Lakewood Public School District Curriculum Guide

Grade: K	Content Area: Science

Original Adoption: Original Adoption: 2023 NJSLS English Language Arts and English as a Second Language (8-21-24); Math NJSLS Mathematics (8-21-24); 2020 NJSLS Science, Social Studies, Career Readiness, Life Literacies & Key Skills, Computer Design & Thinking, Visual & Performing Arts, World Language, Comprehensive Health and Physical Education (5-11-22)
Created By:

Recommended Pacing Guide	
Unit 1: Needs of Plants and Animals	60 days
Unit 2: Pushes and Pulls	60 days
Unit 3: Sunlight and Weather	60 days

Alignment with State Mandates

The following colors are used throughout this document to indicate areas in which the curriculum is aligned with the following NJSA requirements:

- Holocaust and genocides (N.J.S.A. 18A:35-28)
- History and contributions of African-Americans (Amistad Law) (N.J.S.A. 18A:35-4.43)
- Highlight and promote diversity and inclusion (Diversity & Inclusion Law) (N.J.S.A. 18A:35-4.36a)
- History of disabled and LGBT persons included in middle and high school curriculum (Section 18A:35-4.35)
- Climate Change - to prepare students to understand how and why climate change happens, the impact it has on our local and global communities and to act in informed and sustainable ways. Please click here for specific examples (by subject).

Unit 1: Needs of Plants and Animals	Duration:

New Jersey Student Learning Standards	
K-LS1-1	Use observations to describe patterns of what plants and animals (including humans) need to survive.
K-ESS3-1	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

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K-ESS3-3	Communicate solutions that will reduce the impact of humans on the land, water, air and/or other living things in the local environment.
K-ESS2-2	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
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.
K-2-ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Science and Engineering Practices	Discipline Core Ideas/Unit Enduring Understandings	Crosscutting Concepts
• **Practice 3: Planning and Carrying Out Investigations.** Students conduct hands-on investigations to figure out what plants need in order to live and thrive. Students also investigate using secondhand data (photographs) to observe and explain where different animals live and why they live there. Over the course of the unit, students take on more of the planning of the investigations. • **Practice 1: Asking Questions.** In addition to their focus on setting a purpose for reading a text and firsthand investigations, students ask questions based on observations and work to define the problem they are tasked with solving—figuring out why there are no longer any monarch caterpillars in the Garden. Through investigating what animals need to live and then what plants need to live, students begin to understand the problem in the Garden and how they might go about	**LS1.C: Organization for Matter and Energy Flow in Organisms:** • All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1) **ESS2.E: Biogeology:** • Plants and animals can change their environment. (K-ESS2-2) **ESS3.A: Natural Resources** • Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1) **ESS3.C: Human Impacts on Earth Systems:** • Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (K-ESS3-3) **ETS1.A: Defining and Delimiting Engineering Problems:** • Asking questions, making observations, and gathering	**Patterns** • Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (secondary to K-ESS3-3) **Cause and Effect** • Events have causes that generate observable patterns. (K-ESS3-2), (K-ESS3-3) **Systems and System Models** • Systems in the natural and designed world have parts that work together. (K-ESS2-2) • Systems in the natural and designed world have parts that work together. (K-ESS3-1) **Structure and Function** • The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2) ***Connections to Nature of Science*** **Scientific Knowledge is Based on Empirical Evidence**

solving it. ● **Practice 4: Analyzing and Interpreting Data.** Students have multiple opportunities to analyze the data they collect from firsthand investigations and from photographs in order to draw conclusions to the questions being asked. ● **Practice 6: Constructing Explanations and Designing Solutions.** Students gather evidence through their investigations across the unit and use that evidence to construct explanations. For instance, students investigate pictures of animals to figure out what those animals eat; students investigate photographs of habitats, including the available food that grows there, to figure out what animals could live there; and students conduct hands-on experiments to figure out what plants need in order to live. At the end of the unit, students apply what they have learned to redesign the Garden so it meets the needs of both the monarch caterpillars and humans. ● **Practice 5: Using Mathematics and Computational Thinking:** In interpreting data from plant-growth experiments, students figure out different ways of quantifying the growth of plants. ● **Practice 2: Developing and Using Models:** Students use a template of the Garden to make a plan for how they propose redesigning the Garden to meet the needs of both the monarch caterpillars and humans.	information are helpful in thinking about problems. (secondary to K-ESS3-2) **ETS1.B: Developing Possible Solutions:** ● Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (secondary to K-ESS3-3)	● Scientists look for patterns and order when making observations about the world. (K-LS1-1)

● **Practice 8: Obtaining, Evaluating, and Communicating Information:** Students receive explicit instruction and have multiple opportunities to use the strategy of setting a purpose as they engage with the books in the unit and as they conduct investigations. Setting a purpose before reading helps students focus on the illustrations and the text to find specific information and to answer specific questions about plant and animal needs. Setting a purpose before investigating guides the design of the investigation as well as what data to collect and analyze. Students regularly participate in constructing explanations and discourse routines that help them communicate about and make sense of science ideas by using key vocabulary. ● **Practice 7: Engaging in Argument from Evidence:** Students make claims about how to redesign the Garden so it meets the needs of both the monarch caterpillars and humans. Students support their claims by using ideas they have constructed over the course of the unit.		

New Jersey Social and Emotional Competencies and Sub-Competencies	
Self-Awareness	● Recognize one's feelings and thoughts. ● Recognize the impact of one's feelings and thoughts on one's own behavior. ● Recognize one's personal traits, strengths, and limitations. ● Recognize the importance of self-confidence in handling daily tasks and challenges.

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Self-Management	• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors. • Recognize the skills needed to establish and achieve personal and educational goals. • Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals.
Social Awareness	• Recognize and identify the thoughts, feelings, and perspectives of others. • Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Demonstrate an awareness of the expectations for social interactions in a variety of settings.
Responsible Decision Making	• Develop, implement, and model effective problem-solving and critical thinking skills. • Identify the consequences associated with one's actions in order to make constructive choices. • Evaluate personal, ethical, safety, and civic impact of decisions.
Relationship Skills	• Establish and maintain healthy relationships. • Utilize positive communication and social skills to interact effectively with others. • Identify ways to resist inappropriate social pressure. • Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways. • Identify who, when, where, or how to seek help for oneself or others when needed.

Interdisciplinary Connections	
ELA Standards	
RI.CR.K.1	With prompting and support, ask and answer questions about key details in an informational text (e.g., who, what, where, when, why, how).
RI.CI.K.2	With prompting and support, identify the main topic and key details of an informational text (e.g., who, what, where, when, why, how).
RI.IT.K.3	With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
RI.TS.K.4	Recognize common types of informational texts (e.g., biographies, recipes, how-to manuals) and identify features of print (e.g., front cover, back cover, and title page of a book).
RI.MF.K.6	With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

W.IW.K.2	Use a combination of drawing, dictating, and writing to compose informative/explanatory texts to convey ideas.
W.WR.K.5	With prompting and support, generate questions through shared research in response to a topic, text, or stimulus (e.g., event, photograph, video, book).
W.SE.K.6	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
W.RW.K.7	With prompting and support, engage in brief but regular writing and drawing tasks.
SL.PE.K.1	Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. opportunity to integrate climate change education. **A.** Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion). **B.** Continue a conversation through multiple exchanges.
SL.II.K.2	Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
SL.ES.K.3	Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
SL.PI.K.4	Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
SL.UM.K.5	Add drawings or other visual displays to descriptions as desired to provide additional detail.
L.RF.K.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
L.RF.K.4	Read emergent-reader texts (decodable texts, including words with one-to-one letter-sound correspondences) orally with sufficient decoding accuracy to support comprehension.
L.VL.K.2	With prompting and support, ask and answer questions to help determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
L.VI.K.3	With guidance and support from adults, explore word relationships and nuances in word meanings.
Mathematics Standards	
MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.

MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
K.CC.3	Know number names and the count sequence. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20.
K.CC.4	Count to tell the number of objects. Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.CC.5	Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
K.CC.6	Compare numbers. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
K.M.1	Describe and compare measurable attributes. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
KM.2	Describe and compare measurable attributes. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference.
K.G.1	Identify and describe shapes. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
K.G.5	Analyze, compare, create, and compose shapes. Model shapes in the world by building shapes from components and drawing shapes.

Computer Science & Design Thinking	
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ITH.1	Identify products that are designed to meet human wants or needs.

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Career Readiness, Life Literacies & Key Skills	
9.1.2.CR.1	Recognize ways to volunteer in the classroom, school, and community.
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives.
9.4.2.CI.2	Demonstrate originality and inventiveness in work.
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem.
9.4.2.CT.2	Identify possible approaches and resources to execute a plan.
9.4.2.CT.3	Use a variety of types of thinking to solve problems.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data.
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.

Career Readiness, Life Literacies, and Key Skills Practices	
CLKS.1	Act as a responsible and contributing community member and employee.
CLKS.2	Attend to financial well-being.
CLKS.3	Consider the environmental, social and economic impacts of decisions.
CLKS.4	Demonstrate creativity and innovation.
CLKS.5	Utilize critical thinking to make sense of problems and persevere in solving them.
CLKS.6	Model integrity, ethical leadership and effective management.
CLKS.7	Plan education and career paths aligned to personal goals.
CLKS.8	Use technology to enhance productivity, increase collaboration and communicate effectively.
CLKS.9	Work productively in teams while using cultural/global competence.

Evidence of Student Learning	
Formative Tasks: ● Teacher observations	**Alternative Assessments:** ● Oral assessments

● Class discussions ● Whiteboard/Communicators ● On-the-Fly Assessments ● Daily classwork ● Checks for understanding ● Clipboard Assessment Tool ● Critical Juncture Assessment ● Crosscutting Concept Tracker	● 3-D Assessments
Summative Assessments: ● End of Unit Assessment	**Benchmark Assessments:** ●

Knowledge & Skills	
Enduring Understandings: ● Different kinds of plants and animals live in different places. ● An animal needs to eat food to live. ● Animals can only live in a place that has the food they need. ● When plants grow, they get bigger and have new parts that were not there before. ● Plants need water from the place where they are in order to live and grow. ● Plants get the water they need with their roots from the soil around them. ● Plants need light to live and grow. ● Plants get the light they need with their leaves. ● What scientists learn about living things can help people make choices about what to do. ● Humans can make choices so that other living things can get what they need.	**Essential Questions:** ● What do living things need to live and grow? ● Why can an animal live where it does? ● What does it look like when plants grow? ● Do plants need water to grow? ● How do plants get the water they need? ● Do plants need light to live and grow? ● How do plants get light? ● How can humans make sure that other living things can live and grow?
Content *Students will know…* ● Scientists are people who learn about the world around them by carefully observing it. ● Scientists observe using their senses. ● Scientists sort things into groups to help understand what they observe. ● Plants and animals are living things.	**Skills** *Students will be able to …* ● Identify living things. ● Identify similarities and differences between living and nonliving things. ● Observe living things using senses: sight, hearing, smell, and possibly touch. ● Make comparisons between animals living in different habitats.

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- Scientists use different ways to study the world.
- Scientists look for patterns when they make observations about the world.
- Different kinds of plants and animals live in different places.
- Scientists sometimes record what they observe to help them remember.
- An animal needs to eat food to live.
- Animals eat different foods.
- Scientists compare what they have observed to help them see how things are alike and different.
- Animals can only live in a place that has the food they need.
- Different animals eat different food, so they live in different places.
- Scientists read to find out more information and answer their questions.
- Monarch caterpillars can only live where there are milkweed plants for them to eat.
- Scientists investigate to answer questions.
- Scientists sometimes record what they observe so they can remember it and communicate it to others.
- Like animals, plants have needs.
- Plants grow from seeds.
- Plants have stems, leaves, flowers, and roots.
- Scientists sometimes read things multiple times for different purposes.
- When plants grow, they get bigger and have new parts that were not there before.
- Scientists sometimes record what they observe so they can compare how something has changed.
- Garlic plants need water to grow.
- Scientists often investigate one thing at a time to answer their questions.
- Plants need water from the place where they are in order to live and grow.
- Animals need water from the place where they are in order to live and grow.

- Make observations about the food available in the habitats of various animals.
- Explain where monarch butterflies can or cannot live.
- Write an explanation about why monarch caterpillars cannot live in the Garden.
- Sequence a series of plant growth images.
- Compare how a plant looks at various stages of the growth process.
- Analyze a variety of habitats with differing amounts of water.
- Explain why different plants can live in different habitats.
- Make observations about plants living in both very wet and very dry habitats.
- Draw conclusions about where plants and animals can live.
- Make observations of sunflower plants that have been growing in light and in no light.
- Explain whether plants need light to grow.
- Explain why plants can live and grow well in some places but not in others.
- Match human needs to their environmental origins.
- Compare human needs to those of other animals.
- Identify the similarities and differences between human and animal needs.
- Design a Garden Planter Plan that considers how the selected plants can impact which animals live in the garden.
- Explain how caterpillars and milkweed get what they need in order to live in the Garden.

● Plants get the water they need using their roots. ● Plants have roots that grow underground. ● Plants get the water they need with their roots from the soil around them. ● Milkweed plants can only grow in a place that has the water they need. ● Scientists talk and write about what they have learned so they can explain and communicate with others. ● Scientists use the results of one investigation to plan other investigations. ● Plants need light to live and grow. ● Plants get the light they need with their leaves. ● Plants have different parts that work together to help the plant live and grow. ● Animals need to stay safe to live. ● Monarch caterpillars grow into monarch butterflies. ● Monarchs have different habitats at different parts of their lives. ● What scientists learn about living things can help people make choices about what to do. ● Humans are animals that need to eat to live and grow. ● Humans rely on plants to get many of the things they need. ● Humans can make choices so that other living things can get what they need. ● Scientists think back and describe new things they have learned so they can understand and remember them better. ● Animals can live and grow in a place if the food they need is there. ● Plants can live and grow in a place if the water and light they need is there. ● Scientists and engineers communicate their ideas to others.	

Core Instructional & Supplemental Materials	
Suggested Activities/Resources: ● Books in This Unit	**Supplemental Materials**

○ *Science Walk* ○ *A Plant in the Desert* ○ *Above and Below* ○ *Investigating Monarchs* ○ *Handbook of Plants* ● *Needs of Plants and Animals* Kit	● *Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds* PDF ● Digital Resources included in each unit ● Multi-language glossary ● *Rookie Biographies: George Washington Carver* by Dana Meachen Rau ● *Like a Dandelion* by Huy Voun Lee ● *These Olive Trees* by Aya Ghanameh ● *Yellow Butterfly* by Oleksandr Shatokhin

Suggested Accommodations

English Language Learners:

- Multi-sensory instruction
- Flexible grouping
- Small group instruction
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)
- Chunking information
- Scaffolded questioning
- Academic language support
- Vocabulary support
- Co-Constructed Word Banks
- Anchor charts
- Gradual release model
- Visual models
- Native language support when possible (Multi-language glossary)
- Sheltered English Instruction Strategies
- Sentence starters

Special Education/Students with Disabilities:

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Follow all IEP modifications
- Calculators
- Manipulatives/concrete models
- Directions repeated, clarified, and reworded
- Breakdown task into manageable parts

504 Plans:

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Calculators
- Manipulatives/concrete models

- Follow all 504 modifications

Gifted and Talented:
- Higher level questioning
- Enriched assignments
- Tiered assignments
- Choice board to extend learning

Students at Risk of Failure:
- Provide peer tutoring
- Use a strong student as a “buddy”
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources
- Chunking information
- Scaffolded questioning
- Tiered activities
- Manipulatives/concrete models
- Modified assignments
- Brain breaks

Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cueing
- Activate schema
- Build background knowledge

Culturally Diverse:
- Create an emotionally positive classroom climate.
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

Unit 2: Pushes and Pulls	Duration: 60 days

New Jersey Student Learning Standards

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K-PS2-1	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
K-PS2-2	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.
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.
K-2-ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Science and Engineering Practices	Discipline Core Ideas/Unit Enduring Understandings	Crosscutting Concepts
• **Practice 6: Constructing Explanations and Designing Solutions:** Working as pinball engineers, students engage in all stages of an iterative cycle of design as they learn, plan, make, and test. Then, based on the evidence they gather, they repeat the cycle. As students engage in these practices to design solutions for the Class Pinball Machine, they stop at various points throughout the unit to reflect on how they have participated in different engineering practices. • **Practice 8: Obtaining, Evaluating, and Communicating Information:** Students read and search for evidence in a variety of books that are custom written for this unit. They receive explicit instruction and have multiple opportunities to use the reading comprehension strategy of visualizing as	**PS2.A: Forces in Motion:** • Pushes and pulls can have different strengths and directions. (K-PS2-1) (K-PS2-2) • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1) (K-PS2-2) **Ps2.B: Types of Interactions:** • When objects touch or collide, they push on one another and can change motion. (K-PS2-1) **PS3.C: Relationship Between Energy and Forces:** • A bigger push or pull makes things speed up or slow down more quickly. (secondary to K-PS2-1) **ETS1.A: Defining and Delimiting Engineering Problems:** • A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. (secondary to K-PS2-2)	**Cause and Effect** • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3) **Structure and Function** • The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2) ***Connections to Nature of Science*** **Scientific Investigations Use a Variety of Methods** • Scientists use different ways to study the world. (K-PS2-1)

they engage with the texts in the unit. This strategy promotes active engagement with ideas in each book. ● **Practice 4: Analyzing and Interpreting Data:** Students have multiple opportunities to analyze the data they collect from firsthand investigations with their Box Models as they test their ideas about how to exert forces on the pinball to cause it to move a certain way. ● **Practice 3: Planning and Carrying Out Investigations:** Students carry out multiple investigations to determine how to exert forces on the pinball to cause it to move a certain way. ● **Practice 2: Developing and Using Models:** Students use their Box Models to test ideas. ● **Practice 7: Engaging in Argument from Evidence:** Students make claims about what will work best for the Class Pinball Machine. Students support their claims with evidence they got while working with their Box Models. ● **Practice 1: Asking Questions:** As students work with their Box Models, they refine their understanding of what a good pinball machine would need.	● Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) ● Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) **ETS1.B: Developing Possible Solutions:** ● Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2) **ETS1.C: Optimizing the Design Solution:** ● Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)	

New Jersey Social and Emotional Competencies and Sub-Competencies	
Self-Awareness	● Recognize one's feelings and thoughts. ● Recognize the impact of one's feelings and thoughts on one's own behavior. ● Recognize one's personal traits, strengths, and limitations.

	• Recognize the importance of self-confidence in handling daily tasks and challenges.
Self-Management	• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors. • Recognize the skills needed to establish and achieve personal and educational goals. • Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals.
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RI.IT.K.3	With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
RI.K.4	With prompting and support, ask and answer questions about unknown words in a text.

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RI.TS.K.4	Recognize common types of informational texts (e.g., biographies, recipes, how-to manuals) and identify features of print (e.g., front cover, back cover, and title page of a book).
RI.MF.K.6	With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
W.IW.K.2	Use a combination of drawing, dictating, and writing to compose informative/explanatory texts to convey ideas. opportunity to integrate climate change education. **A.** Introduce a topic. **B.** Develop the topic with at least two facts or other information and examples related to the topic, including pictures.
W.WR..K.5	With prompting and support, generate questions through shared research in response to a topic, text, or stimulus (e.g., event, photograph, video, book).
W.SE.K.6	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
W.RW.K.7	With prompting and support, engage in brief but regular writing and drawing tasks.
SL.PE.K.1	Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. opportunity to integrate climate change education. A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion). B. Continue a conversation through multiple exchanges.
SL.II.K.2	Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
SL.PI.K.4	Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
SL.UM.K.5	Add drawings or other visual displays to descriptions as desired to provide additional detail.
L.RF.K.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
L.RF.K.4	Read emergent-reader texts (decodable texts, including words with one-to-one letter-sound correspondences) orally with sufficient decoding accuracy to support comprehension.
L.VL.K.2	With prompting and support, ask and answer questions to help determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.

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L.VI.K.3	With guidance and support from adults, explore word relationships and nuances in word meanings.
Mathematics Standards	
MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP4	Model with mathematics.
MP6	Attend to precision.
K.CC.5	Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
K.M.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
K.M.2	Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference.
K.DL.1	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.
K.G.1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
K.G.4	Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).

Computer Science & Design Thinking	
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ITH.1	Identify products that are designed to meet human wants or needs.

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Career Readiness, Life Literacies & Key Skills	
9.1.2.CR.1	Recognize ways to volunteer in the classroom, school, and community.
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives.
9.4.2.CI.2	Demonstrate originality and inventiveness in work.
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem.
9.4.2.CT.2	Identify possible approaches and resources to execute a plan.
9.4.2.CT.3	Use a variety of types of thinking to solve problems.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data.
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.

Career Readiness, Life Literacies, and Key Skills Practices	
CLKS.1	Act as a responsible and contributing community member and employee.
CLKS.2	Attend to financial well-being.
CLKS.3	Consider the environmental, social and economic impacts of decisions.
CLKS.4	Demonstrate creativity and innovation.
CLKS.5	Utilize critical thinking to make sense of problems and persevere in solving them.
CLKS.6	Model integrity, ethical leadership and effective management.
CLKS.7	Plan education and career paths aligned to personal goals.
CLKS.8	Use technology to enhance productivity, increase collaboration and communicate effectively.
CLKS.9	Work productively in teams while using cultural/global competence.

Evidence of Student Learning	
Formative Tasks: ● Teacher observations ● Class discussions	**Alternative Assessments:** ● Oral assessments

● Whiteboard/Communicators ● On-the-Fly Assessments ● Daily classwork ● Checks for understanding ● Clipboard Assessment Tool ● Critical Juncture Assessment ● Crosscutting Concept Tracker	
Summative Assessments: ● End of Unit Assessment	**Benchmark Assessments:** ●

Knowledge & Skills	
Enduring Understandings: ● An object starts to move when another object exerts a force on it. ● Forces happen between two objects. ● An object moves a long distance when a strong force is exerted on it. ● An object moves a short distance when a gentle force is exerted on it. ● An object starts to move in the same direction as the force that starts the motion. ● Every force has a strength–gentle or strong–and a direction. ● Every force has a strength–gentle or strong–and a direction, which makes the object move a certain distance and direction. ● A moving object changes direction when another moving object exerts a force on it. ● A moving object changes direction when a still object in its way exerts a force on it. ● Whenever we see an object start to move, stop moving, or change direction, that is evidence that something exerted a force on it.	**Essential Questions:** ● Why do things move in different ways? ● What makes an object start to move? ● What makes an object move shorter or longer distances? ● What makes an object start moving in a certain direction? ● What makes an object move to a certain place? ● What can make a moving object change directions? ● How do engineers make their solutions do all the things they want them to do? ● Where are forces in the world?

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Content

Students will know…

- An object starts to move when somebody pushes or pulls it.
- Scientists and engineers ask and answer questions to help them learn about problems.
- An object starts to move when another object exerts a force on it.
- Visualizing is making a picture in your mind and it can be used to notice forces.
- Scientists often talk about how things are connected.
- Scientists and engineers search for cause and effect relationships to explain natural events.
- Forces happen between two objects.
- Scientists and engineers talk about pushes and pulls by saying “Objects move because other objects exert forces on them.”
- Engineers explain how things work by saying how a cause made an effect happen.
- A model is something scientists and engineers make to answer questions about the real world.
- Engineers make solutions to problems–something that helps people do what they want or need to do.
- Engineers learn new ideas and make what they need to solve problems.
- Engineers talk and write to share their solutions with others.
- Things move a longer distance when we push them harder.
- Things move a shorter distance when we do not push them as hard.
- An object moves a long distance when a strong force is exerted on it.
- An object moves a short distance when a gentle force is exerted on it.
- Engineers revise or add to their designs as they learn more about how things work.

Skills

Students will be able to …

- Gather information to answer the investigative question.
- Discuss pushes and pulls in terms of exerting forces.
- Apply what they have learned about exerting forces to make things move, and use the Box Model and a rubber band to make the pinball start to move.
- Use academic vocabulary to explain the forces necessary to move the ball short or long distances.
- Sort images showing objects moving different distances in order to practice visualizing whether a strong or gentle force is being used, based on evidence of the object’s distance.
- Talk like engineers about the cause-and-effect relationship between the distance traveled and the strength of the force exerted.
- Create diagrams that correspond to their Box Models.
- Explain how strong and gentle forces move the pinball different distances.
- Make observations about a tennis ball being rolled between students in the classroom.
- Use language about forces to describe moving a ball to a specific place.
- Explain how to make an object move to a certain place.
- Observe and explain what kinds of forces caused the pinball to move to certain targets.
- Make observations about what might cause a pinball to change direction.
- Make connections between ideas they have read about and their observations in the classroom.
- Synthesize and record what has been learned about the forces that cause a moving object to change direction.
- Support with evidence how to make a pinball change direction.
- Test planned features of pinball machines, making changes along the way to make improvements so that their solution meets each design goal.
- Write a book explaining how to play pinball.

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● Scientists and engineers use drawings, sketches, and models to record and communicate ideas. ● Objects move in the direction we push them. ● An object starts to move in the same direction as the force that starts the motion. ● Every force has a strength–gentle or strong–and a direction. ● Evidence is information that helps you figure out an answer to a question. ● Every force has a strength–gentle or strong–and a direction, which makes an object move a certain distance and direction. ● Engineers talk and write in order to share their solutions and ideas. ● Engineers use evidence to explain their thinking. ● Moving objects change direction when you push them, or when they hit something. ● A moving object changes direction when another moving object exerts a force on it. ● A moving object changes direction when a still object in its way exerts a force on it. ● Engineers explain their ideas and solutions to share with others. ● Sometimes engineers draw diagrams to plan how they will make a solution. ● Engineers test their solutions to problems and make changes based on what happens. ● Engineers communicate about the solutions they have designed by talking and writing. ● There are different forces in lots of places around us every day. ● Whenever we see an object start to move, stop moving, or change directions, that is evidence that something exerted a force on it. ● You cannot see forces, but you can see evidence that they have been exerted.	● Explain how observed movement is caused by a force. ● Gather evidence of forces from the real world and explain forces using this evidence. ● Describe different types of forces. ● Explain that objects start moving, move a certain distance, or move in a certain direction because of the force exerted. ● Explain how different movements are caused by different forces. ● Identify cause and effect.

• We can find evidence of a force being exerted on an object by seeing if an object starts to move, stops moving, or changes direction. • Scientists and engineers communicate their ideas to others.	

Core Instructional & Supplemental Materials	

Suggested Activities/Resources:
• Books in This Unit
  ○ *Talking About Forces*
  ○ *Building with Forces*
  ○ *Room 4 Solves a Problem*
  ○ *A Busy Day in Pushville*
  ○ *Forces in Ball Games*
• *Pushes and Pulls* Kit
	Supplemental Materials
	• *Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds* PDF
	• Digital Resources included in each unit
	• Multi-language glossary
	• *This Little Scientist* by Daniel Roode and Joan Holub
	• *The Carpenter* by Bruna Barros
	• *Dreaming Up: A Celebration of Building* by Christy Hale

Suggested Accommodations

English Language Learners:
- Multi-sensory instruction
- Flexible grouping
- Small group instruction
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)
- Chunking information
- Scaffolded questioning
- Academic language support
- Vocabulary support
- Co-Constructed Word Banks
- Anchor charts
- Gradual release model
- Visual models
- Native language support when possible (Multi-language glossary)
- Sheltered English Instruction Strategies
- Sentence starters

Special Education/Students with Disabilities:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Follow all IEP modifications

- Calculators
- Manipulatives/concrete models
- Directions repeated, clarified, and reworded
- Breakdown task into manageable parts

504 Plans:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Calculators
- Manipulatives/concrete models
- Follow all 504 modifications

Gifted and Talented:
- Higher level questioning
- Enriched assignments
- Tiered assignments
- Choice board to extend learning

Students at Risk of Failure:
- Provide peer tutoring
- Use a strong student as a “buddy”
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources
- Chunking information
- Scaffolded questioning
- Tiered activities
- Manipulatives/concrete models
- Modified assignments
- Brain breaks

Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cueing
- Activate schema
- Build background knowledge

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Culturally Diverse:
- Create an emotionally positive classroom climate.
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

Unit 3: Sunlight and Weather	Duration: 60 days

New Jersey Student Learning Standards	
K-PS3-1	Make observations to determine the effect of sunlight on Earth's surface.
K-PS3-2	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.
K-ESS3-2	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.
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.
K-2-ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Science and Engineering Practices	Discipline Core Ideas/Unit Enduring Understandings	Crosscutting Concepts
• **Practice 2: Developing and Using Models:** Students collect data from physical models representing sunlight shining for different amounts of time and on different surfaces. Students also use models to investigate which playground differences might be causing one school playground to flood during severe rain, and then students select a solution to the playground flooding	**PS3.B: Conservation of Energy and Energy Transfer:** • Sunlight warms Earth's surface. (K-PS3-1) (K-PS3-2) **ESS2.D: Weather and Climate:** • Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.	**Cause and Effect** • Events have causes that generate observable patterns. (K-PS3-1), (K-PS3-2) • Events have causes that generate observable patterns. (K-ESS3-2), (K-ESS3-3) **Patterns** • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1)

problem.

- **Practice 3: Planning and Carrying Out Investigations:** Students conduct firsthand investigations to figure out what causes the playgrounds to warm over time and to warm differently. They then gather data from their own school site as they seek additional evidence to support their ideas. Students also conduct a firsthand investigation in which they work to figure out which differences might cause one playground to flood when the other playground does not. Over the course of the unit, students take on more of the planning of the investigations.
- **Practice 4: Analyzing and Interpreting Data:** Students have multiple opportunities to analyze the data they collect from firsthand investigations and from photographs in order to draw conclusions about the questions being asked.
- **Practice 7: Engaging in Argument from Evidence:** Students have multiple opportunities to use data from the graphs they construct as a class as evidence to support their ideas about how sunlight and color affect the warming of surfaces.
- **Practice 6: Constructing Explanations and Designing Solutions:** Students gather evidence through their investigations across the unit and use that evidence to construct explanations. Throughout the unit, students apply their new ideas as they construct (K-ESS2-1)

ESS3.B: Natural Hazards:

- Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. (K-ESS3-2)

ETS1.A: Defining and Delimiting Engineering Problems:

- Asking questions, making observations, and gathering information are helpful in thinking about problems. (secondary to K-ESS3-2)
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)

ETS1.B: Developing Possible Solutions:

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (secondary to K-ESS3-3)

Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

Connections to Engineering, Technology, and Applications of Science

Interdependence of Science, Engineering, and Technology

- People encounter questions about the natural world every day. (KESS3-2)

Influence of Engineering, Technology, and Science on Society and the Natural World

- People depend on various technologies in their lives; human life would be very different without technology. (K-ESS3-2)

Connections to Nature of Science

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world. (K-PS3-1)

scientific explanations for the principals of the fictional schools. Students apply what they have learned to propose modifications to the playgrounds that address the temperature and flooding problems. ● **Practice 5: Using Mathematical Computational Thinking:** In collaboration with the teacher, students create and analyze graphs representing the frequency of different types of weather at the two fictional schools and the relative temperatures of the surfaces in their models. ● **Practice 1: Asking Questions:** As students read and approach each investigation, they make predictions, based on prior observations or data, about what they think will happen. By beginning an investigation with a prediction, students are ultimately asking questions. Generally speaking, the question is *Does what I think will happen match what happens?* ● **Practice 8: Obtaining, Evaluating, and Communicating Information:** Students receive explicit instruction and have multiple opportunities to use the strategy of making predictions as they engage with the books in the unit and as they conduct investigations. Making predictions before reading helps students reflect on their learning and apply it to new ideas. Students regularly participate in constructing explanations		

and in discourse routines that help them communicate about and make sense of science ideas by using key vocabulary.		

Disciplinary Core Ideas	
PS3.B	**Conservation of Energy and Energy Transfer:** Sunlight warms Earth's surface.
ESS2.D	**Weather and Climate:** Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.
ESS3.B	**Natural Hazards:** Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.
ETS1.A	**Defining and Delimiting an Engineering Problem:** ● Asking questions, making observations, and gathering information are helpful in thinking about problems. ● Before beginning to design a solution, it is important to clearly understand the problem.
ETS1.B	**Developing Possible Solutions:** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.

Science and Engineering Practices	
1	Asking questions and defining problems
2	Developing and using models
3	Planning and carrying out investigations
4	Analyzing and interpreting data
5	Using mathematics and computational thinking
6	Constructing explanations and designing solutions
7	Engaging in argument from evidence
8	Obtaining, evaluating, and communicating information

New Jersey Social and Emotional Competencies and Sub-Competencies

Grade: K	Content Area: Science

Self-Awareness	• Recognize one's feelings and thoughts. • Recognize the impact of one's feelings and thoughts on one's own behavior. • Recognize one's personal traits, strengths, and limitations. • Recognize the importance of self-confidence in handling daily tasks and challenges.
Self-Management	• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors. • Recognize the skills needed to establish and achieve personal and educational goals. • Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals.
Social Awareness	• Recognize and identify the thoughts, feelings, and perspectives of others. • Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Demonstrate an awareness of the expectations for social interactions in a variety of settings.
Responsible Decision Making	• Develop, implement, and model effective problem-solving and critical thinking skills. • Identify the consequences associated with one's actions in order to make constructive choices. • Evaluate personal, ethical, safety, and civic impact of decisions.
Relationship Skills	• Establish and maintain healthy relationships. • Utilize positive communication and social skills to interact effectively with others. • Identify ways to resist inappropriate social pressure. • Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways. • Identify who, when, where, or how to seek help for oneself or others when needed.

Interdisciplinary Connections	
ELA Standards	
RI.CR.K.1	With prompting and support, ask and answer questions about key details in an informational text (e.g., who, what, where, when, why, how).
RI.IT.K.3	With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
RI.MF.K.6	With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

W.IW.K.2	Use a combination of drawing, dictating, and writing to compose informative/explanatory texts to convey ideas. opportunity to integrate climate change education. **A.** Introduce a topic. **B.** Develop the topic with at least two facts or other information and examples related to the topic, including pictures.
W.WR.K.5	With prompting and support, generate questions through shared research in response to a topic, text, or stimulus (e.g., event, photograph, video, book).
W.SE.K.6	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
W.RW.K.7	With prompting and support, engage in brief but regular writing and drawing tasks.
SL.PE.K.1	Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. opportunity to integrate climate change education. A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion). B. Continue a conversation through multiple exchanges.
SL.IIK.2	Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
SL.UM.K.5	Add drawings or other visual displays to descriptions as desired to provide additional detail.
L.RF.K.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
L.RF.K.4	Read emergent-reader texts (decodable texts, including words with one-to-one letter-sound correspondences) orally with sufficient decoding accuracy to support comprehension.
L.VL.K.2	With prompting and support, ask and answer questions to help determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
Mathematics Standards	
MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.

Grade: K	Content Area: Science

K.CC.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.5	Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
K.CC.7	Compare two numbers between 1 and 10 presented as written numerals.
K.M.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
K.M.2	Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference.

Computer Science & Design Thinking	
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.3	Identify and describe patterns in data visualizations.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ED.4	Identify constraints and their role in the engineering design process.
8.2.2.ITH.1	Identify products that are designed to meet human wants or needs.
8.2.2.ITH.5	Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.
8.2.2.NT.2	Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem.

Career Readiness, Life Literacies & Key Skills	
9.1.2.CR.1	Recognize ways to volunteer in the classroom, school, and community.
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives.

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9.4.2.CI.2	Demonstrate originality and inventiveness in work.
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem.
9.4.2.CT.2	Identify possible approaches and resources to execute a plan.
9.4.2.CT.3	Use a variety of types of thinking to solve problems.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data.
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CLKS.1	Act as a responsible and contributing community member and employee.
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CLKS.4	Demonstrate creativity and innovation.
CLKS.5	Utilize critical thinking to make sense of problems and persevere in solving them.
CLKS.6	Model integrity, ethical leadership and effective management.
CLKS.7	Plan education and career paths aligned to personal goals.
CLKS.8	Use technology to enhance productivity, increase collaboration and communicate effectively.
CLKS.9	Work productively in teams while using cultural/global competence.

Evidence of Student Learning	
Formative Tasks: ● Teacher observations ● Class discussions ● Whiteboard/Communicators ● On-the-Fly Assessments ● Daily classwork ● Checks for understanding ● Clipboard Assessment Tool ● Critical Juncture Assessment ● Crosscutting Concept Tracker	**Alternative Assessments:** ● Oral assessments

Lakewood Public School District Curriculum Guide

Grade: K	Content Area: Science

Summative Assessments:	Benchmark Assessments:
● End of Unit Assessment	●

Knowledge & Skills	
Enduring Understandings: ● Weather can be sunny, cloudy, windy, rainy, or snowy. ● Weather can be sunny, cloudy, windy, rainy, snowy, and different temperatures. ● When light shines on a surface, the surface gets warmer. ● The longer light shines on a surface, the warmer the surface gets. ● Dark surfaces get warmer than pale surfaces when light shines on them. ● Weather affects people most when it is severe. ● Weather can be predicted. ● Predicting weather helps people prepare for it.	**Essential Questions:** ● How do we describe weather? ● Why does Earth's surface get warm? ● Why is Earth's surface warmer in the afternoon? ● Why does one surface on Earth get warmer than another, when sunlight shines on them for the same amount of time? ● When does weather affect people most? ● Why does severe rain flood some places but not others? ● How do we stay safe from severe weather?
Content *Students will know…* ● Weather can be sunny, cloudy, windy, rainy, or snowy. ● Scientists often work together with other scientists. ● An important way that readers learn from a book is to make predictions. ● Temperature is a measure of how hot or cold something is. ● Weather can be sunny, cloudy, windy, rainy, snowy, and different temperatures. ● A thermometer is a tool that measures temperature. ● Thermometers can help people use the same words to describe temperature. ● Weather scientists observe and record the type of weather and the temperature. ● Cause and effect is when one thing, the cause, makes another thing, the effect, happen.	**Skills** *Students will be able to …* ● Make and check predictions. ● Identify the types of weather depicted in different photos. ● Make observations about daily weather. ● Measure temperature using a thermometer. ● Collect weather data. ● Organize weather data on graphs in order to make sense of the frequency with this each type of weather occurs. ● Compare the types of weather in two different locations. ● Write about weather observations. ● Connect a Warming Model to a real world scenario. ● Make observations about a Warming Model. ● Draw conclusions based on data represented in a graph. ● Act out roles of sunlight and surface to support their understanding of light warming surface.

Grade: K	**Content Area: Science**

- Scientists organize their data in order to make sense of it.
- Scientists compare to notice how two or more things are alike or different.
- Scientists communicate to share what they learn with others.
- Surfaces with light shining on them get warmer than surfaces without light shining on them.
- When scientists make models, they have to think carefully about how the model is like the real thing they are trying to learn about.
- Scientists use models to investigate things that are too big to study directly.
- Scientists use models to make predictions about the real world.
- Scientists use different ways to study the world.
- Scientists use drawings, sketches, and models as a way to communicate ideas.
- Men and women of diverse backgrounds are scientists and engineers.
- Scientists study the natural and material world.
- When light shines on a surface, the surface gets warmer.
- Light from the sun causes Earth's surface to get warm.
- Sometimes something can block sunlight from directly reaching a surface. This is called shade.
- Earth's surface is warmer in the daytime than in the nighttime because sunlight shines on it in the daytime.
- Throughout the day, Earth's surface can be many different temperatures.
- A surface gets warmer the longer a lamp shines on it.
- The temperature of Earth's surfaces affects living things besides people.
- Models help scientists investigate fast and slow things.

- Respond to a series of questions to demonstrate their knowledge of the relationship between sunlight and the temperature of Earth's surface.
- Compare daytime and nighttime temperatures.
- Write to explain why the temperature is warmer during the day than at night.
- Gather data from the Warming Over Time Model.
- Organize data in a chart to notice a pattern.
- Complete a mini-book to support connections between oral language and the text and illustrations of this book.
- Analyze images to determine which show places that have had sunlight shining on them for longer.
- Compare temperature data collected at night, in the morning, and in the afternoon to observe a pattern of surfaces getting warmer over the course of the day.
- Write to explain why a certain place is warmer in the morning than in the afternoon.
- Gather data from the Colored Surfaces Model.
- Organize data into a chart and compare temperatures for dark and pale surfaces.
- Articulate what happens to different surfaces when light shines on them for the same amount of time.
- Brainstorm and discuss changes that could be made to the playground to help solve the problem of students being uncomfortable during recess because of the temperature.
- Create a mini-book to consolidate understanding of the relative temperatures of different surfaces when exposed to or blocked from sunlight.
- Compare weather data of two locations to draw a conclusion about the amount of rainy days in each.
- Identify differences between to locations that may account for the flooding in one.
- Observe and record results of investigation with Flood Models.
- Analyze collected data.
- Create a poster to illustrate how to prepare for a particular type of severe weather in order to stay safe.

Grade: K	**Content Area: Science**

● Scientists look for patterns and order when making observations about the world. ● The longer light shines on a surface, the warmer the surface gets. ● Light from the sun has been shining on Earth's surface longer in the afternoon. ● Scientists draw and write to communicate what they have learned. ● Surfaces are warmer when light shines on them for a long time. ● Pale and dark surfaces heat up differently when light shines on them. ● Dark surfaces get warmer than pale surfaces when light shines on them. ● Scientists use models to investigate just one thing at a time. ● Different surfaces warm differently under the same light conditions. ● People use various strategies to stay cool when Earth's surface gets hot. ● One way scientists share ideas is through writing a book. ● Weather affects people most when it is severe. ● Weather is different, depending on where you live. ● Weather scientists make predictions. ● Scientists look for patterns and order when making observations about the world. ● Science assumes natural events happen today as they happened in the past. ● Models can be used to represent and investigate differences in the real world. ● Scientists test different possible causes for an effect, even if they are fairly certain that something was not the cause of the effect they have observed. ● The type of material a surface is made of affects whether water soaks into it or collects on top of it. ● Scientists use models to investigate the past and the future. ● Weather can be predicted.	● Explain how the different temperatures are caused by sunlight and surface color and then identify cause and effect.

● Predicting weather helps people prepare for it. ● People can prepare for severe weather in their local community. ● Predicting and preparing for severe weather can help people stay safe. ● We can explain the differences in surfaces' temperatures by the presence or absence of sunlight, the time that sunlight has been shining, and the color of the surfaces. ● Scientists communicate their ideas to others.	

Core Instructional & Supplemental Materials	
Suggested Activities/Resources: ● Books in This Unit ○ *What Is the Weather Like Today?* ○ *Getting Warm in the Sunlight* ○ *Cool People in Hot Places* ○ *Tornado! Predicting Severe Weather* ○ *Handbook of Models* ● *Sunlight and Weather* Kit	**Supplemental Materials** ● *Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds* PDF ● Digital Resources included in each unit ● Multi-language glossary ● *Marvelous Cornelius* by Phil Bildner ● *To Change a Planet* by Christina Soontornvat ● *Eight Days: A Story of Haiti* by Edwidge Danticat

Suggested Accommodations
English Language Learners: ● Multi-sensory instruction ● Flexible grouping ● Small group instruction ● Provide peer tutoring ● Use a strong student as a "buddy" (does not necessarily have to speak the primary language) ● Chunking information ● Scaffolded questioning ● Academic language support ● Vocabulary support ● Co-Constructed Word Banks ● Anchor charts ● Gradual release model ● Visual models ● Native language support when possible (Multi-language glossary) ● Sheltered English Instruction Strategies

- Sentence starters

Special Education/Students with Disabilities:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Follow all IEP modifications
- Calculators
- Manipulatives/concrete models
- Directions repeated, clarified, and reworded
- Breakdown task into manageable parts

504 Plans:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Calculators
- Manipulatives/concrete models
- Follow all 504 modifications

Gifted and Talented:
- Higher level questioning
- Enriched assignments
- Tiered assignments
- Choice board to extend learning

Students at Risk of Failure:
- Provide peer tutoring
- Use a strong student as a “buddy”
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources
- Chunking information
- Scaffolded questioning
- Tiered activities
- Manipulatives/concrete models
- Modified assignments
- Brain breaks

Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons

- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cueing
- Activate schema
- Build background knowledge

Culturally Diverse:

- Create an emotionally positive classroom climate.
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background