Kindergarten Planning Guide

Kindergarten Planning Guide | Grade 1 Planning Guide | Grade 2 Planning Guide
Grade 3 Planning Guide | Grade 4 Planning Guide | Grade 5 Planning Guide
Combined K-5 Planning Guide

What is Included in this Document?

Grade Level Pacing Guides
The Pacing Guide is a resource to support your year-long planning. The units can be taught in any order. In most units, the lessons build on one another. Therefore, we strongly recommend the lessons within each unit are taught in the sequence they are presented. Extensions are available for each lesson and offer an opportunity for students to continue their science content learning. They include assessments and a curated collection of additional activity suggestions, online resources, project ideas, and readings.

Mystery Science - NGSS Alignment
Mystery Science is aligned to the Next Generation Science Standards (NGSS). Each lesson is aligned to a topic, performance expectation, science and engineering practice, disciplinary core idea, and crosscutting concept.

What are Read-Along Lessons?
Read-Along lessons are 30-45 minute lessons. Each lesson contains a digital read-along book that is meant to be read out loud with students and include opportunities to pause and engage in classroom discussion. They also include a short activity that may sometimes require supplies found in your classroom.

Generate Activity Supply Lists
To make planning easier, you can generate supply lists by grade, classroom, unit, or lesson using our Supply Calculator.

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Force Olympics (Physical Science Unit)

Kindergarten

Mystery Science recommends teaching the lessons within each unit in the order they are presented. The units themselves can be taught in any order. The lesson (exploration & activity) is designed to take 30-45 minutes per week. Extensions can expand upon each lesson. The Read-Along lessons offer an opportunity to develop students' literacy as they learn science.

	Plant & Animal Secrets (6-9 weeks)	Wild Weather (3-6 weeks)	Circle of Seasons (3-6 weeks)	Sunny Skies (3-6 weeks)	Force Olympics (6-9 weeks)
Week 1	Lesson 1: Why do woodpeckers peck wood? ***(K-LS1-1)***	Lesson 1 Read-Along: How can you get ready for a big storm? ***(K-ESS3-2)***	Lesson 1 Read-Along: How do you know what to wear for the weather? ***(K-ESS2-1)***	Lesson 1 Read-Along: How could you walk barefoot across hot pavement without burning your feet? ***(K-PS3-1, K-PS3-2)***	Lesson 1: What's the biggest excavator? (***Foundational for K-PS2-1, K-PS2-2)***
Week 2	Lesson 2 Read-Along: Where do animals live? ***(K-ESS3-1)***	Lesson 2: Have you ever watched a storm? ***(K-ESS2-1)***	Lesson 2: What will the weather be like on your birthday? ***(K-ESS2-1)***	Lesson 2: How could you warm up a frozen playground? (***K-PS3-1, K-PS3-2, K-2-ETS1-2, K-2-ETS1-3)***	Lesson 2 Read-Along: Why do builders need so many big machines? (***Foundational for K-PS2-1, K-PS2-2)***
Week 3	Lesson 3: How can you find animals in the woods? ***(K-LS1-1)***	Lesson 3: How many different kinds of weather are there? ***(K-ESS2-1)***	Lesson 3: Why do birds lay eggs in the spring? ***(K-ESS2-1, K-ESS2-2)***	Lesson 3: Why does it get cold in winter? ***(K-PS3-1,)***	Lesson 3: How can you knock down a wall made of concrete? ***(K-PS2-1 and K-PS2-2)***
Week 4	Lesson 4 Read-Along: How do animals make their home in the forest? ***(K-ESS2-2)***				Lesson 4 Read-Along: How can you knock down the most bowling pins? ***(K-PS2-1)***
Week 5	Lesson 5: How do plants and trees grow? ***(K-LS1-1)***				Lesson 5: How can we protect a mountain town from falling rocks? ***(K-PS2-2, K-2-ETS1-2, K-2-ETS1-3)***
Week 6	Lesson 6 Read-Along: Why would you want an old log in your backyard? ***(K-ESS3-3)***				Lesson 6 Read-Along: How could you invent a trap? ***(K-PS2-2, K-2-ETS1-2)***

Lesson Extensions. Extensions are available for each lesson and offer an opportunity for students to continue their science content learning. They include assessments and a curated collection of additional activity suggestions, online resources, project ideas, and readings.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Extensions if you have more time.	Add a week after each lesson to teach items from the Extensions.	If you want to extend the lesson during literacy time, use reading and writing Extensions.

Plant & Animal Secrets (6-9 weeks)

Plant and Animal Needs

Kindergarten Mystery Science & NGSS Alignment - Life Science (LS)

In this unit, students use observations to understand what animals and plants need to survive. Students explore how animals need things to eat and a safe place to live. They also investigate the needs of plants and how those might be different from the needs of animals.

Kindergarten Life Science	Performance Expectations	Focus	Disciplinary Core Ideas (DCIs) (Lesson Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Lesson 1 Why do woodpeckers peck wood?	K-LS1-1	Animal Needs: Food	All animals need to find food in order to survive. They go about finding food in different ways, but all animals have this need in common. Knowing that animals have this need can help you find animals where you live, as well as help you make sense of their behaviors. **DCIs: LS1.C**	Students **obtain information through observations** of different animal behaviors. They use evidence from their observations to **argue** for their **explanation** of why animals are acting in these ways. Students act out the behaviors of different animals.	Students study animal behaviors to identify the **pattern** that all animals have behaviors that include seeking out food to survive.
Lesson 2 Read-Along Where do animals live? 📖	K-ESS3-1	Animal Needs: Shelter	Living things need food, water, shelter, and many other resources to survive! All living things live in places that provide the needs they have to survive. Not all living things live in a house, like humans do. Animals live in many different types of homes close to their resources. **DCIs: ESS3.A**	Students **obtain information** through media about how different animal homes are built. They **communicate this information** in order to identify patterns in the natural world.	Students identify the **pattern** that all living things live where their needs are met. They recognize that plants, animals, and their surroundings make up a **system** as parts that work together.
Lesson 3 How can you find animals in the woods?	K-LS1-1	Animal Needs: Safety	All animals need to find safety (protection) in order to survive. They go about finding safety in different ways, but all animals have this need in common. Knowing that animals have this need can help you find animals where you live, as well as help you make sense of their behaviors. **DCIs: *Extends* LS1.C**	Students **obtain information through observations** of different animal behaviors. They use evidence from their observations to **argue** for why animals are acting in these ways. Students act out the behaviors of different animals.	Students study animal behaviors to identify the **pattern** that all animals have the behavior seeking out safety to survive.

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Plant & Animal Secrets (6-9 weeks)

Plant and Animal Needs

Kindergarten Mystery Science & NGSS Alignment - Life Science (LS)

Kindergarten Life Science	Performance Expectations	Focus	Disciplinary Core Ideas (DCIs) (Lesson Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Lesson 4 Read-Along How do animals make their home in the forest? 📖	K-ESS2-2	Animals & Changing the Environment	All living things need food and safety to survive. Animals can't always find shelter or something to eat lying around, so they have to change their environment to meet their needs. Animals change the environment in many ways - they dig for food, build homes, create hiding spots, and much more! **DCIs: ESS2.E**	Students take a nature walk to **carry out an investigation** exploring which types of animals live around them and what their homes are like. They **analyze and interpret data** by using their observations to describe the patterns they see.	Students begin to recognize that plants, animals, and their surroundings make up a **system** as parts that work together.
Lesson 5 How do plants and trees grow?	K-LS1-1	Plant Needs: Water & Light	Plants are alive, just like animals. They grow over time, and have similar needs (like water). However, there are some big differences between plants and animals. Plants don't have legs… so you won't see them walking around. They also don't have mouths or eat food the way we do. They need water *and* sunlight. **DCIs: LS1.C**	Students **carry out an investigation** to determine what plants need to grow. They grow radish seeds and **make observations** of their plants. Students **analyze and interpret** their observations of what the plants need, but also how they respond to light.	Students study plant growth to identify the **pattern** that all plants need water. They also observe the **pattern** that plants lean towards the light.
Lesson 6 Read-Along Why would you want an old log in your backyard? 📖	K-ESS3-3	Animal Needs & Changing the Environment	People make changes to their environment so that they can live comfortably. They cut down trees, use energy to produce materials and products, and much more. When people make changes to their environment they use resources needed by other living things. It is important to make choices that reduce our impact on the habitat we share. **DCIs: ESS3.C**	Students **obtain and evaluate information** by virtually keeping watch on a log and reporting about the living things that visit it. They **communicate information** by drawing a log and the animals that would use it as their habitat.	Students consider the **cause and effect** relationship between the changes people make to their environment and the impact it has on other living things that share their habitat.

Wild Weather (3-6 weeks)

Severe Weather & Weather Forecasting

Kindergarten Mystery Science & NGSS Alignment - Earth & Space Science (ESS)

In this unit, students explore storms and severe weather! They obtain information from weather forecasts to prepare for storms and stay safe. They also practice describing the various characteristics of weather (wind, clouds, temperature, and precipitation) in order to make their own predictions about storms.

Kindergarten Earth and Space Science	Performance Expectations	Focus	Disciplinary Core Ideas (DCIs) (Lesson Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Lesson 1 Read-Along How can you get ready for a big storm? 📖	K-ESS3-2	Severe Weather & Preparation	Weather is usually mild but it can quickly become severe. Weather tracking helps us know when to prepare for severe weather. Weather forecasting provides information about approaching storms and severe weather so that we can be prepared and stay safe. **DCIs: ESS3.B**	Students **obtain information** through virtual observations of different types of severe weather - thunderstorms, hurricanes, tornadoes, and blizzards. They use this information to **ask questions** about what is needed in order to be prepared and stay safe during these different types of severe weather.	Students explore the **cause and effect** relationship between weather tracking and storm preparation.
Lesson 2 Have you ever watched a storm?	K-ESS3-2 K-ESS2-1	Wind & Storms	One of the ways to forecast weather is to pay close attention to the sky, clouds, and wind. You can usually tell when a thunderstorm is approaching because the sky gets darker and the wind starts to blow harder. You can use information about the wind to describe the weather and prepare for approaching storms. **DCIs: ESS3.B, ESS2.D**	Students create a Breeze Buddy, a simple tool that allows them to observe how hard the wind is blowing. They use this tool to **obtain information** about the wind and **ask questions** about other ways to forecast the weather.	Students explore the **cause and effect** relationship between weather tracking and storm preparation.
Lesson 3 How many different kinds of weather are there?	K-ESS2-1	Weather Conditions	The weather is always changing around us! For example, sometimes we need a coat, or an umbrella, and other days we don't. Weather isn't just one thing, there are different factors that affect the weather. When you are a weather watcher, you observe the weather around you. **DCIs: ESS2.D**	Students **obtain information** through observations of the weather. They **communicate the information** by acting as a weather watcher and creating drawings of the weather conditions.	Students observe weather **patterns**. They understand weather as a pattern in the natural world.

Circle of Seasons (3-6 weeks)

Weather Patterns & Seasons

Kindergarten Mystery Science & NGSS Alignment - Earth & Space Science (ESS)

In this unit, students gather evidence in order to identify daily and seasonal weather patterns. They use those patterns to explain mysteries like why you might lose your jacket during the day or why birds lay their eggs at certain times of the year.

Kindergarten Earth and Space Science	Performance Expectations	Focus	Disciplinary Core Ideas (DCIs) (Lesson Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Lesson 1 Read-Along How do you know what to wear for the weather? 📖	K-ESS2-1	Local Weather & Daily Patterns	Weather changes exhibit patterns over time and one such pattern is the change throughout the day. It is usually cooler in the mornings and evenings when the Sun isn't out, and warmer in the afternoon when the Sun is shining high above us. **DCIs: ESS2.D**	Students track the weather daily and **analyze the data** by collecting, recording, and sharing their observations. They act as weather reporters and **ask questions** based on observations of weather to find out more information about the natural world.	Students observe weather **patterns**. They understand temperature changes throughout the day as a **pattern** in the natural world.
Lesson 2 What will the weather be like on your birthday?	K-ESS2-1	Seasonal Patterns	Weather has patterns throughout each day, but there are also patterns throughout the year. Each season has its own type of weather! Winter is cold, snowy, and trees are bare; spring is warmer, rainy, and new leaves begin to grow; summer is hot and trees have a lot of leaves; autumn is chilly and the leaves begin to fall. These seasons repeat in a cyclical pattern. **DCIs: ESS2.D**	Students **obtain and evaluate information** in a series of unnamed drawings of each season. They use clues in the picture to **argue** for the season they think the picture represents. Next, they use these clues to sequence the seasons in the correct cycle.	Students use their observations of the weather in each season to identify **patterns**. They determine the order of the seasons, and notice the **pattern** that all four seasons repeat each year.
Lesson 3 Why do birds lay eggs in the spring?	K-ESS2-1 K-ESS2-2	Animals Changing Their Environment	Seasonal weather patterns affect the environment and the organisms that live in those environments. For example, birds lay their eggs in the spring. Birds do this because there is enough food available in the spring and summer and this allows enough time for the eggs to hatch and the chicks to grow. They construct their nests using materials that are available in their surrounding environment. **DCIs: ESS2.D, ESS2.E**	Students **develop** a bird nest **model**. They use this model to **construct an argument** that birds use material around them to change their environment to keep their eggs and baby birds safe.	Students observe how the **structure** of a bird nest enables them to **function** in keeping eggs and baby birds safe.

Sunny Skies (3-6 weeks)

Sunlight & Warmth

Kindergarten Mystery Science & NGSS Alignment - Physical Science (PS)

In this unit, students make observations to explore how sunlight warms the Earth's surface. The Sun's energy heats up the pavement, keeps us warm, and can even melt marshmallows. Using what they learn, students think about ways that shade and structures can reduce the warming effect of the Sun.

Kindergarten Physical Science	Performance Expectations	Focus	Disciplinary Core Ideas (DCIs) (Lesson Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Lesson 1 Read-Along How could you walk barefoot across hot pavement without burning your feet? 📖	K-PS3-1 K-PS3-2 K-2-ETS1-1 K-2-ETS1-3	Sunlight, Heat, & Earth's Surface	The Sun warms Earth's surface. Keya observes this when she's at the pool one day and needs to get to the ice cream truck without her shoes! She realizes that places which get a lot of sunlight have warmer temperatures, and shaded places that get less sunlight have cooler temperatures. She uses that information to find a cool path to the ice cream! **DCI's: PS3.B, ETS1.A, ETS1.C**	Students make observations to define the problem that Farmer Josie's cows need shade in order to stay cool. Then, through a series of steps,they **design a solution** to build a shade structure that can reduce the warming effect of sunlight for the cows.	Students consider the **effect** of direct sunlight on an area and how that **causes** surfaces to heat up. They also examine how shade structures can reduce the warming **effect** of the Sun.
Lesson 2 How could you warm up a frozen playground?	K-PS3-1 K-PS3-2* K-2-ETS1-2 K-2-ETS1-3	Sunlight, Warming, & Engineering	The Sun gives off *so* much light and heat that it warms the Earth's surface. If a place doesn't get enough sunlight, it becomes very cold. Engineers can solve this problem by designing a tool that increases the warming effect of the sun on a specific place. *This lesson uses an activity that *increases* the warming effect of sunlight on an area. **DCI's: PS3.B, ETS1.B, ETS1.C**	Students **define the problem** that Chill City, a valley town surrounded by mountains, does not get enough sunlight in the winter. Using various materials, they **carry out an investigation** to test which materials can redirect sunlight. Using this information, they **design a solution** to help bring sunlight to various locations in Chill City.	Students consider the **cause and effect** relationship between sunlight exposure and the temperature on Earth's surface.
Lesson 3 Why does it get cold in winter?	K-PS3-1 K-PS3-2	Sunlight & Warmth	The Sun warms Earth's surface throughout the year. The pattern of the arc of the Sun in the Sky and the duration of time the Sun is in the sky throughout the day is part of the reason why it's warm during the summer and cold during the winter. **DCI's: PS3.B**	Students **construct an explanation** for why marshmallows melt in one car and not in another car. Then, to test this explanation, they **conduct a** virtual **investigation** to determine that the warmth of the Sun is the cause of the melted marshmallows.	Students consider the **effect** of parking a car in a sunny area and how the heat of the Sun can **cause** things to heat up and melt.

Force Olympics (6-9 weeks)

Forces, Machines, & Engineering

Kindergarten Mystery Science & NGSS Alignment - Physical Science (PS)

In this unit, students are introduced to pushes and pulls and how those affect the motion of objects. Students observe and investigate the effects of what happens when the strength or direction of those pushes and pulls are changed.

Kindergarten Physical Science	Performance Expectations	Focus	Disciplinary Core Ideas (DCIs) (Lesson Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Lesson 1 What's the biggest excavator?	Foundational for K-PS2-1 K-PS2-2	Pushes & Pulls	Machines multiply the work a human can do - making the work easier! A machine's force is stronger than a human's force. For example, digging a hole takes less work with a shovel than it does with your hands. It takes even less work if you use a bigger machine, like a bulldozer! **DCIs: *Foundational* for PS2.A, PS2.B, PS2.C**	Students **obtain information** through observations of different machines. They use evidence from their observations to **argue** for their **explanation** of why machines make work easier. Students act out the "work words" of different machines.	Students consider the **effects** that machines can have when completing a task.
Lesson 2 Read-Along Why do builders need so many big machines? 📖	Foundational for K-PS2-1 K-PS2-2	Pushes, Pulls & "Work Words"	There are many different types of machines and each one has a unique job. Machines help people by making their work faster and easier. Machines help people do things like dig, lift, dump, push, and mix! Without machines, it would take a lot longer to build new things. **DCIs: *Foundational* for PS2.A, PS2.B, PS2.C**	Students **obtain information** through footage of different construction equipment being used in different ways. Student **communicate about the information** by discussing what each machine does using "work words".	Students consider the **cause and effect** relationship between the movement of a machine and the work it can do.
Lesson 3 How can you knock down a wall made of concrete?	K-PS2-1 K-PS2-2	Motion, Speed, & Strength	Machines create pushes and pulls, or "forces". A wrecking ball is a machine that uses a push to knock things over. By changing the strength and direction of the push, you can make the force larger or smaller. **DCIs: PS2.A, PS2.B, *Foundational* PS3.C and ETS1.A**	Students **carry out an investigation** to determine how far back they should pull their **model** wrecking ball to knock down a wall, but not the houses behind it. They **analyze the data** collected in their investigation to discuss how the force of the wrecking ball changes when you change the strength and direction of its push.	Students analyze the **effect** of changing the strength and direction of a wrecking ball's push. They experiment with different heights to determine how the push, or force, is changed.

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Force Olympics (6-9 weeks)

Forces, Machines, & Engineering

Kindergarten Mystery Science & NGSS Alignment - Physical Science (PS)

Kindergarten Physical Science	Performance Expectations	Focus	Disciplinary Core Ideas (DCIs) (Lesson Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Lesson 4 Read-Along How can you knock down the most bowling pins? 📖	K-PS2-1	Speed & Direction of Force	To move an object farther or faster, a bigger push or pull is needed. When objects collide they push on one another causing a change in direction and speed. By changing the force acting on an object, you can change the motion of the object. **DCIs: PS2.A, PS2.B, *Foundational PS3.C***	Students **carry out an investigation** by 'bowling' with solo cups (pins), a tennis ball (bowling ball), and pool noodles (bumpers). They explore the forces at work when one thing hits another, and how changing the size of the force affects the motion of an object.	Students analyze the **cause and effect** relationship between the size of the force on an object and the direction or speed it goes.
Lesson 5 How can we protect a mountain town from falling rocks?	K-PS2-1 K-PS2-2 K-2-ETS1-2 K-2-ETS1-3	Direction of Motion & Engineering	Pushes and pulls can have different strengths. The faster an object moves, or the larger it is, the stronger it pushes on something when it bumps into it. Sometimes a push or pull is so strong that it makes an object start moving, or stop moving! Pushing or pulling on an object can even change the direction an object is going. We can use scientific knowledge to help people solve a problem. **DCIs: PS2.A, PS2.B, PS3.C, ETS1.B, ETS1.C**	Students use a **model** of a mountain town, Tiny Town, to **conduct an investigation** of how to protect the town from a falling boulder. They **design a solution** to safely guide a boulder down the hill so it doesn't hit the town and rolls into a dump truck. Using pushpin poles, students change the direction the boulder is rolling.	Students consider the **cause and effect** relationship between a force and an object's speed or direction.
Lesson 6 Read-Along How could you invent a trap? 📖	K-PS2-2 K-2-ETS1-2	Forces & Engineering	Inventors design solutions to solve problems. Anyone can be an inventor! Inventors create new ideas, and many use engineering and design to help them. Inventors use their knowledge to create something new. In this story, two inventors use a pull to help them solve a problem. **DCIs: PS2.A, ETS1.A, ETS1.B, ETS1.C**	Students **design a solution** to help the book characters solve a problem. Then, they **define a problem** by choosing a chore they don't like doing. Next, they **design solution** by sketching a machine that could help them. They compare their solutions with a partner.	Students consider the **structure and function** of existing materials and tools in order to create new uses for them in order to solve a problem.