li>● E-Portfolios: Google Drive,</li> <li>● Authentic listening and reading sources that provide data and support for speaking and writing prompts.</li> <li>● BrainPop</li> <li>● StudyJams (scholastic)</li> <li>● MOSA Mack</li> <li>● Smart Exchange</li> <li>● Manipulatives</li> <li>● Science materials as appropriate</li> </ul>	<p><b>INSTRUCTIONAL STRATEGIES</b></p> <ul style="list-style-type: none"> <li>● Reinforcing effort</li> <li>● Provide recognition</li> <li>● Cooperative learning</li> <li>● Cues, Questions, Organizers</li> <li>● Summarizing (or note taking)</li> <li>● Generating &amp; testing hypotheses</li> <li>● Student practice</li> <li>● Individualized instruction</li> <li>● Effective feedback</li> <li>● Presenting learning goals/objectives</li> <li>● Blended learning</li> <li>● Authentic learning</li> <li>● Adapting to learning styles</li> <li>● Conferencing</li> <li>● Activate prior knowledge</li> <li>● Investigations</li> <li>● Graphic organizers</li> <li>● Guest speakers</li> <li>● Identifying similarities and differences</li> <li>● Learning centers</li> </ul>	<p><b>Technology Connections</b> Review Digital Citizenship with each grade using this <a href="#">guideline</a>.</p> <p><b>8.1.5.A.1</b> digital tools <b>8.1.5.A.2</b> enhance products digitally <b>8.1.5.A.3</b> graphic organizers <b>8.1.5.E.1</b> digital research <b>8.1.5F.1</b> collect &amp; organize data</p>	<p><b>21st C 9.1 Finance</b> <b>CRP1</b> responsible citizenship <b>CRP4</b> communicate responsibly <b>CRP5</b> impacts of decisions <b>CRP6</b> creativity &amp; innovation <b>CRP7</b> research <b>CRP8</b> critical thinking <b>CRP10</b> career education <b>CRP11</b> enhance productivity through technology <b>9.1.8.E.3</b> fact vs. ads <b>9.1.8.E.8</b> deceptive advertising. <b>9.1.8.E.4</b> wants and needs <b>9.2.8.B.3</b> communication <b>9.2.8.B.1</b> career choices</p>
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<p>to experimentation</p> <ul style="list-style-type: none"> <li>● Gizmo</li> <li>● Phet Simulations</li> <li>● Mystery Science</li> <li>● NSTA Science Books</li> </ul> <p>GRADE 6 Earth Science, Holt Science and Technology Holt, Rinehart, and Winston, New York, 2001</p>	<ul style="list-style-type: none"> <li>● Modeling</li> <li>● Music/ songs</li> <li>● Peer teaching</li> <li>● Project -based learning</li> <li>● Reading aloud</li> <li>● Debate</li> <li>● Student choice</li> <li>● Think- Pair- Share</li> <li>● Rubrics</li> <li>● Varied texts</li> </ul>		
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## Grade 5

<p><b>MODIFICATIONS -SPECIAL NEEDS, 504</b></p> <ul style="list-style-type: none"> <li>● Pair visual prompts with verbal presentations</li> <li>● Ask students to restate information, directions, and assignments.</li> <li>● Provide opportunities for repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide copy of class notes</li> <li>● Provide preferential seating</li> <li>● Accommodate student requests to use a computer to complete</li> </ul>	<p><b>STUDENTS AT RISK OF FAILURE</b></p> <ul style="list-style-type: none"> <li>● Ask students to restate information, directions, and assignments.</li> <li>● Provide opportunities for repetition and practice</li> <li>● Model skills / techniques to be mastered.</li> <li>● Provide extended time to complete class work</li> <li>● Provide copy of class notes</li> <li>● Provide preferential seating</li> <li>● Accommodate student requests to use a computer to complete assignments.</li> <li>● Establish expectations for correct spelling on assignments.</li> <li>● Provide extra textbooks for home.</li> <li>● Assign a peer helper in the class setting</li> </ul>	<p><b>GIFTED AND TALENTED</b></p> <ul style="list-style-type: none"> <li>● Include use of technological devices to gain access to online resources in order to research and explore current events and science topics and practices.</li> <li>● Use advanced supplementary / reading materials</li> <li>● Use authentic resources to promote a deeper understanding of culture.</li> <li>● Provide opportunities for open-ended, self-directed activities</li> <li>● Encourage the use of creativity</li> <li>● Provide opportunities to develop depth and breadth of knowledge in the subject area (examples: create</li> </ul>	<p><b>ELL Modifications</b></p> <ul style="list-style-type: none"> <li>● Seat student near teacher</li> <li>● Print clearly</li> <li>● Do not use cursive</li> <li>● Give directions in print &amp; orally</li> <li>● Print keywords, page numbers, homework, deadlines on the board</li> <li>● Incorporate visuals</li> <li>● Avoid slang or colloquial sayings,</li> <li>● Avoid complex sentence structure</li> <li>● Use questions that need one word answers</li> <li>● Be ready to give additional instructions on complex tasks</li> <li>● Adjust assignments so student writes less</li> <li>● Provide simpler questions to answer</li> <li>● Expect fewer spelling words</li> <li>● Provide extra time as necessary</li> </ul>
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<p>assignments.</p> <ul style="list-style-type: none"> <li>• Establish expectations for correct spelling on assignments.</li> <li>• Provide extra textbooks for home.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide oral reminders and check student work during independent work time</li> <li>• Assist student with long and short term planning of assignments</li> <li>• Encourage student to proofread assignments and tests</li> <li>• Provide regular parent/school communication</li> </ul>	<p>drawings/illustrations, use of music, create poems/songs, write opinion letters, create videos/stories/comic strips, etc.)</p> <ul style="list-style-type: none"> <li>• Conduct research and provide presentations of science topics.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide graphic organizers</li> <li>• Provide an ELL dictionary</li> <li>• Provide books on tape or CD</li> <li>• Provide wall charts of key concepts</li> <li>• Provide a word wall</li> <li>• Provide models of docs such as Homework, projects</li> </ul>
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## RESOURCES

- Materials & Resources, Interdisciplinary Connections, Technology, Assessments - Included at each grade level

### [SEL Competencies](#)

### [Amistad](#)



[Holocaust](#)

[Italian American Heritage](#)

## REFERENCES

ELL, Instructional Strategies, Differentiation, Students at Risk, Modifications - Included at each grade level

[Bilingual/ESL Education](#): This website provides resources to help educators understand and implement effective instructional strategies for bilingual/ESL students.

[Gifted & Talented](#): This website provides resources to help educators understand and implement effective instructional strategies for Gifted and Talented students.

[Special Education](#): This website provides resources to help educators understand and implement effective instructional strategies for students with high frequency learning challenges.

## APPENDIX

[New Jersey Statutes and Regulations](#)

[Ogdensburg Borough School District Policies and Regulations](#) (Type “Curriculum” in the search bar)

[OBSD Policy and Regulations Synopsis](#)

## Administrative Code<sup>1</sup>

### New Jersey Administrative Code Summary and Statutes Curriculum Development: Integration of 21st Century Skills and Themes and Interdisciplinary Connections

- District boards of education shall be responsible for the review and continuous improvement of curriculum and instruction based upon changes in knowledge, technology, assessment results, and modifications to the NJSLs, according to N.J.A.C. 6A:8-2. 1.
- District boards of education shall include interdisciplinary connections throughout the K–12 curriculum. 2. District boards of education shall integrate into the curriculum 21st century themes and skills ([N.J.A.C. 6A:8-3.1\(c\)2](#)).

#### **Twenty-first century themes and skills integrated into all content standards areas (N.J.A.C. 6A:8-1.1(a)3).**

“Twenty-first century themes and skills” means themes such as global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; learning and innovation skills, including creativity and innovation, critical thinking and problem solving, and communication and collaboration; information, media, and technology skills; and life and career skills, including flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility.

[From NJDOE :](#) Please note that Administrative Code requires that the local curriculum include, but is not limited to:

1. A pacing guide;
2. A list of core instructional materials, including various levels of texts at each grade level;
3. Benchmark assessments; and
4. Modifications for special education students, for ELLs in accordance with N.J.A.C. 6A:15, for students at risk of school failure, and for gifted students.

#### **Dissection Law**

[N.J.S.A. 18A:35-4.25](#) and [N.J.S.A. 18A:35-4.24](#) authorizes parents or guardians to assert the right of their children to refuse to dissect, vivisection, incubate, capture or otherwise harm or destroy animals or any parts thereof as part of a course of instruction.

#### **Amistad Law:** [N.J.S.A. 18A 52:16A-88](#)

Every board of education shall incorporate the information regarding the contributions of African Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

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<sup>1</sup> <https://www.nj.gov/education/cccs/2020/NJSLs-Science.pdf>

**Holocaust Law:** [N.J.S.A. 18A:35-28](#)

Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

**LGBT and Disabilities Law:** [N.J.S.A. 18A:35-4.35](#)

A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards ([N.J.S.A. 18A:35-4.36](#)). A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.

**Standards in Action: Climate Change****[Climate Change](#)**

By its very nature, art has the power to inform or draw attention to a specific topic. It is always about something. In fact, the increasing prevalence of activist art in the past decade evidences the power of the arts to communicate big ideas. The aim of activist art is to change the world by inspiring people to take action against societal problems (Nurmis, 2016) – including global climate change. For example, when students engage in the creation and presentation of media artwork, or when devising a theatrical work exploring the social and economic implications of climate change (e.g., impacts on human health, agriculture, food security, water supply, transportation, energy systems, ecosystems), one might expect to see students working collaboratively to research the complex impacts of global climate change on the economy and quality of daily living for people throughout the world. Ultimately, by being culturally engaging, and tapping into the creative potential of the arts to shape perception, students can New Jersey Department of Education June 2020 4 contribute to imagining a new and better future for humankind (Curtis, Reid, & Ballard, 2012; Hulme, 2009; Marks, Chandler, & Baldwin, 2014; Nurmis, 2016) through their artwork. This holds true for students now, and as adults in the workplace. It is not inconceivable that learning to leverage the capacity of the arts to raise awareness about the effects of climate change could yield employment opportunities focused on combating the negative effects of climate change and other societal global issues.

[2020 New Jersey Model Curriculum, Storyline](#)

[2020 New Jersey Student Learning Standards Kindergarten through Grade 12](#)