PLANNED INSTRUCTION

A PLANNED COURSE FOR:
Science

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Curriculum writing committee:

Grade Level: Kindergarten

Date of Board Approval: _____June 2025_____

Curriculum Map

Overview: The Kindergarten Science course covers the Pennsylvania STEEL Standards that will bring science concepts to life, creating, motivating, and interactive real world connections for our students. Through the use of the Cross-Cutting Concepts, Disciplinary Core Ideas, and Science and Engineering Practices, students will be immersed in hands-on exploratory learning.

Time/Credit for the course: Full Academic Year

Goals:

Marking Period One: Over a 45-day period of time, students will aim to understand:

Unit 1: Needs of Plants and Animals (pages 4-18)

- Use observations to describe patterns of what plants and animals (including humans) need to survive
- Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

Marking Period Two and Three: Over a 90-day period of time, students will aim to understand:

Unit 2: Local Weather (pages 19-35)

- Make observations to determine the effect of sunlight on Earth's surface.
- Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
- Use and share observations of local weather conditions to describe patterns over time.
- Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

Marking Period Four: Over a 45-day period of time, students will aim to understand:

Unit 3: Pushes and Pulls (pages 36-47)

- 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.
- 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.

Curriculum Plan

Unit 1: Needs of Plants and Animals Curriculum Plan

Unit Overview
What do plants and animals need to meet their needs and survive within environments? What is the relationship between the needs of different plants and animals and the places they live? The concept that all animals need food and plants need water and light connects to the idea that living things need water, air, and resources from the land, and they live in places that have the things they need. These ideas also connect to the concept that plants and animals (including humans) can change the environment to meet their needs). The concept that humans use natural resources for everything they do connects to the idea that the things people do to live comfortably can affect th e world around them, but they can make choices that reduce their impacts on the land, water, air, and other living things.

Standards	Big Idea	Essential Questions
Science: 3.1.K.A Use observations to describe patterns of what plants and animals (including humans) need to survive. (K-LS1-1) 3.3.K.B Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. (K-ESS2-2)	The structures, functions, and behaviors of plants and animals allow them to find and use the things they need to survive. Living things can make changes to the environment to meet their needs.	How do plants and animals get the things they need to survive? How do living organisms change Earth's environment to meet their needs? How do living things use the resources in their environment? How do humans impact their environment?

3.3.K.C Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. (K-ESS3-1) 3.3.K.E Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. (K-ESS3-3) **Technology & Engineering:** 3.5.K-2.C Explain ways that technology helps with everyday tasks. 3.5.K-2.F Investigate the use of technologies in the home and community. 3.5.K-2.D Select ways to reduce, reuse, and recycle resources in daily life. 3.5.K-2.F Investigate the use of technologies in the home and community. 3.5.K-2.H Explain the needs and wants of individuals and societies.	Plants and animals (including humans) use things in their environment to survive. Human activities impact the environment.	

3.5.K-2.K Safely use tools to complete tasks. 3.5.K-2.DD Collaborate effectively as a member of a team. Environmental Literacy & Sustainability: 3.4.K-2.D Plan and carry out an investigation to address an issue in the local environment and community. 3.4.K-2.A Categorize ways people harvest, redistribute, and use natural resources.		

Unit 1: Needs of Plants and Animals Curriculum Plan

Learning Objectives/DOK Levels:

Students will know…. (DCI)	Students will be able to… (SEP)	Students will apply…(CCC)	DOK Level(s)
All animals need food in order to live and grow. They	Use observations (firsthand or from media) to describe	Patterns in the natural and human designed world can be	DOK Level 2 (Skills/Concepts): This requires students to interpret observations

obtain their food from plants or from other animals. Plants need water and light to live and grow. Plants and animals can change their environment. 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.	patterns in the natural world in order to answer scientific questions. Construct an argument with evidence to support a claim. Use a model to represent relationships in the natural world. Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. Ask questions based on observations to find more information about the designed world. Read grade appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.	observed and used as evidence. Systems in the natural and designed world have parts that work together. Events have causes that generate observable patterns.	and recognize patterns, moving beyond basic recall but not yet involving complex reasoning. DOK Level 3 (Strategic Thinking): Constructing an argument requires deeper understanding, evaluation, and the ability to support claims with evidence, which involves reasoning and strategic thinking. DOK Level 2 (Skills/Concepts): Using a model involves understanding and applying relationships or concepts but remains within the realm of basic analysis and representation. DOK Level 3 (Strategic Thinking): Communicating solutions using models or drawings requires students to organize and explain complex ideas, which involves strategic thinking and reasoning. DOK Level 2 (Skills/Concepts): Formulating questions from observations involves the use of inquiry and reasoning but does not yet require complex analysis. DOK Level 1 (Recall): Reading and obtaining information from texts or media to describe patterns involves recalling information or identifying simple details.

Core Activities and Corresponding Instructional Methods

Mystery Science Unit(s)	Core Activities	Corresponding Instructional Methods	Extensions	Correctives	Time/Days
Plant Needs (Plant Secrets) Phenomena	• Watch Powerful Plants Video • Questioning/discussions • The anchor phenomenon for this unit is a collection of examples of plants that have grown onto other objects without anyone having put the plants there. How can this happen?	• Driving Question Board: See, Think, Wonder Chart to keep up through unit and revise as you go • Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn • Guided Inquiry-gather clues to deepen understanding • During the introduction, students generate observations and questions about the phenomenon and create a list of possible explanations for the phenomenon. • Students will gather clues during and after each lesson in this unit to help them improve their understanding and explanations. It is important to encourage students to recognize that even if they don't know the perfect answer yet, they are going to learn a lot throughout the unit and will have an opportunity to revisit the phenomenon over time.	How to get rid of Kudzu?	IXL	1-20 minute session

Plant Needs (Plant Secrets) LIving vs Nonliving	Session 1: ● Play "Are Plants Alive" video ● (Anchor Connection) Kinesthetic Activity: Model what a plant will do when the sun is out– Plant Dance ● Questioning/Discussion: - Why would a plant lean towards the sun? Session 2: ● Play :Why do Sunflowers follow the sun? ● (Anchor Connection) Questioning/discussion - Why would a plant lean towards the sun? - Is the sun important to a growing plant? - Do rocks move towards the sun? - Would a chair grow? Session 3: ● Youtube: What Makes Something Alive? Scishow video ● What's Alive- read aloud	Session 1: ● For Plant Dance: Use a flashlight, lamp, or sun paper found in lesson on mystery science– have teacher act like the sun– students should move towards the sun–to mimic a plant in nature ● Add to See, Think, Wonder Chart - Students should understand that plants may not seem like it, but they are living things with needs Session 2: ● Watch: Why Do Sunflowers follow the Sun? ● Add to See, Think, Wonder Chart ○ Review and see what questions we have answered. Session 3: ● Play or read a story about Living vs. Nonliving ● Discuss and add to See, Think, Wonder Chart	Supplemental/ Optional Resources: Living vs. Nonliving Song by Harry Kindergarten Living and Non-living things for kids- youtube video	IXL	3- 20 minute sessions

	• (Anchor Connection) Discussion: Have you ever taken care of an animal or plant?	○ Review and see what questions we have answered.			
Plant Needs (Plant Secrets) Plant Needs ** Will need time to plant seeds, allow time to grow, and observe. **	Session 1: Play the video: How do plants and trees grow? • Discuss what they discovered in video and relate to what they see in nature, or if they have a garden at home. • Plant radish seeds to establish plant needs Session 2: • Students observe, analyze and interpret data Session 3: • Students observe, analyze and interpret data • Students wonder: How can we help plants and animals meet their needs?	Session 1: • Play video and discuss how plants grow and what they need • Plant seeds in cups ** • Add needs to See, Think, Wonder chart, revise findings Session 2: • Observe approximately 4 days later • Make observations to connect light and water as plant needs • Add needs to See, Think, Wonder chart, revise findings Session 3: • Connect quality of needs to quality of growth • Add needs to See, Think, Wonder chart, revise findings	Supplemental/ Optional Resources: Play the video: Corn Cob Sprouting in Water	IXL	4- 20 minute lessons

	• (Anchor connection) Students learn: plants have needs. Two of their biggest needs are water and light. Plants grow in such a way that they get as much light as possible. - That can mean that, for some plants, they can grow onto other nearby objects so that they are higher up and get more light. Session 4: Assessment: Drawing of what seeds need				
Plant Needs (Plant Secrets) Human impacts on environments	Session 1: • Play the Video: Why Would You Want an Old Log In Your BackYard? • Discuss what was discovered in the video and relate to what they see in nature or outside. • Play the read along video	Session 1: • Students will complete a short exercise where they pretend to be lizards eating ants. - Discover why old logs are helpful to animals. - Add to See Think Wonder Chart, revise findings - Make final changes to See, Think, Wonder Chart		IXL	1-20 minute session

Animal Needs (Animal Secrets) Phenomena	• Watch: Animal Homes Video • The anchor phenomenon for this unit is a small collection of animals that live in very different places and do very different things. Yet they all have in common that they rely upon the place in which they live to meet their needs.	• Driving Question Board: See, Think, Wonder Chart to keep up through unit and revise as you go • Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn • Guided Inquiry-gather clues to deepen understanding • During the introduction, students generate observations and questions about the phenomenon and create a list of possible explanations for the phenomenon in a guided See-Think-Wonder activity. We recommend that you record your student's ideas in a single See-Think-Wonder chart for your class. • Students will gather clues during and after each lesson in this unit to help them improve their understanding and explanations. It is important to encourage students to recognize that even if they don't know the perfect answer yet, they are going to learn a lot throughout the unit and will have an opportunity to revisit the phenomenon over time.		IXL	1- 20 minute session

Animal Needs (Animal Secrets Food)	Session 1: • Watch: Why do woodpeckers peck wood? • (Anchor Connection) Kinesthetic activity: pretend to be different animals in the forest- quail scratching in the dirt, raccoons wading in water, woodpeckers pecking a log . • Read through vocabulary slides Session 2: • Why do different animals live in different places • Discuss why an animal needs food. • Assessment: Have students pick an animal talked about and draw it eating its food on the drawing page.	Session1: • Driving Question Board: See, Think, Wonder Chart to keep up through unit and revise as you go • Discuss vocabulary words Session 2: • Think pair share with a partner and discuss why animals need food • Class discuss why do animals live in different places • Have students take one of the animals discussed and explain why they live where they live– what are their needs.	Supplemental/ Optional Resources: Desert Beetle harvests water Visit a pond where students can feed the ducks Visit a farm where the students can feed the animals What do caterpillars eat? What do cows eat? What do toads eat? What do giant pandas eat?	IXL	2- 20 minute sessions
Animal Needs	Session 1: • Watch: Where do animals live?	• Driving Question Board: See, Think, Wonder Chart to keep up through unit and revise as you go	Supplemental/ Optional Resources:	IXL	2-20 minute sessions

(Animal Secrets) Shelter	• (Anchor Connection) Kinesthetic activity: Pretend to be a squirrel and learn about habitats. • Discuss where animals live. <u>Session 2:</u> • Students wonder: How do animals stay safe where they live? (Anchor Connection) Students learn: Different animals seek very different types of places to live. Some live up in the trees, some live on the ground, and some live underground. • <u>Assessment: Draw an animal making its home in a tree</u>	• Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn • Guided Inquiry-gather clues to deepen understanding	Nature Walk Go on a nature walk in your neighborhood to look for local animal homes. Look for nests, ponds, trees and more! Animal Home Sorting Sort animal toys (such as figurines or stuffed animals) by their different homes. Print out pictures of different animal locations (for example: trees, water, caves, and ground) and have children put the animal toys in their homes. Animal Home Matching Cards		

			Use the Who Lives Here handout to create an animal home sorting activity for the child. Utilize books: My Very First Book of Animal Homes by Eric Carle Who Lives Here? by Nicola Davies Do Turtles Sleep in Treetops? by Laura Purdie Salas		
Animal Needs (Animal Secrets) Safetly	Session 1: ● Watch: How Can you Find Animals in the Woods? ● (Anchor Connection) Kinesthetic Activity: Gopher in a Hole: Students pretend to be	Session 1: ● Use pictures, models, or questions as you fill out the See, Think, WonderChart to add to it as they learn	Walk in the woods and look for animal Why do wolves howl at the moon?	IXL	2- 20 minute sessions

	snails, praying mantises and gophers • Discuss how animals can stay safe. Session 2: • Watch Nature Hike VIdeo: • Students observe different animal behaviors and work to discover another pattern: all animals seek safety in order to survive. • (Anchor Connection) Discuss: How do animals make their homes? Students learn: In addition to food, many animals require some form of shelter. Some animals find their shelters, others make shelters.	Session 2: • Add to See, Think, Wonder Chart • Guided Inquiry-gather clues to deepen understanding	What's the smallest animal on earth? Why are butterflies so colorful? More extension mini lessons through mystery science?		
Animal Needs (Animal Secrets) Animals and changing	Session 1: • Watch: How Do Animals Make Their Homes in the Forest? • (Anchor Connection) Kinesthetic Activity: Students listen for animal sounds and	Session 1: • Driving Question Board: See, Think, Wonder Chart to keep up through unit and revise as you go • Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn	Supplemental/ Optional Resources: Alligators survive in ice https://thewonderofscienc	IXL	2- 20 min sessions

their environments	pretend to be woodpeckers. ● Discuss: How animals can build shelters. Students learn: In addition to food, many animals require some form of shelter. Some animals find their shelters, others make shelters. <u>Session 2:</u> ● Student learn: In addition to food, animals also require some form of shelter. Some animals find their shelters, while others make their shelter. ● (Anchor Connection) Discuss: How do animals find their shelters or make their shelters?	● Guided Inquiry-gather clues to deepen understanding <u>Session 2:</u> ● Driving Question Board: See, Think, Wonder Chart to keep up through unit and revise as you go ● Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn ● Guided Inquiry-gather clues to deepen understanding ● Make final changes to See, Think, Wonder Chart	Can animals be friends with other animals?		

Textbook and Supplemental Resources

Mystery Science IXL Youtube videos The Wonder of Science website

Assessments:

Diagnostic	Formative	Summative
Science Journal See, Think, Wonder Chart	Assessment: Drawing of what seeds need Assessment: Connect animal to its habitat Assessment:Draw an animal eating its food Assessment:Draw an animal making its home in a tree	Claim, Evidence, Reasoning (CER)- tell me, show me, sell me

Unit 2: Local Weather Curriculum Plan

Unit Overview
Can changes in weather patterns be observed over the course of the year? Can weather influence the ability of plants and animals to meet their needs in their environment? Sunlight warms Earth's surface. This concept of sunlight warming Earth's surface connects to the idea that weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. The concepts of weather and patterns of weather connect to the idea that some kinds of severe weather are more likely than others in a given region. The concept that asking questions, making observations, and gathering information are helpful in thinking about problems could connect to multiple concepts such as sunlight warms Earth's surface as well as that weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time and some kinds of severe weather are more likely than others in a given region. These connections could be made by having students engage in the process of asking questions, making observations, and gathering information about sunlight's effect on Earth's surface in order to define a problem and then reflecting on this process. Alternatively, students can ask questions, make observations, and gather information to think about problems caused by both typical local weather and severe local weather. And the concept that designs can be conveyed through sketches, drawings, or physical models could connect to multiple concepts such as sunlight warms Earth's surface and that weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. These connections could be made through a task in which students must use a representation to convey their design of a structure that will provide a cool place for the students of their school to use when they are outside on a warm day. Students could also engage in a task in which they need to convey the design of an object that would protect them from any negative effects of wind and then reflect on the usefulness of conveying their ideas through representations.

Standards	Understandings	Essential Questions
3.2.K.C Make observations to determine the effect of sunlight on Earth's surface. (K-PS3-1) 3.2.K.D Use tools and materials to design and build a structure that will reduce the	Energy can be modeled as either motions of particles or as being stored in force fields. Weather and climate are shaped by complex interactions involving sunlight, the ocean, the atmosphere, ice,	What is energy? What controls weather and the climate in an area?

warming effect of sunlight on an area. (K-PS3-2) 3.3.K.A Use and share observations of local weather conditions to describe patterns over time. (K-ESS2-1) 3.3.K.D Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. (K-ESS3-2) **Technology & Engineering:** 3.5.K-2.C Explain ways that technology helps with everyday tasks. 3.5.K-2.F Investigate the use of technologies in the home and community. 3.5.K-2.A Identify and use everyday symbols. 3.5.K-2.F Investigate the use of technologies in the home and community. 3.5.K-2.G Explain the tools and techniques that people use to help them do things.	landforms, and living things. Natural processes can cause sudden or gradual changes to Earth's systems, some of which may adversely affect humans.	How do natural hazards affect people and communities?

3.5.K-2.K Safely use tools to complete tasks. 3.5.K-2.AA Demonstrate that creating can be done by anyone. 3.5.K-2.DD Collaborate effectively as a member of a team. **Environmental Literacy & Sustainability:** **Anchors:** N/A **Eligible Content:** N/A		

Unit 2: Weather Curriculum Plan

Learning Objectives:

Students will know…. (DCI)	Students will be able to… (SEP)	Students will apply…(CCC)	DOK Level(s)
Sunlight warms Earth's surface. Weather is the combination of sunlight, wind, snow or	Make observations (firsthand or from media) to collect data that can be used to make comparisons.	Events have causes that generate observable patterns.	DOK Level 2 (Skills/Concepts): Collecting data to make comparisons involves using observations to organize and interpret information but does not require complex reasoning.

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. 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.	Scientists use different ways to study the world. Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. Ask questions based on observations to find more information about the designed world. Read grade appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.	Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.	DOK Level 1 (Recall): This statement involves recalling basic information about scientific methods without requiring further explanation or analysis. DOK Level 4 (Extended Thinking): Designing and building a device involves extended thinking, requiring students to integrate multiple steps, evaluate, and create solutions to solve a problem. DOK Level 2 (Skills/Concepts): Describing patterns based on observations involves interpreting data and applying understanding to explain scientific concepts. DOK Level 2 (Skills/Concepts): Asking questions based on observations involves reasoning and inquiry, going beyond simple recall but not yet involving complex analysis. DOK Level 1 (Recall): Reading and obtaining information from texts to describe patterns involves recalling or recognizing basic information without requiring further processing.

Core Activities and Corresponding Instructional Methods

Mystery Science Unit(s)	Core Activities	Corresponding Instructional Methods	Extensions	Correctives	Time/Days
Severe Weather Unit (Wild Weather) Phenomena	• Watch Flying Kites Video • Questioning/discussions	• Driving Question Board: See, Think, Wonder Chart to keep up through the unit and revise as you go • Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn • Guided Inquiry-gather clues to deepen understanding		IXL	1- 20 minute session
Severe Weather Unit (Wild Weather) Severe Weather and Preparation	Session 1: • Watch How To Get Ready for a Big Storm • Questioning/discussions	Session 1: • Add to the See, Think, Wonder Chart - Students will be introduced to the idea that the weather report on a smartphone, on a TV, or on a computer — helps people know when to get ready for a coming storm. • Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn • Guided Inquiry-gather clues to deepen understanding	Why do you get goosebumps when you're cold?		3- 20 Minute Sessions

	Session 2: (Anchor Connection) ● Teacher-led discussion ● Talk about weather forecasts ● Talk about wind and how it is an important part of weather Session 3: ● How Do You Get Ready For A Big Storm	Session 2: ● Add to the See, Think, Wonder Chart ● Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn ● Guided Inquiry-gather clues to deepen understanding ● Students wonder: How can we find out how hard the wind is blowing? ● Students learn: Weather forecasts help us to prepare for different kinds of weather. Wind is a very important part of the weather. Sometimes the wind is just right for flying a kite, and sometimes there is way too much wind or not enough wind. Session 3: ● How Do You Get Ready For A Big Storm Assessment			
Severe Weather Unit (Wild Weather) Wind and Storms	Session 1: ● Watch: Have you ever watched a storm?	Session 1: ● Add to the See, Think, Wonder Chart ● In this lesson, students observe changes in the weather when a storm is coming ● Hands-on Activity: Breeze buddies- students create a tool to show them how windy it is	Lightning Strikes trice-Empire State building-wonder of Science	IXL	3- 20 Minute Sessions

	Session 2: (Anchor Connection) ● Teacher-led discussion Session 3: ● Assessment:	● teacher-led discussion- Add to see, think, wonder chart Session 2: ● Add to the See, Think, Wonder Chart - Students wonder: Is wind all that you need to fly a kite? - Students learn: A tool called a breeze buddy can help students observe the wind. - This tool can be used to help them determine the strength of the wind, which is useful for determining when conditions are best for flying a kite. Session 3: ● Assessment: Draw a picture of your breeze buddy. ● Students will be drawing a picture of how their breeze buddy looks when different winds blow			

Severe Weather Unit (Wild Weather) Weather Conditions	Session 1: ● Watch: How many different kinds of weather there are Session 2: (Anchor Connection) ● Teacher-led discussion	Session 1: ● In this session, students observe and describe the weather, paying attention to the sun, the temperature, the wind, and precipitation. ● Hands-on activity: Be a Weather Watcher - Students observe and draw the weather around them ● Teacher-led discussions ● Add to the See, Think, Wonder Chart Session 2: ● Add to See, Think, Wonder Chart - Students wonder: What's the weather like where I live? - Students learn: There are four aspects of the weather.	Timelapse of a Blizzard- Wonder of Science		2- 20 Minute Sessions
Severe Weather Unit (Wild Weather) Weather Conditions and Preparation	Session 1: ● Good vs. Bad Weather Assessment	Session 1: ● Good vs. Bad Weather Assessment		IXL	1- 20 Minute Session

Weather Patterns Unit (Circle of Seasons)	Phenomena: ● Watch Furry Foxes video - The anchor phenomenon for this unit is the amazing cycle of changes an arctic fox's fur undergoes throughout the annual cycle of seasonal weather.	● Students will add to the See, Think, Wonder Chart - Students generate observations and questions about the phenomenon and create a list of possible explanations for the phenomenon. ● Students will gather clues during and after each lesson in this unit to help them improve their understanding and explanations. - It is important to encourage students to recognize that even if they don't know the perfect answer yet, they are going to learn a lot throughout the unit and will have an opportunity to revisit the phenomenon over time.		IXL	
Weather Patterns Unit (Circle of Seasons) Local Weather and	Session 1: ● Read Aloud: Watch How Do You Know What to Wear for the Weather	Session 1: ● Driving Question Board: See, Think, Wonder Chart ● Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn ● Guided Inquiry-gather clues to deepen understanding ● Create a weather journal	Timelapse of a snowman melting- Wonder of Science Read Aloud: Little Raindrop	Spring Weather mystery science mini lessons	4- 20 minute sessions

Daily Patterns	Session 2: • Weather Journal Session 3: (Anchor Connection) • Teacher-led discussion- how the weather changes Session 4: • Go over student's Weather Journal	Session 2: • Add to weather journal and discuss the difference between yesterday's and today's weather Session 3: • Add to See, Think, Wonder Chart • Students wonder: - How does the weather change so much each year? - Students learn: The foxes have more puffy fur when the weather is cold, and less puffy fur when the weather is hot. This is similar to how people change their clothes in different weather. • Add to weather journal Session 4: • Finalize Weather Journal • Go over findings			
Weather Patterns Unit (Circle of Seasons) Seasonal Weather Patterns	Session 1: • Watch: What will the weather will be like on your birthday? Session 2:	Session 1: • Add to See, Think, Wonder chart • Students observe four seasons and determine seasons order • Observe changes	Why does the wind blow- Wonder of Science	IXL	4- 20 minute sessions

	• Hands-on Activity- circle of seasons • Teacher-led discussion Session 3: (Anchor Connections) • Teacher-led discussions Session 4: • Seasons Assessment	Session 2: • Add to the See, Think, Wonder chart • Students make observations of seasons and temperatures • Students spot patterns, see the order of the seasons • Wrap up slides with teacher-led discussion Session 3: • Add to See, Think, Wonder chart • What do animals do at different times of the year- foxes have fur that changes between seasons • Puffy fur in the winter, fur falls out in the warmer seasons- then grows back in the fall Session 4: • Assessment: Cut and glue seasons in order			
Weather Patterns Unit (Circle of Seasons) Animals Changing	Session 1: • Watch: Why Do Birds Lay Their Eggs in the Spring	Session 1: • Driving Question Board: See, Think, Wonder Chart to keep up through the unit and revise as you go • Use pictures, models, or questions as you fill out the See,	Homemade Thermometer- Wonder of Science	IXL	4- 20 minute sessions

their Environment	<u>Session 2:</u> • Hands-on Activities • Teacher-led discussions • Questioning and answering <u>Session 3:</u> (Anchor Connection) • Teacher-led discussion <u>Session 4:</u> • Assessment	Think Wonder Chart to add to it as they learn • Guided Inquiry-gather clues to deepen understanding <u>Session 2:</u> • Hands-on Activity: 1. Build A Bird Nest and 2. Make a Bird - Students make a model of a bird nest (with paper bags) and notice how birds can change their environment to meet their needs when they build their nests. - Make your hand into a fist like this. Put your hand on the paper, with the bottom of your hand at the edge of the paper. Trace around your hand - with a pencil. Add details. <u>Session 3:</u> • Add to See, Think, Wonder Chart <u>Session 4:</u> • Assessment: Why Do Birds Lay Eggs in the Spring?	Read Aloud: Mama Built a Little Nest		
Weather Patterns Unit	<u>Session 1</u>:	<u>Session 1:</u> • Add to See, Think, Wonder Chart		IXL	1- 20 minute session

(Circle of Seasons) Seasonal Weather Patterns	• Watch: What's the Weather Like For Arctic Fox? • Teacher led discussions • What's the Weather Like? Assessment	• Discuss the different types of weather the Arctic foxes experience • Assessment: What is the Weather Like?			
Sunlight & Warmth Unit (Sunny Skies)	Session 1: • Phenomena: Solar Sizzle - The anchor phenomenon for this unit is a cooker that can be used to heat food, even though it doesn't have any obvious heat source.	Session 1: • Create See, Think, Wonder chart • Students generate observations and questions about the phenomenon and create a list of possible explanations for the phenomenon. • Students will gather clues during and after each lesson in this unit to help them improve their understanding and explanations. It is important to encourage students to recognize that even if they don't know the perfect answer yet, they are going to learn a lot throughout the unit and will have an opportunity to revisit the phenomenon over time.		IXL	1- 20 min session
Sunlight & Warmth Unit (Sunny Skies)	Session 1: • Read Along: How could you walk barefoot across hot pavement	Session 1: • Listen to the story - How could you walk barefoot across hot	How the Sun Sees You- Wonder of Science		2- 20 min sessions

Sunlight, Heat, & Earth's Surface	without burning your feet? ● Teacher-led discussion ● Hands-on activity- Cool Cows <u>Session 2:</u> (Anchor connection) ● Teacher-led discussion	pavement without burning your feet? ● Teacher-led discussion - Discuss how to keep cool ● Add to See, Think, Wonder chart ● Hands-on– Cool cows ○ think through how cows can stay cool ○ Discuss how to design a shady structure for cows <u>Session 2:</u> ● Teacher-led discussion ○ How does the sun make things hot? ● Students learn: Solar cookers only work during the day because that's when the Sun is out. ● Add to See, Think, Wonder chart	Make shade structure for Cool cows		
Sunlight & Warmth Unit (Sunny Skies) Sunlight, Warming, & Engineering	<u>Session 1:</u> ● Watch video: How could you warm up a frozen playground? ● Teacher-led discussions	<u>Session 1:</u> ● Watch video ● Students think about their experiences with hot and cold weather, and learn about a real city where the sun never shines in winter. ● Add to See, Think, Wonder chart	Read Aloud: Hot and Cold	IXL	3 -20 min sessions

	Session 2: ● Hands- on Activity: Chill City Experiment ● Teacher-led discussion Session 3 (Anchor Connection) ● Teacher-led discussion	Session 2: ● Hands-on :Chill City ○ Students experiment with different types of materials (opaque, transparent, and reflective) to figure out how to reflect light. ○ They use this to bring light and warmth to an imaginary paper town. ● Add to See, Think, Wonder chart ● Teacher-led discussion Session 3: ● Add to See, Think, Wonder chart ● Teacher- led discussion ● Students wonder ○ How does shade keep you cool? ○ Students learn: Light reflects off of the shiny parts of the cooker, which heats the food from underneath	Mystery Science Video: Why Can We See Our Breath In The Cold?		
Sunlight & Warmth Unit (Sunny Skies) Sunlight & Warmth	Session 1: ● Watch video: Why does it get cold in winter? ● Teacher led discussions	Session 1: ● Watch video ○ Students observe the path of the Sun in the summer and in the winter and realize that		IXL	4- 20 minute sessions

	<u>Session 2:</u> ● Hands-on Activity: Melting Marshmallows ● Teacher-led discussions <u>Session 3:</u> (Anchor Connection) ● Teacher-led discussions <u>Session 4:</u> Assessment	light from the Sun keeps the Earth warm. ● Students will generate questions ● Add to See, Think, Wonder chart <u>Session 2:</u> ● Mysterious Melting Marshmallows: students solve a mystery. ○ What made the marshmallows melt? (The answer, of course, is the heat of the Sun.) ● Teacher-led discussion ● Add to See, Think, Wonder chart <u>Session 3:</u> ● Students learn: ○ Solar cookers don't work in the shade. They must be in full sunlight to work. ● Teacher-led discussion ● Students will answer and generate questions ● Add to See, Think, Wonder chart <u>Session 4:</u> ● Assessment: What is in the sun?			

Sunlight & Warmth Unit (Sunny Skies) Sunlight, Heat, & Earth's Surface	Session 1: Performance Task: Can you use the sun to cook food?	Session 1: • Students investigate the effect of sunlight on earth's surface • Review unit • Gather observations about sunlight • Make predictions on where food can be made in the sunlight		IXL	1 20 min session

Textbook and Supplemental Resources

Mystery Science
IXL
Youtube videos
The Wonder of Science website

Assessments:

Diagnostic	Formative	Summative
Science Journal See, Think, Wonder Chart	Assessment: How Do You Get Ready For A Big Storm Assessment: Good vs. Bad Weather Assessment: Draw a picture of your breeze buddy. Assessment: Cut and glue seasons in order Assessment: What is in the sun?	CER (claim, evidence, reason)- tell me, show me, sell me

	Assessment: Why Do Birds Lay Eggs in the Spring?	

Unit 3: Pushes and Pulls Curriculum Plan

Unit Overview
How do pushes and pulls affect the motion of an object? Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. This concept of motion connects to the idea that a bigger push or pull makes things speed up or slow down more quickly. The concept of pushing or pulling on an object also connects to the idea that, when objects touch or collide, they push on one another and can change motion. The idea that a bigger push or pull makes things speed up or slow down more quickly connects to the concept that pushes and pulls can have different strengths and directions. The concept that people measure weather conditions to describe and record the weather and to notice patterns over time connects to the idea that it is useful to compare and test designs through data analysis. The ideas that a situation that people want to change or create can be approached as a problem to be solved through engineering and that, because there is always more than one possible solution to a problem, it is useful to compare and test designs could connect to multiple physical science concepts in this bundle. For example, these concepts could connect to the idea that when objects touch or collide, they push on one another and can change motion through a task in which students are challenged to work in groups to change the direction or speed of a ball with another object and then test and compare each group's solution. Alternatively, these engineering concepts could connect to the idea that a bigger push or pull makes things speed up or slow down more quickly through a different task in which students are asked to pull or push an object in a certain amount of time and then challenged to do it faster. Students could then compare their solutions and reflect on how their pull or push needed to change in order to move the object faster.

Standards	Understandings	Essential Questions

3.2.K.A 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-PS2-2) 3.2.K.B 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-PS2-1) **Technology & Engineering:** 3.5.K-2.C Explain ways that technology helps with everyday tasks. 3.5.K-2.F Investigate the use of technologies in the home and community. 3.5.K-2.G Explain the tools and techniques that people use to help them do things. 3.5.K-2.Z Illustrate how systems have parts or components that work together to accomplish a goal. 3.5.K-2.AA Demonstrate that creating can be done by	A change in motion of interacting objects can be explained and predicted by forces. All forces between objects, regardless of size or direction, arise from only a few types of interactions.	How can one predict an object's continued motion, changes in motion, or stability? What underlying forces explain the variety of interactions observed?

anyone. 3.5.K-2.K Safely use tools to complete tasks. 3.5.K-2.DD Collaborate effectively as a member of a team. 3.5.K-2.T Demonstrate that designs have requirements. 3.5.K-2.U Explain that design is a response to wants and needs **Environmental Literacy & Sustainability:**		

Unit 3: Pushes and Pulls Curriculum Plan

Learning Objectives:

Students will know…. (DCI)	Students will be able to… (SEP)	Students will apply…(CCC)	DOK Level(s)
Pushes and pulls can have different strengths and directions. Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. When objects touch or collide, they push on one another and can change motion.	Analyze data from tests of an object or tool to determine if it works as intended. With guidance, plan and conduct an investigation in collaboration with peers. Scientists use different ways to study the world. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.	Simple tests can be designed to gather evidence to support or refute student ideas about causes. Simple tests can be designed to gather evidence to support or refute student ideas about causes. Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.	DOK Level 3 (Strategic Thinking): Analyzing data to evaluate whether an object or tool works as intended requires interpretation and reasoning, going beyond basic observation to involve deeper analysis. DOK Level 2 (Skills/Concepts): Planning and conducting an investigation involves applying concepts with some reasoning, but with guidance, it remains at a skill -based level rather than complex problem -solving. DOK Level 1 (Recall): This statement involves recalling basic facts about how scientists work, requiring only the retrieval of simple information. DOK Level 2 (Skills/Concepts): Describing patterns based on observations involves understanding and applying knowledge to identify trends, which requires reasoning but not complex thinking.

Core Activities and Corresponding Instructional Methods

Mystery Science Unit(s)	Core Activities	Corresponding Instructional Methods	Extensions	Correctives	Time/Days
Pushes & Pulls Unit (Force Olympics) Big Barges	Session 1: ● Watch Big Barges video ● Questioning/Discussion	Session 1: ● Driving Question Board: See, Think, Wonder Chart to keep up through the unit and revise as you go ● Use pictures, models, or questions as you fill out the See, Think Wonder Chart to add to it as they learn ● Guided Inquiry-gather clues to deepen understanding	How do braces work? In this mini-lesson, students learn how braces act like a tiny push and pull machine in your mouth!		1-20 minute session
Pushes & Pulls Unit (Force Olympics) What's the biggest excavator?	Session 1: ● Watch video What's the Biggest Excavator?	Session 1: ● Add to See, Think, Wonder Chart ○ In this session, students discover that there are pushes and pulls involved in any kind of work, including the work done by machines ● In the hands-on activity, be a Digging Machine, students pretend to use shovels and excavators to dig a hole for a swimming pool.	Read Aloud: The Excavator that Didn't Want to Dig		3-20 minute sessions

	Session 2: Anchor Connection • Teacher-led discussion • Talk about excavating • Talk about how digging combines pushing and pulling Session 3: • Circle the machine that spins Assessment	• Wrap-up slides &teacher-led discussion. Session 2: • Add to See, Think, Wonder Chart • Students wonder: How else are barges loaded? • Students learn: Digging machines use pushes and pulls to help lift and dump different kinds of cargo onto barges. Then, they can be moved to new places. Session 3: • Circle the Machine that Spins Assessment	Read Aloud: Cece Loves Science		
Pushes & Pulls Unit (Force Olympics) Why do builders need so many big machines?	Session 1: • Read-Along Big Machines At Work	Session 1: • In this Read-Along session, Vivian watches a house being built and wonders why the builders need so many big machines. • The lesson includes a short exercise where students act out the "work words" of their favorite machine. • You can extend the lesson with the optional activity, Forces at Work, where students watch videos of construction equipment and practice using work words to	Invent a Backscratcher: For a hands-on activity, check out this Teach Engineering activity, in which students use simple materials to invent a backscratcher.		2-20 minute sessions

	<u>Session 2:</u> Anchor Connection ● Teacher-led discussion ● Talk about and compare barges and trucks	describe what the machines are doing. ● Add to See, Think, Wonder Chart ● Teacher-led discussion. <u>Session 2:</u> ● Add to See, Think, Wonder Chart ● Students wonder: How else do barges move? ● Students learn that dump trucks use pushes and pulls to help load and unload barges, just like digging machines do.			

Pushes & Pulls Unit (Force Olympics) How can you knock down a wall made of concrete?	Session 1: ● Watch: How Can You Knock Down a Wall Made of Concrete Session 2: ● Hands-On Activity Session 3: Anchor Connections ● Teacher-led discussion ● Talk about and compare motion, speed, and strength	Session 1: ● Add to See, Think, Wonder Chart ● In this session, students change the strength and direction of a wrecking ball's push in order to solve a tricky problem. Session 2: ● Don't Crush That House: a game in which students experiment with the force of a paper wrecking ball in order to knock down a wall of cups. The challenge is: they can't knock down the paper houses! ● Wrap-up slides &teacher-led discussion. Session 3: ● Add to See, Think, Wonder Chart ● Students wonder: Can tugboats hold a barge still? ● Students learn: Tugboats can either push or pull on barges to make them move. The tugboat goes behind the barge if it is pushing, and in front if it is pulling.	Mystery Science Video: Can you Build a House of Cookies and Candy		3-20 minute sessions

Pushes & Pulls Unit (Force Olympics) How can you knock down the most bowling pins?	Session 1: ● Read Along: How to Win At Bumper Bowling ● Hands-On Activity Session 2: Anchor Connections ● Teacher-led discussion ● Talk about speed and direction of force Session 3:	Session 1: ● Read-Along session: Daniel worries he won't do well at a friend's Bumper Bowling party…until he figures out an unexpected way to win. ● Add to See, Think, Wonder Chart ● Hands-on Activity: Short exercise where students act out bowling. If you want to extend the lesson, you can try this optional activity, Human Bumper Bowling, where students make a model bumper bowling alley and work together to knock down pins. ● Teacher-led discussion Session 2: ● Add to See, Think, Wonder Chart ○ Students wonder: Why don't barges get damaged when tugboats push on them? ○ Students learn that tugboats can push barges up against other stationary objects. This keeps them from moving around when loading or unloading Session 3: ● Assessment Pushes and Pulls			3-20 minute sessions

	• Pushes and Pulls Assessment				
Pushes & Pulls Unit (Force Olympics) How can we protect a mountain town from falling rocks?	Session 1: • Watch Video: How Can We Protect a Mountain Town from Falling Rocks Session 2: • Hands-on Activity Session 3: Anchor Connections • Teacher-led discussion • Talk about direction of motion and engineering.	Session 1: • In this session, students investigate how pushes can change the speed and direction of falling objects • Add to See, Think, Wonder Chart Session 2: • Hands-on Activity: Boulder Bounce, students play a game where they design a solution that protects a model town called Tiny Town from a bouncing-ball "boulder." • Add to See, Think, Wonder Chart • Wrap-up slides &teacher-led discussion. Session 3: • Add to See, Think, Wonder Chart • Students wonder: Are there different kinds of barges? • Students learn: tugboats are covered in flexible materials, such as tires, that help to cushion impacts when pushing on barges.			3-20 minute sessions

Pushes & Pulls Unit (Force Olympics) How can we invent a trap?	Session 1: • Read Aloud The Monster Trap Session 2: • Anchor Connection • Hands-on Activity Session 3: • Assessment	Session 1: • In this Read-Along session, twins Mimi and Lulu try different ways to catch a mysterious nighttime visitor…until they hit on just the right solution. • The lesson includes a short exercise where students imagine how to design a good monster trap, and then pretend to be sneaky monsters. You can extend the lesson with the optional activity, Be an Inventor, where students draw their own inventions for machines that do chores. • Add to See, Think, Wonder Chart • Teacher Led Discussion Session 2: • Students wonder: How can we change which way a barge is moving? Students learn: There are many types of barges. Two of the most common types have either a large, flat top or a deep hold. They do different jobs. • Activity: What do tugboats do? • Add to See, Think, Wonder Chart Session 3: • Invent a Machine	Find the Inventions All Around Us: Ask your students to walk around the classroom and look for inventions. Talk about the inventions they find. Inventions in your classroom may include paper and pencils; tape, pushpins, and crayons; staplers and hole punches; electric lights and the switches that turn them on and off, and so on.		3-20 minute sessions

Pushes & Pulls Unit (Force Olympics) Performance Task: What do tugboats do?	Session 1: • Performance Task	Session 1: • In this performance task, students observe and predict how tugboats affect the motion of other ships. • After a brief review of the unit, students gather observations of tugboats in action, and then use those observations to predict how tugboats can change the speed or direction of other ships with pushes and pulls.	Read Aloud: Mighty Tug		1-20 minute session

Textbook and Supplemental Resources

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Assessments:

Diagnostic	Formative	Summative
Science Journal	Assessment: Circle the Machine that Spins	CER- tell me, show me, sell me

See, Think, Wonder Chart	Assessment Pushes and Pulls Assessment: Invent a Machine	