Science G1

EWING PUBLIC SCHOOLS
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Board Approval Date: January 24, 2022 Michael Nitti
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In accordance with The Ewing Public Schools' Policy 2230, Course Guides, this curriculum has been reviewed and found to be in compliance with all policies and all affirmative action criteria.

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Course Description and Rationale

Students in this course will learn to explain scientific phenomena. The Next Generation Science Standards (NGSS) performance expectations rely on three dimensions of learning to develop student understanding of scientific concepts. Core conceptual ideas are learned by engaging in scientific and engineering practices and considering crosscutting concepts. These three dimensions support students in developing useable knowledge to explain real world phenomena in the sciences.

In science, performance expectations at the elementary school level use three dimensional learning to foster student understanding of science concepts.

Students will use the following eight NGSS Science and Engineering Practices to demonstrate understanding of the disciplinary core ideas and develop critical thinking skills:

- Asking questions (science) and defining problems (engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using math and computational thinking
- Constructing explanations (science) and designing solutions (engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

The following seven crosscutting concepts support the development of a deeper understanding of the disciplinary core ideas:

- Patterns
- Cause and effect: mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: flows, cycles and conservation
- Structure and function

The course is a year-long course that meets for 45 minutes per day, on average for half the days of each marking period. The course uses a project-based approach to exploring many concepts. Many of the core ideas will be applied to engineering problems, allowing students to also develop an understanding of the engineering design process. This will further develop problem-solving and critical thinking skills as students work to design, test, solve, and revise solutions to problems. The crosscutting concepts of patterns through structure and function are used as organizing concepts for these disciplinary core ideas. These performance expectations focus on students demonstrating proficiency in developing and using models, using mathematical thinking, and obtaining, evaluating and communicating information; and to use these practices to demonstrate understanding of the core ideas.

The course content is arranged into three units of study:

- Waves: Light and Sound
- Space Systems: Patterns and Cycles
- Structure, Function, and Information Processing

Career Readiness, Life Literacies, and Key Skills

During this course, students will work on developing, to an age appropriate level, the following Career Readiness, Life Literacies, and Key Skills:

Disciplinary Concepts:

- Career Awareness and Planning
  - Different types of jobs require different knowledge and skills
- Creativity and Innovation
  - Brainstorming can create new, innovative ideas.
- Critical Thinking and Problem-solving
  - Critical thinkers must first identify a problem then develop a plan to address it in order to effectively solve a problem.
- Digital Citizenship
  - Young people can have a positive impact on the natural world in the fight against climate change.
- Information and Media Literacy
  - Digital tools and media resources provide access to vast stores of information that can be searched.
  - Digital tools can be used to display data in various ways.
  - A variety of diverse sources, contexts, disciplines and cultures provide valuable and necessary information that can be used for different purposes.
  - Information is shared or conveyed in a variety of formats and sources.
- Technology Literacy
  - Digital tools have a purpose.
  - Collaboration can simplify the work an individual has to do and sometimes produce a better product.

Technology Integration

Computer Science and Design Thinking

During this course, students will work on developing, to an age appropriate level, the following Computer Science and Design Thinking Skills:

Disciplinary Concepts and Core Ideas:

- Data & Analysis
  - Individuals collect, use, and display data about individuals and the world around them.
  - Data can be used to make predictions about the world.
- Engineering Design
  - Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions.
  - Limitations (constraints) must be considered when engineering designs.
- Interaction of Technology and Humans
  - Human needs and desires determine which new tools are developed.

    - Technology has changed the way people live and work.
    - Various tools can improve daily tasks and quality of life.
- Effects of Technology on the Natural World
    - The use of technology developed for the human designed world can affect the environment, including land, water, air, plants, and animals.
    - Technologies that use natural sources can have negative effects on the environment, its quality, and inhabitants.
    - Reusing and recycling materials can save money while preserving natural resources and avoiding damage to the environment.

ELA Integration:

- **NJSLS.RI.1.1** Ask and answer questions about key details in a text. (1-LS1-2),(1-LS3-1)
- **NJSLS.RI.1.2** Identify the main topic and retell key details of a text. (1-LS1-2)
- **NJSLS.RI.1.10** With prompting and support, read informational texts appropriately complex for grade. (1-LS1-2)
- **NJSLS.W.1.2** Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)
- **NJSLS.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), (1-LS1-1),(1-LS3-1), (1-PS4-1), (1-PS4-2),(1-PS4-3),(1-PS4-4)
- **NJSLS.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), (1-LS3-1), (1-PS4-1), (1-PS4-2),(1-PS4-3)
- **NJSLS.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)

Mathematics Integration:

- **NJSLS.MP.2** Reason abstractly and quantitatively. (1-ESS1-2), (1-LS3-1)
- **NJSLS.MP.4** Model with mathematics. (1-ESS1-2)
- **NJSLS.MP.5** Use appropriate tools strategically. (1-ESS1-2), (1-LS3-1), (1-PS4-4)
- **NJSLS.1.MD.A.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1), (1-PS4-4)
- **NJSLS.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)
- **NJSLS.1.MD.C.4** Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2)
- **NJSLS.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)

- **NJSLS.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)
- **NJSLS.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)
- **NJSLS.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)
- **NJSLS.1.OA.A.1** Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2)

Unit 1: Waves: Light and Sound

Recommended Pacing - 30 days

Why Is This Unit Important?

This unit begins to target two major big ideas of waves:

- Sound is a pressure wave in air or other material medium, which can transfer energy and information, which the brain and ear working together are very good at detecting and decoding.
- Light is an electromagnetic wave traveling in vacuum at the speed of light, but can be reflected, refracted, and absorbed by objects

Disciplinary Core Ideas:

- Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)
- Objects can be seen if light is available to illuminate them or if they give off their own light. (1-PS4-2)
- Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.) (1-PS4-3)
- People also use a variety of devices to communicate (send and receive information) over long distances. (1-PS4-4)

Science and Engineering Practices:

- Plan and conduct investigations collaboratively to produce evidence to answer a question. (1-PS4-1),(1-PS4-3)
- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-PS4-2)
- Use tools and materials provided to design a device that solves a specific problem. (1-PS4-4)

Cross Cutting Concepts:

- 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)

Enduring Understandings:

- There is a relationship between sound and vibrating materials
- There is a relationship between the availability of light and the ability to see objects.
- Light travels from place to place, which can be determined by observing the effect of placing objects made with different materials in the path of a beam of light.
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.
- People depend on various technologies in their lives; human life would be very different without technology.
- Science investigations begin with a question.
- Science uses different ways to study the world.

Essential Questions:

- What happens when materials vibrate?
- What happens when there is no light?

Acquired Knowledge:

- Sound can make matter vibrate,
- Vibrating matter can make sound.
- Objects can be seen only when light is available to illuminate them.
- Some objects give off their own light.
- 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.
- People also use a variety of devices to communicate (send and receive information) over long distances.

Acquired Skills:

- Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.
- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Use tools and materials provided to design a device that solves a specific problem.

Assessments:

Formative Assessment:

- Group discussions/presentations:
    - Propose higher order questions
    - Present information to students and ask a question
    - Have students discuss their answers with their peers at their table and discuss together as a group

Summative Assessment:

- Projects:
    - Plan and Investigate People Communicate
    - Design a Device

Benchmark Assessment:

- Students will be assessed on their ability to 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.]
- Students will be assessed on their ability to 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.]
- Students will be assessed on their ability to 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).] [Assessment Boundary: Assessment does not include the speed of light.]
- Students will be assessed on their ability to 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.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

Alternative Assessment:

- Modified project requirements and rubrics

Suggested Learning Experiences and Instructional Activities:

Anticipatory Sets:

- Vibrate and Make Sound
- Light

In-Class Activities and Laboratory Experiences:

- Sound
- Plan and Investigate Sound Makes Things Vibrate
- Vibration
- Light and Dark
- Communicating with Sound

Closure and Reflection Activities:

- Career Exploration: Photographer

Instructional Materials:

Exploring Science, Cengage & National Geographic Learning; 2016

Technology Connections:

- http://www.atozteacherstuff.com/Themes/Shadows___Light/
- https://www.thefirstgraderoundup.com/2017/11/light-unit-for-1st-grade.html
- https://luckytobeinfirst.com/2017/09/sound-light-science-experiments.html

Unit 2: Space Systems: Patterns and Cycles

Recommended Pacing - 30 days

Why Is This Unit Important?

This unit begins to target targets two major big ideas of Space Systems:

- The planet Earth is a tiny part of a vast universe that has developed over a huge expanse of time. The history of the universe, and of the structures and objects within it, can be deciphered using observations.
- Similarly, the patterns of motion of the objects in our solar system can be described, predicted, and used to explain many Earth phenomena.

Disciplinary Core Ideas:

- Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1-ESS1-1)
- Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2)

Science and Engineering Practices:

- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1-2)
- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1)

Cross Cutting Concepts:

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-ESS1-1),(1-ESS1-2)

Enduring Understandings:

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.
- Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
- Seasonal patterns of sunrise and sunset can be observed, described, and predicted
- Science assumes natural events happen today as they happened in the past.
- Many events are repeated.

Essential Questions:

- What objects are in the sky and how do they seem to move?

Acquired Knowledge:

- The moon has repeating cycles of motion centered around the Earth
- The Earth has repeating cycles of motion centered around the sun
- The sun is one of many stars in the universe
- Our sun's solar system follows a repeating pattern of motion as do those of all stars

Acquired Skills:

- Make observations (firsthand or from media) to collect data that can be used to make comparisons.
- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

Assessments:

Formative Assessments:

- Group discussions/presentations:
    - Propose higher order questions
    - Present information to students and ask a question
    - Have students discuss their answers with their peers at their table and discuss together as a group

Summative Assessments:

- Projects:
    - Make Observations

Benchmarks:

- Students will be assessed on their ability to 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.]
- Students will be assessed on their ability to 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.]

Alternative Assessments:

- Modified project requirements and rubrics

Suggested Learning Experiences and Instructional Activities:

Anticipatory Sets:

- The Sun
- The Moon
- Stars
- Season

In-Class Activities and Laboratory Experiences:

- Investigate The Sun
- Investigate The Moon
- The Night Sky

Closure and Reflection Activities:

- Career Exploration: Astronomer

Instructional Materials:

Exploring Science, Cengage & National Geographic Learning; 2016

Technology Connections:

- https://www.livebinders.com/play/play?id=1176282#anchor
- https://mysteryscience.com/

Unit 3: Structure, Function, and Information Processing

Recommended Pacing - 30 days

Why Is This Unit Important?

This unit begins to targets three major big ideas of structure, function, and information processing:

- Organisms structures function to help with survival and reproduction
- Behavioral traits have evolved to help facilitate offspring survival
- Heredity functions to maintain traits while permitting variance

Disciplinary Core Ideas:

- 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)
- Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)
- 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)
- 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)
- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)

Science and Engineering Practices:

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-LS3-1)
- Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1- 1)
- Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2)

Cross Cutting Concepts:

- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2),(1-LS3-1)
- The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)

Enduring Understandings:

- Plants and animals use their external parts to help them survive, grow, and meet their needs
- Behaviors of parents and offspring help the offspring survive.
- Young plants and animals are like, but not exactly the same as, their parents.
- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.
- The shape and stability of structures of natural and designed objects are related to their function(s).
- Every human-made product is designed by applying some knowledge of the natural world and is built by using natural materials.
- Scientists look for patterns and order when making observations about the world.

Essential Questions:

- What are some ways plants and animals meet their needs so that they can survive and grow?
- How are parents and their children similar and different?

Acquired Knowledge:

- 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.
- Adult plants and animals can have young.
- In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.
- Animals have body parts that capture and convey different kinds of information needed for growth and survival.
- Animals respond to inputs with behaviors that help them survive.
- Plants also respond to some external inputs.
- Young animals are very much, but not exactly, like their parents.
- Plants also are very much, but not exactly, like their parents.
- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.

Acquired Skills:

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Use materials to design a device that solves a specific problem or a solution to a specific problem.
- Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.

Assessments:

Formative Assessments:

- Group discussions/presentations:
    - Propose higher order questions
    - Present information to students and ask a question
    - Have students discuss their answers with their peers at their table and discuss together as a group

Summative Assessments:

- Projects:
    - Look for Patterns
    - Make observations

Benchmark Assessment:

- Students will be assessed on their ability to use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]
- Students will be assessed on their ability to read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]
- Students will be assessed on their ability to 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.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

Alternative Assessment:

- Modified project requirements and rubrics

Suggested Learning Experiences and Instructional Activities:

Anticipatory Sets:

- Plants
- Animals Move

In-Class Activities and Laboratory Experiences:

- Plants and Light
- Root Growth
- A Better Train
- Design a Solution
- Sustainability Project – A Tree is Nice

Closure and Reflection Activities:

- How are Plants Alike and Different?
- How are Animals Alike and Different?
- Career Exploration: Conservationist

Instructional Materials:

Exploring Science, Cengage & National Geographic Learning; 2016

Technology Connections:

- https://njctl.org/courses/science/1st-grade-science/plant-animal-structures-functions-information-processing/
- http://www.apples4theteacher.com/science.html
- https://www.education.com/activity/first-grade/life-science/

Sample Standards Integration

Career Readiness, Life Literacies, and Key Skills

9.4.2.IML.2

For example in Unit 1, students will have to communicate the results of their data analysis on whether or not their design solution worked to use light and sound to communicate effectively over a distance.

9.4.2.CI.2

For example in Unit 3, students will use tools and materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

9.4.2.CT.2

For example in Unit 2, students will have to plan, conduct, and analyze the results of their data to relate the amount of daylight to the time of year.

9.4.2.CT.3

For example in Unit 1, students will have to plan and design a solution that will use sound and/or light to communicate effectively over a distance.

8.1 Computer Science and Desgn Thinking
All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.

For example, in Unit 3, students will access, manage, evaluate, and synthesize information to determine patterns in behavior of parents and offspring that help offspring survive.

Interdisciplinary Connection

NJSLS.RI.1.1 Ask and answer questions about key details in a text. (1-LS1-2),(1-LS3-1)

NJSLS.RI.1.2 Identify the main topic and retell key details of a text. (1-LS1-2)

NJSLS.RI.1.10 With prompting and support, read informational texts appropriately complex for grade. (1-LS1-2)

NJSLS.W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)

NJSLS.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), (1-LS1-1),(1-LS3-1), (1-PS4-1), (1-PS4-2),(1-PS4-3),(1-PS4-4)

NJSLS.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), (1-LS3-1), (1-PS4-1), (1-PS4-2),(1-PS4-3)

NJSLS.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)

These standards are met through the completion of the benchmark performances in all 3 units. For example, in Unit 3, students will read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

NJSLS.MP.2 Reason abstractly and quantitatively. (1-ESS1-2), (1-LS3-1)

NJSLS.MP.4 Model with mathematics. (1-ESS1-2)

NJSLS.MP.5 Use appropriate tools strategically. (1-ESS1-2), (1-LS3-1), (1-PS4-4)

These standards are met through the completion of the benchmark performances in all 3 units. For example, in Unit 2, students will have to reason both abstractly and quantitatively in regards to what they observe and research regarding the discovery of patterns of the sun, moon, and stars that can be used to predict.

NJSLS.1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1), (1-PS4-4)

NJSLS.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)

NJSLS.1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2)

These standards are met through the completion of the benchmark performances in all 3 units. For example, in Unit 1, students will conduct an investigation measuring data to solve a problem involving Communicating over a distance.

NJSLS.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)

NJSLS.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)

NJSLS.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)

NJSLS.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)

These standards are met through the completion of the benchmark performance in Unit 3, students will determine patterns in behavior of parents and offspring that help them survive.

NJSLS.1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2)

These standards are met through the completion of the benchmark performance in Unit 2, students will make observations at different times of the year to relate the amount of daylight to the time of year.