

GREEN TOWNSHIP SCHOOL DISTRICT



Content Area: Science
Course/Grade Level: 1st Grade

Curriculum Committee Members:

Principal:
Jon Paul Bollette

Board Approval Date:
10/21/26



1st Grade

Mission:

All students will develop an understanding of scientific concepts and processes essential for informed decision-making, meaningful participation in civic life, and readiness for postsecondary opportunities, including careers in STEM fields.

Vision:

Prepare 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 magazine and journal articles and web-based resources to gain knowledge about current and past science problems and solutions and develop well-reasoned claims; and
- Communicate ideas through journal articles, reports, posters, and media presentations that explain and argue.



1st Grade

Key Performance and Benchmark Tasks/Assessments

Formative assessments:

- Used to gauge student understanding and progress throughout the unit.
- Not necessarily graded
- Provide feedback for students to use to reflect, revise and refine their work.

Summative Assessments:

- Final projects or assessments to determine what students have learned over the course of the project or unit.

Benchmark Assessments:

- Teacher-created benchmark assessments to be given periodically during the year.

Alternative Assessments:

- Teacher modifies assignments and activities based on student needs.
- Oral assessments administered in place of written when necessary.
- Accommodation and modification ideas may be found here:
 - [Modifications & Accommodations Menu](#)
 - *Assessments other than paper & pencil tests See link for more info:*
http://education.qmu.edu/assets/docs/forms/mirs/assessment_brochure.pdf

Integrated Accommodations & Modifications

Please utilize the link below for ideas and strategies to use with ***ELL, Students with IEPs & 504s, At-Risk Students and Gifted & Talented Students.***

The attached worksheets can be printed ahead of each unit during the planning phase to help the teacher plan for the needs of particular students in each class, allowing for differentiation per unit and per year. The worksheets contain suggested accommodations and modifications for Content & Material, Student



1st Grade

Organization, Instructional Strategies, Assessments, Attention/Focus, Written Language, and Social/Behavioral.

[Modifications & Accommodations Menu](#)



1st Grade

Unit 1

<u>Measurement</u>	Pacing: 16 instructional periods
Unit Summary: In this unit, students use nonstandard units and simple measuring tools to investigate and compare the length, weight, and capacity of everyday objects. They develop measurement skills by describing, ordering, and explaining their observations, including exploring how gravity affects weight and how different containers hold different amounts.	
Essential Questions: - How can we measure and compare different objects? - How do measuring tools and nonstandard units help us measure objects? - How does gravity affect the weight of an object?	Enduring Understandings: - Objects can be measured and compared using attributes such as length, weight, and capacity. - Using tools and nonstandard units helps us describe and communicate measurements accurately. - Scientists and mathematicians use measurements to observe, compare, and explain the world around them.

New Jersey Student Learning Standards	Student Learning Objectives	Practices
- This Science unit is foundational and based on crucial mathematic standards to be used throughout the rest of the year. NJ Student Learning Math Standards: 1.MD.A <i>Measure lengths indirectly and by iterating length units.</i> 1.MD.A.1: Order three objects by length; compare the lengths of two objects indirectly using a third object. 1.MD.A.2: Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to	- Use direct comparison and nonstandard units to measure the length of common objects to build conceptual understanding of length. - Describe the length of different objects using appropriate vocabulary - Measure objects using nonstandard units and iterating length units. - Compare two objects according to their weight and describe them as same or different, heavier or lighter	- Planning and Carrying Out Investigations - Using Mathematics and Computational Thinking - Analyzing and Interpreting Data - Obtaining, Evaluating, and Communicating Information



1st Grade

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.

- Use a balance and nonstandard units to measure the weight of common objects
- Explain the connection between gravity and weight
- Use nonstandard units to compare and order the relative capacities of various containers
- Describe the capacity of the containers using comparative language as some, more, and most
- Understand and explain the relationship between customary measuring containers

Interdisciplinary Connections

2020 Career Readiness, Life Literacies, and Key Skills

- 9.4.2.CT.2 – Identify possible causes of a problem and brainstorm possible solutions.
- 9.4.2.TL.1 – Identify the basic features of a digital tool and explain the purpose of the tool.
- 9.4.2.TL.6 – Illustrate and communicate ideas and stories using multiple digital tools.

Unit 1: Core Unit Content

Key Concepts

- ☐ Linear measurement
- ☐ Direct comparison of weight using nonstandard units
- ☐ Capacity

Instructional Materials & Resources



1st Grade

Knowing Science
Scholastic Science Spin
Generation Genius
NJDOE Science and Curriculum Resources

Unit 1: Assessments

Formative assessments:

- Utilize real life objects to order items by length.
- Utilize real life objects to order items by capacity.
- Utilize real life objects to order items by weight.
- Measure object length using non-standard units such as pencils or paper clips and then compare lengths.
- Measure object capacity using non-standard units such as cubes or pom-poms and then compare capacity.
- Measure object weight using non-standard units such as cubes or erasers (utilizing a scale) and then compare weights.
- Generation Genius Exit Tickets

Summative Assessments:

- Write the words for a set of objects to order them from shortest to longest, lightest to heaviest, holds least to holds most.
- Illustrate or write to explain what heavier/lighter, longer/shorter, holds least/holds most, etc mean.
- Generation Genius Quizzes

Alternative Assessments:

Unit 1: Accommodations & Modifications

Please utilize the link below for ideas and strategies to use with ELL, Students with IEPs & 504s, At-Risk Students and Gifted & Talented Students. Note possible accommodations or modifications for this unit below.

[Modifications & Accommodations Menu](#)



1st Grade

Unit 2

Light and Sound

Pacing: 13 instructional periods

Unit Summary: In this unit, students investigate how sound is produced by vibrations and how light travels, helping us see and communicate. They explore how different materials interact with light, examine communication technologies that use sound and light, and apply the engineering design process to build, test, and improve a cup-and-string telephone.

Essential Questions:

- How are sound and light created?
- How does sound travel from one object to another?
- How has communication technology changed over time?

Enduring Understandings:

- Sound and light are forms of energy that help us communicate and understand the world around us.
- Sound and light travel in predictable ways and interact differently with materials.
- Engineers use their understanding of sound and light to design technologies that solve communication problems.

New Jersey Student Learning Standards	Student Learning Objectives	Practices
• 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.] • -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,	• Explain that sound is produced when matter vibrates • Explain how sound waves produced by one object may cause another to vibrate • Identify light as a form of energy that helps us see objects • Demonstrate that light travels in a straight line called a ray or beam • Give examples of objects or materials that are opaque, transparent, or translucent	• Developing and Using Models • Planning and Carrying Out Investigations • Analyzing and Interpreting Data • Obtaining, Evaluating, and Communicating Information • Constructing Explanations and Designing Solutions



1st Grade

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.] • 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).] [Assessment Boundary: Assessment does not include the speed of light.] • 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.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]	• Give examples of communication technology using light • Give examples of communication technology using sound • Understand how communication technology has changed • Use engineering design process and provided materials to build and test different designs for cup and string phones	
---	--	--

Interdisciplinary Connections

2020 Career Readiness, Life Literacies, and Key Skills

- 9.4.2.CI.2 – Demonstrate originality and inventiveness in brainstorming ideas for products or solutions to authentic problems.
- 9.4.2.CT.1 – Identify problem-solving strategies used in the development of an innovative product or practice.
- 9.4.2.CT.2 – Identify possible causes of a problem and brainstorm possible solutions.
- 9.4.2.CT.4 – Explain the importance of overcoming failure as part of the design process.
- 9.4.2.IML.4 – Compare and contrast the way information is shared in a variety of contexts.
- 9.4.2.TL.1 – Identify the basic features of a digital tool and explain the purpose of the tool.
- 9.4.2.TL.6 – Illustrate and communicate ideas and stories using multiple digital tools.
- 9.4.2.TL.7 – Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts.



1st Grade

Unit2: Core Unit Content

Key Concepts

- ☐ Properties of sound and vibration
- ☐ Basic properties of light
- ☐ Communication engineering challenge (using light and/or sound)

Instructional Materials & Resources

Knowing Science
Scholastic Science Spin
Generation Genius
NJDOE Science and Curriculum Resources

Unit 2: Assessments

Formative assessments:

- Make observations about what objects light does and does not travel through. Sort objects and make a hypothesis about how light travels.
- Take a sound walk to discover how different sounds travel.
- Match sounds to their sources and sort by volume/pitch.
- Investigate how to make a sound louder or softer using classroom materials.
- Generation Genius Exit Tickets

Summative Assessments:

- Create instruments from recycled materials and be able to explain how they create sound.
- Illustrate or write to explain how sound occurs and travels.
- Illustrate or write to explain how light occurs and travels.
- Generation Genius Quizzes



1st Grade

Alternative Assessments:

Unit 2: Accommodations & Modifications

Please utilize the link below for ideas and strategies to use with ELL, Students with IEPs & 504s, At-Risk Students and Gifted & Talented Students. Note possible accommodations or modifications for this unit below.

[Modifications & Accommodations Menu](#)

Unit 3

Parents and Heredity

Pacing: 16 instructional periods

Unit Summary:

Essential Questions:

- How do living things grow and change throughout their lives?
- Why do some animals live in groups?
- How do animals survive during the winter?

Enduring Understandings:

- All living things have life cycles that include stages of growth, change, reproduction, and death.
- Animals have behaviors and group structures that help them survive, care for their young, and meet their basic needs.
- Animals respond to seasonal changes in ways that help them meet their basic needs and survive.

New Jersey Student Learning Standards	Student Learning Objectives	Practices
• 1-LS1-2. 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	• Identify life cycle stages common to all living things (birth, growth, reproduction, death)	• Obtaining, Evaluating, and Communicating Information



1st Grade

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).] • 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.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]	• Describe, sequence, and compare life cycle stages of various animals • Give examples of animals that grow from eggs or live birth • Explain the relationship of parents and offspring of various animals • Identify general reasons for living in a group • Describe the basic group structure and function of wolves (pack), elephant (herd), dolphins and other fish (school), and honeybees (colony), including roles, communication, and caring for offspring • Associate basic needs with winter behaviors • Explain what happens to animals that hibernate, migrate, and remain active during winter months • Give examples of animals that engage in each type of winter behavior	• Developing and Using Models • Analyzing and Interpreting Data • Constructing Explanations and Designing Solutions • Planning and Carrying Out Investigations
--	---	---

Interdisciplinary Connections

2020 Career Readiness, Life Literacies, and Key Skills

9.4.2.IML.1: Identify a simple search term to find information in a search engine or digital resource.

9.4.2.IML.3: Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).

Unit 3: Core Unit Content

Key Concepts

- ☐ Animal life cycles
- ☐ Animal communities and survival



1st Grade

- ☐ Animal survival response to Winter

Instructional Materials & Resources

Knowing Science
Scholastic Science Spin
Generation Genius
NJDOE Science and Curriculum Resources

Unit 3: Assessments

Formative assessments:

- Match pictures of parents and offspring
- Compare similarities and differences between parents and offspring
- Illustrate or label the life cycle of animals such as caterpillar, chicken, etc.
- Illustrate or label the life cycle of plants such as a flower, oak tree, etc.
- Generation Genius Exit tickets

Summative Assessments:

- Create an animal based on observable traits such as fur, markings, body parts
- Illustrate or explain how animal traits help them survive in their environment
- Generation Genius Quizzes

Alternative Assessments:

Unit 3: Accommodations & Modifications



1st Grade

Please utilize the link below for ideas and strategies to use with ELL, Students with IEPs & 504s, At-Risk Students and Gifted & Talented Students. Note possible accommodations or modifications for this unit below.

[Modifications & Accommodations Menu](#)

Unit 4

Biomimicry

Pacing: 4 instructional periods

Unit Summary: In this unit, students investigate how the specialized external structures of plants and animals help them meet their basic needs and survive in different habitats. They explore the concept of biomimicry and apply the engineering design process to design, build, and improve an original product inspired by nature to solve a human problem.

Essential Questions:

- How do the external structures of plants and animals help them survive?
- What is biomimicry, and how does nature inspire inventions?
- How can we use ideas from nature to design something new?

Enduring Understandings:

- Plants and animals have unique external structures that help them survive in their habitats.
- People can learn from nature to solve problems and create new technologies.
- Engineers use the design process to develop and improve solutions inspired by the natural world.

New Jersey Student Learning Standards	Student Learning Objectives	Practices
• 1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to	• Identify unique and specialized external structures that help plants and animals meet their basic needs for survival in their own particular habitat • Understand the concept of biomimicry and give examples of nature-inspired human technology	• Developing and Using Models • Constructing Explanations and Designing Solutions • Planning and Carrying Out Investigations



1st Grade

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.] • K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	• Use the engineering design process to create an original product, based on nature, to solve human problems	• Obtaining, Evaluating, and Communicating Information • Engaging in Argument from Evidence
--	--	--

Interdisciplinary Connections

2020 Career Readiness, Life Literacies, and Key Skills

9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2)

9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).

Unit 4: Core Unit Content

Key Concepts

☐ Biomimicry

Instructional Materials & Resources

Knowing Science
Scholastic Science Spin
Generation Genius



1st Grade

NJDOE Science and Curriculum Resources

Unit 4: Assessments

Formative assessments:

- Sort animals by the type of adaptation they have in order to protect themselves: camouflage, poison/venom, special body parts/armor, etc.
- Match plant and animal parts to their function.
- Journal from the perspective of different animals to share what traits they would have and how those traits would help them survive
- Generation Genius Exit Tickets

Summative Assessments:

- Animals Adaptation Project: Create an animal with different adaptations to survive in a chosen habitat. Explain how each part/adaptation will help it survive.
- Generation Genius Quizzes

Alternative Assessments:

Unit 4: Accommodations & Modifications

Please utilize the link below for ideas and strategies to use with ELL, Students with IEPs & 504s, At-Risk Students and Gifted & Talented Students. Note possible accommodations or modifications for this unit below.

[Modifications & Accommodations Menu](#)



1st Grade

Unit 5

Earth's Patterns

Pacing: 8 instructional periods

Unit Summary: In this unit, students use models to investigate how Earth's rotation causes day and night, the apparent movement of the Sun, and predictable shadow patterns, as well as how the Moon changes through its phases. They also explore how Earth's tilt and its orbit around the Sun create the seasons and explain the changes observed throughout the year.

Essential Questions:

- How does Earth's movement create day and night?
- Why does the Moon appear to change shape over time?
- Why do the seasons change?

Enduring Understandings:

- Earth's movements create predictable patterns that we observe every day and throughout the year.
- The positions and movements of Earth, the Sun, and the Moon explain many patterns we observe in space.
- Earth's tilt and its orbit around the Sun cause the seasons and changes we experience throughout the year.

New Jersey Student Learning Standards	Student Learning Objectives	Practices
• 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.] • 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.]	• Model the rotation of Earth to explain day and night • Represent and explain the daily apparent motion of the sun • Create models to understand length and direction of shadows in daily patterns • Identify the cyclical phases of the moon • Model how the Earth orbits the Sun • Describe that the Earth is tilted on its axis • Understand that Earth's orbit around the sun causes the change in seasons • Describe some of the differences between the seasons	• Developing and Using Models • Obtaining, Evaluating, and Communicating Information • Analyzing and Interpreting Data • Planning and Carrying Out Investigations • Using Mathematics and Computational Thinking



1st Grade

Interdisciplinary Connections

[2020 Career Readiness, Life Literacies, and Key Skills](#)

9.4.2.IML.2: Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).

Unit 5: Core Unit Content

Key Concepts

- ☐ The relationship between Earth and the Sun and Moon
- ☐ The seasons
- ☐ Star patterns

Instructional Materials & Resources

Knowing Science
Scholastic Science Spin
Generation Genius
NJDOE Science and Curriculum Resources

Unit 5: Assessments

Formative assessments:

- Create a forecast by predicting weather in a chosen season while using patterns or sunlight, weather, temperature, etc.
- Record seasonal patterns for plants, animals, and humans.
- Generation Genius Exit Tickets



1st Grade

Summative Assessments:

- Generation Genius Quizzes
- Illustrate or write about why day and night occur

Alternative Assessments:

Unit 5: Accommodations & Modifications

Please utilize the link below for ideas and strategies to use with ELL, Students with IEPs & 504s, At-Risk Students and Gifted & Talented Students. Note possible accommodations or modifications for this unit below.

[Modifications & Accommodations Menu](#)