East Newark Public School

Science Curriculum
Grade 3

Revised 2022

Equity Statement:

East Newark Public School District does not discriminate on the basis of race, color, creed, religion, sex, ancestry, or national origin. The East Newark Board of Education ensures that all students enrolled in the schools of this district shall be afforded equal educational opportunities in strict accordance with the law. No student shall be denied access to or benefit from any educational program or activity on the basis of the student's race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability. The Board directs the Superintendent to allocate faculty, administrators, support staff members, curriculum materials, and instructional equipment supplies among classes of this district in a manner that ensures equivalency of educational opportunity throughout this district. The school district's curricula will eliminate discrimination, promote mutual acceptance and respect among students, and enable students to interact effectively with others, regardless of race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability.

Course Description:

The East Newark Public School third grade science program is designed to introduce and develop a foundation in science through five major units of study. Students will gain an understanding of many important areas of Life, Earth, and Physical Sciences, and will utilize and understand scientific processes. All courses are designed to prepare students for The New Jersey Student Learning Assessment, their school science courses, and for solving simple scientific problems and issues in their everyday lives.

The material is presented at a moderate pace and can be adjusted for various levels taught. Lessons are based on discussions and student- driven activities. Hands-on activities are meant to show connections to real-life science applications, and to promote critical thinking and problem solving skills. Students who are placed in this course based on ESL placement will also receive appropriate accommodations based upon their ESL level. Students receiving Special Education services will receive modifications and accommodations to information and assessments as indicated in their Individual Education Plan.

Course Modifications:
The course instructor will determine, with the assistance of administrators, teacher assistants/aides, educational specialists, and/or special education teachers, what modifications will be made for his/her students. Such examples of modifications can include, but not be limited to:

- Extended time as needed
- Modification of tests and quizzes
- Preferential seating
- Alternative/Formative assessment (projects)
- Effective teacher questioning (ranging from simple recall to higher order critical thinking questions)
- Supplemental materials
- Cooperative learning
- Teacher tutoring
- Peer tutoring
- Differentiated Instruction

Best Practices:

Best practices come from research-based, effective methodologies in presenting material in a manner to engage all students in the learning process. Thorough planning and collaborative discussions about instructional practices are part of the ongoing practice of teachers. Student activities and practices that reflect effective methodology include, but are not limited to, providing students with:

- Regular opportunities to investigate topics in depth
- The ability to exercise choice and responsibility by choosing their own topics
- Opportunities for active participation in the classroom and the community
- Exploration of open-ended questions that challenge their thinking
- Opportunities for reading, writing, observing, discussing, and debating ideas
- Activities that include independent inquiry and cooperative learning
- Assessment of student learning that promotes lifelong responsible citizenship rather than the sole memorization of facts
- Strategies and tools to read and comprehend informational text

Grade 3 Scope and Sequence:

Unit	Estimated Pacing
General Science	4 weeks
Forces and Interactions	7 weeks
Interdependent Relationships in Ecosystems	8 weeks
Life Cycles and Traits	7 weeks
Weather and Climate	8 weeks

Marking Period	Unit Title	Recommended Instructional Days
1	General Science	4 weeks

NJSLS - Science: *TItle*	NJSLS - Science: *Performance Expectations*	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit
Engineering Design	• **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. • **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.	**Essential Question/s:** 1. What do scientists and engineers do? 2. How are you like a scientist and an engineer? 3. How do the sun and the moon affect Earth? 4. What is data? 5. How do athletes improve? **Activity Description**: • Article analysis • Vocabulary activities • Video/photo analysis • Weekly Phenomenon Investigation: Compare and contrast the roles of a NASA scientist and a NASA engineer. • Discuss: How does thinking like a scientist help you with your well-being? How does thinking like an engineer help you become a better student? What are some things you think you could do to be a behavioral researcher? • Investigation/Demonstration: Can you poke a pencil through a plastic bag full of water without spilling the water? • Graphic organizer: You are a Mathematician • In a group, brainstorm ideas for a product. Use a graphic organizer to take notes and write down evidence to use as selling points for your presentation. The goal is to get your fellow classmates to invest in your product. • Discuss attributes of both engineers and scientists. Students will work with a partner to compare and contrast the two using a Venn diagram. • Weekly Phenomenon Investigation: How do the sun and moon affect Earth?
FOUNDATION Disciplinary: *Core Idea*	**FOUNDATION Disciplinary: *Statement***	
ETS1.A: Defining and Delimiting Engineering Problems	• 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.	
ETS1.B: Developing Possible Solutions	• Research on a problem 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. ● 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. ● Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	● Discuss: How can you relate stability and change to your social relationships? What are some things that can affect how you feel in a day? What are some positive ways you can respond to change? ● Graphic organizer: Moon Phases Observations ● Pattern Exploration: Walk the Line ● Cause and Effect Card Activity/Demonstation ● Students will draw their own model of a lunar or solar eclipse, being as descriptive as possible. There should be pictures, labels, and explanations. ● Engineering Design: Pretend you're a fourth pig, and you need to build a house that will withstand the wolf! A blowdryer/fan will be used to test the designs. ● Writing prompt: The sun and moon are not the same size. So why do they appear to be the same size in our sky? ● Writing prompt: Have there been any physical changes to your school? Did your school get any new rules, or did they all stay the same? Write about the ways the system showed stability and ways the system changed. ● Weekly Phenomenon Investigation: How do athletes like Brandon Ingram improve? ● Discuss: What kind of data can your friends gather to tell them what kind of friend you are? What kind of data can help you make decisions about how to treat others? What can you do to help you keep your responsibilities balanced? ● Graphic Organizer: Goal Tracker. Write about the goal you chose to work on and keep track of. How did it go? How was your improvement? Did data help you improve? ● Find five objects, measure them, then record what each object is and how long it is. ● Water and Marble Relay ● Big Feet, Little Feet: How big are the feet of your classmates? Using your measurement skills, measure the feet of five different friends in your class. Collect and record data, create a graph, and then analyze results using a graphic organizer. ● Weekly Phenomenon Investigation: What is the perfect backpack? ● Discuss: How can you connect growth mindset thinking to engineers testing a prototype? What are the benefits to following a plan? In what areas of your life can asking questions help you? ● Engineering Design: Students will design a "perfect" backpack that is intended to solve an identified problem.
ETS1.C: Optimizing the Design Solution	● Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Asking Questions and Defining Problems	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.	
Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	
Planning and Carrying Out Investigations	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.	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	
Influence of Science, Engineering, and Technology on Society and the Natural World	● People's needs and wants change over time, as do their demands for new and improved technologies.	

	• Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	**Interdisciplinary Connections: Content: ;NJSLS#:** ELA/Literacy - • RI.3.2. - Determine the main idea of a text, recount the key details and explain how they support the main idea. • 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. • RI.3.9 - Compare and contrast the most important points and key details presented in two texts on the same topic. • SL.3.1 - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. • 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. • W.3.7 - Conduct short research projects that build knowledge about a topic. Mathematics - • MP.2 - Reason abstractly and quantitatively. • MP.4 - Model with mathematics. • MP.5 - Use appropriate tools strategically. • 3-5.OA - Operations and Algebraic Thinking Technology - • 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
• Self-Awareness • Self-Management • Responsible Decision Making • Social Awareness • Relationship Skills • Motivation	• Emotional Awareness • Internal Regulation • Behavior Control • Goal Pursuance • Appreciating Social and Environment Diversity • Adaptive Behavior • Communication • Social Engagement • Constructive Thinking • Consequence Evaluation • Respect for Self and Others • Enthusiasm • Initiative • Resilience	

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u> • Participation in class discussions/debates • Exit tickets • Quizzes • In-class assignments/activities • Presentations • Group assignments	**<u>Benchmarks:</u>** • Writing promps • Mid-Unit Assessments **<u>Summative Assessments:</u>** • Unit test • Unit project

• IXL results	• Lab activities

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Modified/leveled readings from Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Translated and modified readings from Science Studies Weekly - Grade Four • Translated teacher created reading guides and presentations	• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations

Supplemental Resources

- Chromebooks
- SmartBoard
- IXL
- Teacher Online Resources
- Science A-Z
- BrainPop
- Newsela.com
- Quizlet
- Kahoot
- Applicable educational videos

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Extended time for revisions or opportunity to identify and develop areas of personal interest	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes • Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments • Utilize differentiation in the areas of acceleration, enrichment, and grouping

• Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.		languages, composition of response and attempted response.	

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	• **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. • **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. • **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. • **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	• Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.	

Marking Period	**Unit Title**	**Recommended Instructional Days**
1-2	Forces and Interactions	10 weeks

NJSLS - Science: ***TItle***	**NJSLS - Science:** ***Performance Expectations***	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**

Motion and Stability: Forces and Interactions	• **3-PS2-1:** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced force on the motion of an object. • **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. • **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. • **3-PS2-4:** Define a simple design problem that can be solved by applying scientific ideas about magnets.	**Essential Question/s:** 1. Does science help you to be a better athlete? 2. Which ball will go the farthest when hit with a bat? 3. Why do I move when the car stops unexpectedly? 4. How do magnets work? 5. How does a doorbell work? 6. Why does your hair stick up after going down a slide? 7. Can magnetic or electric forces prevent car crashes? 8. What is air? 9. How does smooth batter turn into soft, warm brownies? 10. Why does ice melt in your hand?
Engineering Design	• **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. • **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.	**Activity Description**: • Article analysis • Vocabulary activities • Video/photo analysis • Weekly Phenomenon Investigation: Does science help you to be a better athlete? • Discuss: What are some things you can do to help your well-being stay balanced? What does it feel like to be off balance? What evidence might your peers have that you are a good friend? Is there anything you would change about the way you treat others to give different evidence? • Graphic organizer: Applied Forces - Go outside and practice applying force. Force can be applied when you throw or kick a ball, jump, pick something up, push something, etc. Then, try and to apply two different amounts of force to the same object. After experimenting, fill out the graphic organizer. • Push Pull Game • In small groups, illustrate Newton's Laws on a poster board. • Investigation Activity: How do balanced and unbalanced forces affect the motion of an object? • Conduct a research project on how balanced and unbalanced forces affect the motion of an object. Write about your findings and provide evidence. • Weekly Phenomenon Investigation: Which ball will go farthest when hit with a bat? • Discuss: Have you ever done something with a great amount of force? How did it feel? What did it make you feel? How can you respond if someone accidentally bumps you and the force knocks
FOUNDATION **Disciplinary:** ***Core Idea***	**FOUNDATION** **Disciplinary:** ***Statement***	
PS2.A: Forces and Motion	• 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. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) • 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. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)	you down? How can you respond if you accidentally bump into someone else and the force knocks them down? What is a positive way to use force in activities? ● Experiment: Force and Balls ● Weekly Phenomenon Investigation: Why do I move when the car stops unexpectedly? ● Discuss: What should you always do to be safe when you get in a car? Why do you think change can be hard sometimes? How can you respond with resilience when something doesn't go like you thought it would? What is something you can think that shows resilience? ● Engineering Design Challenge: Design a vehicle that will protect its passenger upon collision. A track with a ramp on one end and a barricade at the other end will be set up and students will push their vehicle with a boiled egg inside down the ramp and see if the egg is protected. ● Weekly Phenomenon Investigation: How do magnets work? ● Discuss: What social skills are like a magnetic force in social relationships? (What types of people do you like to spend time with?) How can you treat others in a way that helps them want to spend time with you? What is something that makes you think happy thoughts? What is something you can do that helps others think of happy thoughts? ● Magnetic Maze: Students will draw a maze on a piece of construction paper and place a paperclip on the maze. Then, students will put the magnet underneath the construction paper and pull the paperclip through the maze by moving the magnet. Questions and observations will be recorded using a data sheet. ● Magnetic Slime Recipe ● Weekly Phenomenon Investigation: How does a doorbell work? ● Discuss:Think of a time you used magnets to help you. What are the qualities that draw you to different people? What social skills can you use to help others enjoy their time with you? How can large magnets help communities? ● Create an Electromagnet and then try to pick up a paperclip. After, have students experiment with their electromagnets; instruct students to ask questions and make observations. ● Writing prompt: Write how an electromagnet makes the doorbell function. Make a list of the ways electromagnets are used. ● Weekly Phenomenon Investigation: Why does my hair stand up when I go down a slide?
PS2.B: Types of Interactions	● Objects in contact exert forces on each other. ● 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.	
ETS1.A: Defining and Delimiting Engineering Problems	● 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.	
ETS1.B: Developing Possible Solutions	● Research on a problem 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. ● 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. ● Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	

ETS1.C: Optimizing the Design Solution	• Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	• Discuss: How do you feel when you see static electricity? What does learning about static electricity tell you about the world? What can you do with the knowledge you have gained about static electricity? Which of these experiments was your favorite? Why? • Activity: Floating Paper - Instruct students to do the following: Blow up a balloon. Rub the balloon on your hair. Move the balloon toward the paper. Draw a picture of what happens and record questions/observations. • Activity: Bending Water - Instruct students to do the following: Blow up a balloon, and turn on a faucet. Rub your balloon against your hair. Next, move it toward the water without touching the water. Draw a picture of what happens and record questions/observations. • Chast and Effect Chart • Writing prompt: Explain why your hair sticks up after you go down a slide. • Weekly Phenomenon Investigation: Can magnetic or electric forces prevent car crashes? • Discuss: What are important safety measures to take when riding in cars? How does designing a new solution help people? How does it feel to work on creating solutions to problems? How can research help you solve problems? What can you do if one of your ideas fails? • Engineering Design Challenge: Design a prototype of a vehicle that will never crash into other cars. • Weekly Phenomenon Investigation: What is air? • Discuss: How can you respond positively to changes in your life? What can you do if you are having a hard time with a change in your life? What is your favorite form of matter? Would you rather be hot or cold? How can you problem-solve if you are hot? How can you problem-solve if you are cold? • Graphic Organizer: Physical Properties of an Object • Physical Properties Lab • Simulation: Changes Between Solids, Liquids, and Gases • Water cycle demonstration • Writing prompt: Write a paragraph about what air is. • Weekly Phenomenon Investigation: How does smooth batter turn into soft, warm brownies? • Discuss: How do you turn challenges into opportunities to learn something new? How do you respond when something gets difficult? What kind of social energy do you add to your friend
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Asking Questions and Defining Problems	• 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. • Ask questions that can be investigated based on patterns such as cause and effect relationships.	
Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	
Planning and Carrying Out Investigations	• 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. • 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.	
Scientific Investigations Use a Variety of Methods	Science investigations use a variety of methods, tools, and techniques.	
Science Knowledge is Based on Empirical Evidence	Science findings are based on recognizing patterns.	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	

Cause and Effect	Cause and effect relationships are routinely identified, tested, and used to explain change.
Patterns	Patterns of change can be used to make predictions.
Interdependence of Science, Engineering, and Technology	Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.
Influence of Science, Engineering, and Technology on Society and the Natural World	● People's needs and wants change over time, as do their demands for new and improved technologies. ● Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***
● Self-Awareness ● Self-Management ● Responsible Decision Making ● Social Awareness ● Relationship Skills ● Motivation	● Emotional Awareness ● Internal Regulation ● Behavior Control ● Goal Pursuance ● Appreciating Social and Environment Diversity ● Adaptive Behavior ● Communication ● Social Engagement ● Constructive Thinking ● Consequence Evaluation ● Respect for Self and Others ● Enthusiasm ● Initiative ● Resilience

groups? What social skills help you add positive energy? What are some strategies you can use to change your mood if you need to?
- Light Observations Lab
- Draw models of different types of energy (ex: sound, light, electrical)
- Research a scientist who has influenced the world of technology. Create a poster detailing their contributions.
- Writing prompt: Write one paragraph describing your day with no electricity.
- Weekly Phenomenon Investigation: Why does ice melt in your hand?
- Discuss: When it is cold outside, what should you wear to keep your body protected? If you are cold, what can you do to warm up? If you are hot, how can you take care of your physical well-being? What safety precautions should you take when you are near a fire or stove? How can you respond if your prototype fails? How can you be resilient if you fail in an activity or task?
- Writing prompt: Write about how you would insulate a house.
- Engineering Design: Create a prototype that will keep a soda cold.

Interdisciplinary Connections: Content: ;NJSLS#:

ELA/Literacy -
- RI.3.1 - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- 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.
- 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).
- W.3.7 - Conduct short research projects that build knowledge about a topic.
- 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.
- SL.3.3 - Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3)

Mathematics -
- MP.2 - Reason abstractly and quantitatively.

		• MP.5 - Use appropriate tools strategically. • 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. Technology - • 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u> • Participation in class discussions/debates • Exit tickets • Quizzes • In-class assignments/activities • Presentations • Group assignments • IXL results	**<u>Benchmarks:</u>** • Writing promps • Mid-Unit Assessments **<u>Summative Assessments:</u>** • Unit test • Unit project • Lab activities

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Modified/leveled readings from Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Translated and modified readings from Science Studies Weekly - Grade Four • Translated teacher created reading guides and presentations	• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations

Supplemental Resources

- Chromebooks
- SmartBoard
- IXL
- Teacher Online Resources

- Science A-Z
- BrainPop
- Newsela.com
- Quizlet
- Kahoot
- Applicable educational videos

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate • Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Extended time for revisions or opportunity to identify and develop areas of personal interest	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes • Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments • Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	• **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. • **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. • **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. • **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	

	• Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.

Marking Period	**Unit Title**	**Recommended Instructional Days**
2-3	Interdependent Relationships in Ecosystems	8 weeks

NJSLS - Science: ***TItle***	**NJSLS - Science:** ***Performance Expectations***	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**
Ecosystems: Interactions, Energy, and Dynamics	• **3-LS2-1:** Construct an argument that some animals form groups that help members survive.	**<u>Essential Question/s:</u>** 1. Why are orcas the apex predator of the ocean? 2. Are chickens dinosaurs? 3. What are fossils? 4. What can I learn about an owl from owl pellets? 5. How do wolves affect the ecosystem in Yellowstone National Park? 6. How do mudskippers live in and out of water? 7. Why did paleontologists find a shark fossil in Kansas? 8. How has a changing environment affected the lives of Arabian Sea Cows? 9. Where did all the water in Chennai go?
Biological Evolution: Unity and Diversity	• **3-LS4-1:** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. • **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. • **3-LS4-4:** Make a claim about the merit of a situation to a problem caused when	

	the environment changes and the types of plants and animals that live there may change.	**Activity Description**: ● Article analysis ● Vocabulary activities ● Video/photo analysis ● Weekly Phenomenon Investigation: Why are orcas the apex predators of the ocean? ● Discuss: How does living in groups help animals? What groups are you a part of? How does being a part of those groups impact your well-being? ● Graphic organizer: Orcas ● Play a game to simulate group protection: One student will have a bowl of candy, and their goal is to protect the candy. Act out different scenarios so students will see that a group helps them to be protected. ● Writing prompt: Explain why animals form groups to survive. Use your annotations to provide evidence. ● Weekly Phenomenon: Are chickens dinosaurs? ● Student Detective Activity: Determine where an organism lived based on fossil examples. ● Discuss: What do you like about fossils? What traces do you leave behind? If someone went through your room, what would it tell them about you, like a fossil tells people about a dinosaur? Trace your hand and write down five things about yourself that you want future students to know. ● Create your own fossil activity ● Fossil Matching ● Writing prompt: Write a letter to a paleontologist. Write about the fossil you made. Imagine you found it. What was that organism's life like? ● Weekly Phenomenon Investigation: What can I learn about an owl from owl pellets? ● Discuss: How do tools help scientists? Paleontologists study ancient animals. What do you like to study? How does an environment shape the people who live in it? How does analyzing something help you understand it? Is there a behavior you perform that you can analyze? ● Owl Pellet Examination Lab ● Challenge Activity: Removing fossils from frozen ground ● Writing prompt: Design a tool that can help paleontologists remove fossils from the ground in Antarctica. ● Weekly Phenomenon Investigation: How do wolves affect the ecosystem in Yellowstone National Park?
Engineering Design	● **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. ● **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.	
FOUNDATION Disciplinary: ***Core Idea***	**FOUNDATION Disciplinary:** ***Statement***	
LS2.D: Social Interactions and Group Behavior	● 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.	
LS4.A: Evidence of Common Ancestry and Diversity	● Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2) ● Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.	
LS4.C: Adaptation	● For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	
ETS1.A: Defining and Delimiting Engineering Problems	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.	• Discuss: How would you compare your friend groups to ecosystems? What do you contribute to social ecosystems that helps the ecosystem to thrive? Is there anything that should change in the social ecosystem? What are some things you can do to help someone feel connected and thrive if they move to your school from another place? How can you show empathy for a person who moves to a new place? What could you do to thrive if you moved to a new place? • Graphic Organizer: Freshwater Organisms • Writing prompt: Explain what an ecosystem is, and discuss the importance of all members of the ecosystem. • Writing prompt: Describe an organism that will survive well, less well, and not at all in a city. • Weekly Phenomenon Investigation: How do mudskippers live in and out of water? • Discuss: What would you say is your natural habitat? What are some supplies someone would need if they were asked to leave their home? Can you think of any examples of when humans are removed from their natural habitats? What problems can this create? What are some coping strategies you can use to help you adapt to change? • Habitat mixup: Have each student pick an animal. Then, assign students a habitat that is not natural for their chosen animal. Let students draw their animal's new habitat from a hat. • Project: Create a new adaptation for an animal that has been displaced from its natural habitat. Write about your new animal and how its adaptation allows it to survive well in its new habitat. • Weekly Phenomenon Investigation: Why did paleontologists find a shark fossil in Kansas? • Discuss: How do you feel when your environment changes? What kinds of problems can happen when an environment changes? What can you do to help you manage change better? How would you like to treat others who are going through a change, like moving schools or meeting new friends? • Writing prompt: Write about a way to solve a problem caused by an environmental change. • Weekly Phenomenon Investigation: How has a changing environment affected the lives of Arabian sea cows? • Discuss: What are some of the ways you think you impact your environment in your community? What kind of impact do you want to have on the environment in your area? Are there any things you would like to change regarding your interaction with your
ETS1.B: Developing Possible Solutions	• Research on a problem 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. • 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. • Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	
ETS1.C: Optimizing the Design Solution	Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
Engaging in Argument from Evidence	Construct an argument with evidence, data, and/or a model.	
Analyzing and Interpreting Data	Analyze and interpret data to make sense of phenomena using logical reasoning.	
Asking Questions and Defining Problems	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.	
Planning and Carrying Out Investigations	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.	

Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.
FOUNDATION Crosscutting Concepts: ***Core Idea***	**FOUNDATION Crosscutting Concepts:** ***Statement***
Cause and Effect	Cause and effect relationships are routinely identified and used to explain change.
Scale, Proportion, and Quantity	Observable phenomena exist from very short to very long time periods.
Scientific Knowledge Assumes an Order and Consistency in Natural Systems	Science assumes consistent patterns in natural systems.
Influence of Science, Engineering, and Technology on Society and the Natural World	● People's needs and wants change over time, as do their demands for new and improved technologies. ● Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***
● Self-Awareness ● Self-Management ● Responsible Decision Making ● Social Awareness ● Relationship Skills ● Motivation	● Emotional Awareness ● Internal Regulation ● Behavior Control ● Goal Pursuance ● Appreciating Social and Environment Diversity ● Adaptive Behavior ● Communication ● Social Engagement ● Constructive Thinking ● Consequence Evaluation ● Respect for Self and Others ● Enthusiasm ● Initiative ● Resilience

environment? How many things have you recycled this week? How many things do you think you have thrown away? Is there anything you have thrown away this week that could be recycled and used in a new way?

- Problem Solving: How to Provide Constructive Criticism
- Writing Prompt: Come up with a solution to help the Arabian sea cows.
- Weekly Phenomenon Investigation: Where did all the water in Chennai go?
- Discuss: How does a water shortage impact a community? What other factors do you think could be contributing to the water shortage in Chennai? What can you do to conserve water in your own community? How does it help a community when the members of that community are aware of conservation and preservation methods?
- Engineering Design: Design something that could conserve water in a drought.

Interdisciplinary Connections: Content: ;NJSLS#:

ELA/Literacy -

- RI.3.1 - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.2 - Determine the main idea of a text; recount the key details and explain how they support the main idea.
- 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.
- W.3.1 - Write opinion pieces on topics or texts, supporting a point of view with reasons.
- W.3.2 - Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- 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.
- 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.

Mathematics -

		• MP.2 - Reason abstractly and quantitatively. • MP.4 - Model with mathematics. • MP.5 - Use appropriate tools strategically. • 3.NBT - Number and Operations in Base Ten. • 3.MD.B.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. Technology - • 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u> • Participation in class discussions/debates • Exit tickets • Quizzes • In-class assignments/activities • Presentations • Group assignments • IXL results	**<u>Benchmarks:</u>** • Writing promps • Mid-Unit Assessments **<u>Summative Assessments:</u>** • Unit test • Unit project • Lab activities

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Modified/leveled readings from Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Translated and modified readings from Science Studies Weekly - Grade Four • Translated teacher created reading guides and presentations	• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations

Supplemental Resources

- Chromebooks
- SmartBoard
- IXL

- Teacher Online Resources
- Science A-Z
- BrainPop
- Newsela.com
- Quizlet
- Kahoot
- Applicable educational videos

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate • Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Extended time for revisions or opportunity to identify and develop areas of personal interest	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes • Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments • Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	• **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. • **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. • **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. • **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	

	• Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.

Marking Period	**Unit Title**	**Recommended Instructional Days**
3-4	Life Cycles and Traits	4 weeks

NJSLS - Science: ***TItle***	**NJSLS - Science:** ***Performance Expectations***	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**
From molecules to Organisms: Structures and Processes	• **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.	**<u>Essential Question/s:</u>** 1. What are some plant life cycles? 2. What are some animal life cycles? 3. How do living things change? 4. What is an organism? 5. What does a bean have in common with a human? 6. Why are there so many types of dogs? 7. Why do some families look alike and some do not? 8. Why have peppered moths changed color? 9. Why do lions survive longer in zoos than they do in the wild? 10. Why do kidney beans vary in size? **<u>Activity Description</u>**: • Article analysis • Vocabulary activities • Video/photo analysis • Weekly Phenomenon Investigation: What does a bean have in common with a human?
Heredity: Inheritance and Variation of Traits	• **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. • **3-LS3-2:** Use evidence to support the explanation that traits can be influenced by the environment.	
Biological Evolution: Unity and Diversity	• **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.	

FOUNDATION **Disciplinary:** ***Core Idea***	**FOUNDATION** **Disciplinary:** ***Statement***
LS1.B: Growth and Development of Organisms	Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
LS3.A: Inheritance of Traits	● Many characteristics of organisms are inherited from their parents. ● Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.
LS3.B: Variation of Traits	● Different organisms vary in how they look and function because they have different inherited information. ● The environment also affects the traits that an organism develops.
LS4.B: Natural Selection	Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***
Developing and Using Models	Develop models to describe phenomena.
Scientific Knowledge is Based on Empirical Evidence	Science findings are based on recognizing patterns.
Analyzing and Interpreting Data	Analyze and interpret data to make sense of phenomena using logical reasoning.
Constructing Explanations and Designing Solutions	Use evidence (e.g., observations, patterns) to support an explanation.
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***

- Discuss: What are some ways you have changed since you were born? What are some ways you predict you will change this school year?
- Fickle Flamingo! Activity
- Organism Study Journal
- How I've Grown Activity
- Seeds in A Bag - Observing Growth Activity
- Writing Prompt: Option 1 - Write about the life cycle of an organism of your choice. Option 2 - Write a eulogy about your organism.
- Weekly Phenomenon Investigation: Why are there so many types of dogs?
- Discuss: What are three traits you have inherited from your parents or grandparents that you are grateful for? What is a trait you have inherited that you would change? How can you change your thinking about a trait you want to change?
- Graphic Organizer: Inherited Traits
- Inherited Traits Guess Who Activity
- Compare and Contrast: Animals of a Litter
- Class Traits Analysis
- My Ideal Dog Graphic Organizer
- Data Analysis: Determining Inherited Traits
- Writing prompt: What are some traits you inherited from family members?
- Writing prompt: Describe your ideal dog and the traits the dog would have.
- Weekly Phenomenon Investigation: Why do some families look alike and some do not?
- Discuss: What are some of your favorite traits you have inherited from a parent? What is a trait you have inherited that you would change? What is a trait you think someone else has inherited that you have noticed? Think about how inherited traits are different for each person. What do you appreciate about the differences you see in your peers?
- Have students create a story about a family. Then, have them draw a picture of that family. Compare all the families students drew pictures of, and take note of how some families are very similar and some are not.
- Graphic organizer: Interview with a geneticist
- Penny Genes Activity: Group students in pairs. Give each partnership two coins. Have students flip coins and fill out the chart

Patterns	• Patterns of change can be used to make predictions. • Similarities and differences in patterns can be used to sort and classify natural phenomena.	to "create" a "child." Have students draw a picture of the child and write a story describing their parents. • Weekly Phenomenon Investigation: Why have peppered moths changed color? • Discuss: How does adapting to your situation help you be resilient? How can practicing a growth mindset help you adapt to changes around you? What is a situation you have had to adapt to? Think of a situation in which you needed to adapt. Was it challenging? Discuss with a partner how you responded in that situation. • Survival of the Fittest Simulation: Activity 1 - Students will be finding ping pong-sized balls. Show them what they will be finding, and give them the challenge. Then, pick five students to blindfold. Say "Go!" and let all students search for the ping pong balls. Students that are blindfolded will obviously struggle to find the balls. Gather students together and discuss how an animal that is not adapted well to its environment will not survive. Activity 2 - Relay Races: Split students into groups. Have a bucket on each side of the room for each team. One side should have the same number of balls as students on the team in the bucket. Students are going to be running the balls to the other side and into the other bucket. The first team to get all the balls to the other side and sit down will win. After explaining the rules, give each team an adaptation (ex: walk on all fours, hop on one foot, no hands, or speed). Discuss cause and effect of survival for each activity. • Adaptations and Environment Graphic Organizer Activity • Research local wildlife that have adapted to where you live. Complete the Local Wildlife graphic organizer. • Writing prompt: What do you think caused the differences in Darwin's finches? • Weekly Phenomenon Investigation: Why do lions survive longer in zoos than they do in the wild? • Discuss: What is your favorite animal? What effects does your environment at school, home, and at play have on you? What kind of environments do you create for your friend groups? Are you kind? Are you welcoming? Do you include everyone? • Compare and contrast lions in the wild and lions in a zoo. • Plan and carry out an investigation to prove that the environment can affect an organism's traits. • Weekly Phenomenon Investigation: Why do kidney beans vary in size? • Discuss: How does it help your community if you have different perspectives? How are you similar to your friends? How are you
Cause and Effect	Cause and effect relationships are routinely identified and used to explain change.	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
• Self-Awareness • Self-Management • Responsible Decision Making • Social Awareness • Relationship Skills • Motivation	• Emotional Awareness • Internal Regulation • Behavior Control • Goal Pursuance • Appreciating Social and Environment Diversity • Adaptive Behavior • Communication • Social Engagement • Constructive Thinking • Consequence Evaluation • Respect for Self and Others • Enthusiasm • Initiative • Resilience	

		different from your friends? What do you appreciate about the differences you and your friends have? Some plants grow thorns on their stems to protect them from harm. What things do you do that protect you? ● Variation in Beans Activity ● Writing prompt: Why do you think kidney beans vary in size and shape? ● Writing prompt: Look at provided photos of rose plants. Which do you think will survive longer and produce more offspring? Why? **Interdisciplinary Connections: Content: ;NJSLS#:** ELA/Literacy - ● RI.3.1 - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. ● RI.3.2 - Determine the main idea of a text; recount the key details and explain how they support the main idea. ● 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. ● 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). ● W.3.2 - Write informative/explanatory texts to examine a topic and convey ideas and information clearly. ● 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. ● 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. Mathematics - ● MP.2 - Reason abstractly and quantitatively. ● MP.4 - Model with mathematics. ● 3.NBT - Number and Operations in Base Ten ● 3.NF - Number and Operations—Fractions ● 3.MD.B.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step

		"how many more" and "how many less" problems using information presented in scaled bar graphs. ● 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. Technology - ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u> ● Participation in class discussions/debates ● Exit tickets ● Quizzes ● In-class assignments/activities ● Presentations ● Group assignments ● IXL results	**<u>Benchmarks:</u>** ● Writing promps ● Mid-Unit Assessments **<u>Summative Assessments:</u>** ● Unit test ● Unit project ● Lab activities

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
● Science Studies Weekly - Grade Four ● Teacher created reading guides and presentations	● Modified/leveled readings from Science Studies Weekly - Grade Four ● Teacher created reading guides and presentations	● Translated and modified readings from Science Studies Weekly - Grade Four ● Translated teacher created reading guides and presentations	● Science Studies Weekly - Grade Four ● Teacher created reading guides and presentations

Supplemental Resources

● Chromebooks
● SmartBoard
● IXL
● Teacher Online Resources
● Science A-Z

- BrainPop
- Newsela.com
- Quizlet
- Kahoot
- Applicable educational videos

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and alternative assignments/assessments where appropriate • Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Extended time for revisions or opportunity to identify and develop areas of personal interest	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes • Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments • Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS		
	Disciplinary Concept:	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	• **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. • **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. • **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. • **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	• Act as a responsible and contributing community members and employee. • Attend to financial well-being.	

	• Consider the environmental, social and economic impacts of decisions. • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence.

Marking Period	**Unit Title**	**Recommended Instructional Days**
4	Weather and Climate	7 weeks

NJSLS - Science: ***TItle***	**NJSLS - Science:** ***Performance Expectations***	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**
Earth's Systems	• **3-ESS2-1:** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. • **3-ESS2-2:** Obtain and combine information to describe climates in different regions of the world.	**Essential Question/s:** 1. Why is the weatherman wrong sometimes? 2. Why does it get colder when you move north? Is it the same all over the world? 3. How do you stay safe in a weather hazard? 4. How does a lightning rod work? 5. What is air? 6. How does smooth batter turn into soft, warm brownies? 7. Why does ice melt in your hand? **Activity Description**: • Article analysis • Vocabulary activities • Video/photo analysis • Weekly Phenomenon Investigation: Why Is the Weatherman Wrong Sometimes? • Discuss: How does "predicting" help you make good decisions? How does the weather affect your well-being? How does it affect
Earth and Human Activity	• **3-ESS3-1:** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	
Engineering Design	• **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. • **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.	your mood? How can the weather affect a community's ability to meet basic needs like having enough food and water? • Graphic organizer: Meteorologists • Create a Fahrenheit scale and a Celsius scale; label the boiling and freezing points on each. • Graphic organizer: Precipitation and Temperature • Making a Weather Vane Activity • Four corners: Label or assign each corner of the room with a type of cloud. Display a picture of a cloud, and have students go to the matching weather corner. • Collecting Data and Creating Data Activity • Patterns in Seasons Exploration • Writing prompt: When have you experienced precipitation? • Weekly Phenomenon Investigation: Why does it get colder when you move north? Is it the same all over the world? • Discuss: Do you remember the first time you saw rain or snow? Discuss what it was like with a partner. When you visit a place with a different climate than you are used to, what types of things do you notice are different? How can being able to interpret maps be helpful? • Temperature Map Activity • Climate vs. Weather Card Sort • Climate Research - use a provided graphic organizer ot sort your information • World Climate Patterns Analysis • Writing prompt: Write about your favorite climate type. • Weekly Phenomenon Investigation: How do you stay safe in a weather hazard? • Discuss: How can hazardous weather impact the emotions of communities affected by this type of weather? What can community members do to be prepared for hazardous weather? How does having a plan of action help people feel less stress about hazardous weather? What kinds of threats to well-being do hazardous weather systems present? • Storm Jar Demonstration - students will complete a Storm Observations graphic organizer • Analyzing Main Idea: First-Hand Experiences of Natural Disasters • Design a solution to help prevent a flood/landslide/ice storm or minimize damage, using a provided graphic organizer • Writing prompt: Write about a storm you experienced. • Weekly Phenomenon Investigation: How do lightning rods work?
FOUNDATION Disciplinary: *Core Idea*	**FOUNDATION Disciplinary: *Statement***	
ESS2.D: Weather and Climate	• 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. • Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	
ESS3.B: Natural Hazards	• A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.	
ETS1.A: Defining and Delimiting Engineering Problems	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.	
ETS1.B: Developing Possible Solutions	• Research on a problem 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. • 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. • Tests are often designed to identify failure points or difficulties, which	

	suggest the elements of the design that need to be improved.
ETS1.C: Optimizing the Design Solution	Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***
Analyzing and Interpreting Data	Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.
Obtaining, Evaluating, and Communicating Information	Obtain and combine information from books and other reliable media to explain phenomena.
Engaging in Argument from Evidence	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.
Asking Questions and Defining Problems	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.
Planning and Carrying Out Investigations	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.
Constructing Explanations and Designing Solutions	Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***

- Discuss: How can you respond when you encounter things that you can't control? How does weather impact a community's ability to meet their basic needs for food and water? How can weather affect stability in communities? How do natural disasters affect communities? Have you been personally impacted by a natural disaster?
- Underground Home Activity: Design an underground home using the first three steps of the Engineering Design Process. Think about extreme temperatures and weather that your home could withstand.
- Writing prompt: Write a story about humans controlling the weather. How can they control it? What do they do with that control? What are the consequences?

Interdisciplinary Connections: Content: ;NJSLS#:

ELA/Literacy -

- RI.3.1 - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.9 - Compare and contrast the most important points and key details presented in two texts on the same topic.
- W.3.1 - Write opinion pieces on topics or texts, supporting a point of view with reasons.
- W.3.7 - Conduct short research projects that build knowledge about a topic.
- 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.

Mathematics -

- MP.2 - Reason abstractly and quantitatively.
- MP.4 - Model with mathematics.
- MP.5 - Use appropriate tools strategically.
- 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.MD.B.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in bar graphs.

Patterns	Patterns of change can be used to make predictions.	Technology - ● 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
Cause and Effect	Cause and effect relationships are routinely identified, tested, and used to explain change.	
Influence of Engineering, Technology, and Science on Society and the Natural World	● People's needs and wants change over time, as do their demands for new and improved technologies. ● 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).	
Science is a Human Endeavor	Science affects everyday life.	
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
● Self-Awareness ● Self-Management ● Responsible Decision Making ● Social Awareness ● Relationship Skills ● Motivation	● Emotional Awareness ● Internal Regulation ● Behavior Control ● Goal Pursuance ● Appreciating Social and Environment Diversity ● Adaptive Behavior ● Communication ● Social Engagement ● Constructive Thinking ● Consequence Evaluation ● Respect for Self and Others ● Enthusiasm ● Initiative ● Resilience	

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u> ● Participation in class discussions/debates ● Exit tickets ● Quizzes	**<u>Benchmarks:</u>** ● Writing promps ● Mid-Unit Assessments

• In-class assignments/activities • Presentations • Group assignments • IXL results	**<u>Summative Assessments:</u>** • Unit test • Unit project • Lab activities

Differentiated Student Access to Content: Teaching and Learning *Resources/Materials*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Modified/leveled readings from Science Studies Weekly - Grade Four • Teacher created reading guides and presentations	• Translated and modified readings from Science Studies Weekly - Grade Four • Translated teacher created reading guides and presentations	• Science Studies Weekly - Grade Four • Teacher created reading guides and presentations

Supplemental Resources

- Chromebooks
- SmartBoard
- IXL
- Teacher Online Resources
- Science A-Z
- BrainPop
- Newsela.com
- Quizlet
- Kahoot
- Applicable educational videos

Differentiated Student Access to Content: Recommended *Strategies & Techniques*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
• Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. • Jigsaws • Think-Pair-Share • Boost engagement with material by providing opportunities for differentiation, group work, and	• Provide graphic organizers for additional support or encourage students to create digital multimedia to showcase knowledge. • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions	• Utilize visual supports and graphic organizers • Use prompts and model directions • Provide opportunities to model talk during read alouds, and scaffold talk during whole class and small group discussions • Device used for translation purposes	• Encourage students to explore concepts in depth and encourage independent studies or investigations. • Modeling or independent student-led research • Use of higher leveled text and/or writing assignments

alternative assignments/assessments where appropriate ● Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.	● Extended time for revisions or opportunity to identify and develop areas of personal interest	● Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.	● Utilize differentiation in the areas of acceleration, enrichment, and grouping

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	Performance Expectation/s:	● **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process. ● **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem. ● **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems. ● **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
	Career Readiness, Life Literacies, & Key Skills Practices	
	● Act as a responsible and contributing community members and employee. ● Attend to financial well-being. ● Consider the environmental, social and economic impacts of decisions. ● Demonstrate creativity and innovation. ● Utilize critical thinking to make sense of problems and persevere in solving them. ● Model integrity, ethical leadership and effective management ● Plan education and career paths aligned to personal goals. ● Use technology to enhance productivity increase collaboration and communicate effectively. ● Work productively in teams while using cultural/global competence.	

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	x	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	x	Standards in Action: *Climate Change*