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?

Pacing Guide
The Pacing Guide is a resource to support your year-long planning. The units can be taught in any order. In most units, the Mysteries build on one another. Therefore, we strongly recommend the Mysteries within each unit are taught in the sequence they are presented. If you have more time, each unit can be extended by using items from the Optional Extras.

Mystery Science - NGSS Alignment
Mystery Science is aligned to the Next Generation Science Standards. Each Mystery is aligned to a topic, performance expectations, science and engineering practices, disciplinary core ideas, and crosscutting concepts. This document explains how each Mystery is aligned to the NGSS standards.

What are Read-Along Mysteries?

Read-Along Mysteries are a new type of lesson that we are piloting this school year for Kindergarten and 1st Grade. Each 30-45 minute lesson contains a digital read-along book and a mini-activity. The digital read-along book is meant to be read out loud with students with opportunities to pause and discuss. The mini-activity is a short activity that may sometimes require supplies found in your classroom.

Table of Contents

Mystery Science Kindergarten - Pacing Guide

Mystery Science recommends teaching the mysteries within each unit in the order they are presented. The units themselves can be taught in any order. Each unit provides approximately 6 weeks of instruction teaching science once a week. The core Mystery (exploration & activity) are designed to take under an hour per week. The Read Along Mysteries offer an opportunity to develop students' literacy as they learn science.

	Force Olympics (6-9 weeks)	Weather Watching (6-9 weeks)	Plant & Animal Secrets (6-9 weeks)
Week 1	Mystery 1: What's the Biggest Excavator	Mystery 1: Have you ever watched a storm? ***(K-ESS2-1)***	Mystery 1: Why do woodpeckers peck wood? ***(K-LS1-1)***
Week 2	Mystery 2 Read Along: Why do builders need so many big machines?	Mystery 2 Read Along: How can you get ready for a big storm? ***(K-ESS3-2)***	Mystery 2 Read Along: Where do animals live? ***(K-ESS3-1)***
Week 3	Mystery 3: How can you knock down a wall made of concrete? ***(K-PS2-1 and K-PS2-2)***	Mystery 3: What will the weather be like on your birthday? ***(K-ESS2-1)***	Mystery 3: How can you find animals in the woods? ***(K-LS1-1)***
Week 4	Mystery 4 Read Along: How can you knock down the most bowling pins? ***(K-PS2-1)***	Mystery 4 Read Along: How do you know what to wear for the weather? ***(K-ESS2-1)***	Mystery 4 Read Along: How do animals make their home in the forest? ***(K-ESS2-2)***
Week 5	Mystery 5: How can we protect a mountain town from falling rocks? ***(K-PS2-2, K-2-ETS1-2, K-2-ETS1-3)***	Mystery 5: How could you warm up a frozen playground? (***K-PS3-1, K-PS3-2, K-2-ETS1-2, K-2-ETS1-3)***	Mystery 5: How do plants and trees grow? ***(K-LS1-1)***
Week 6	Mystery 6 Read Along: How could you invent a trap? ***(K-PS2-2, K-2-ETS1-2)***	Mystery 6 Read Along: How could you walk barefoot across hot pavement without burning your feet? ***(K-PS3-1, K-PS3-2)***	Mystery 5 - **Part 2**: How do plants and trees grow? ***(K-LS1-1)***
Week 7			Mystery 6 Read Along: Why would you want an old log in your backyard? ***(K-ESS3-3)***

Have extra time? "Optional Extras" are extensions to each Mystery. We recommend you use them during your unit or to extend the length of each unit. They include an informational text reading that builds on the Mystery's topic, assessments, and suggestions for supplemental activities.

More Science each week	Longer Science units	Cross Curricular Integration
Use items from the Optional Extras to extend each Mystery if you have more time.	Add a week after each Mystery to teach items from the Optional Extras.	If you want to extend the Mystery but don't have extra time, use Optional Extras during literacy time.

Weather Watching (6-9 weeks) *Weather Conditions, Instruments, & Seasons*

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

Profound Perspective: This unit will help students develop the habit of becoming weather watchers who take pleasure in noticing weather patterns and predicting changes.

Kindergarten Earth and Space Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Have you ever watched a storm?	K-ESS2-1	Weather Conditions and Tracking	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.
Mystery 2 Read Along How can you get ready for a big storm? 📖	K-ESS3-2	Weather Conditions and Tracking	Weather is usually mild but it can quickly become severe. Weather tracking helps us know when to prepare for weather hazards. When the weather becomes severe you may see the sky get darker, the temperature drop, the wind increase, and even precipitation fall. Knowing how to prepare for weather hazards keeps people safe. **DCIs: ESS3.B, ETS1.A**	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 weather as a pattern in the natural world. Students explore the **cause and effect** relationship between weather tracking and hazard preparation.
Mystery 3 What would the weather be like on your birthday?	K-ESS2-1	Seasons and Patterns	"Weather watchers" see that there are four seasons that each have their 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. The seasons don't just stop, they repeat in a cycle. Therefore, the weather and seasons are a 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.

Mystery 4 Read Along How do you know what to wear for the weather? 	K-ESS2-1	Daily Weather & Patterns	Weather changes over time, like in the seasons, but it can also 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 **develop and use models** of weather instruments and use them to **carry out an investigation**. Using the instruments students determine the direction of the wind, and how much rain has fallen. Students **analyze the data** to determine weather trends.	Students observe weather **patterns**. They understand temperature changes throughout the day as a **pattern** in the natural world.
Mystery 5 How could you warm up a frozen playground?	K-PS3-1 K-PS3-2* K-2-ETS1-2 K-2-ETS1-3	Sun's Warmth & Engineering	The sun is very far away from earth, but also very important to us. It gives off *so* much light and heat that it warms 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 Mystery uses an engineering 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.
Mystery 6 Read Along How could you walk barefoot across hot pavement without burning your feet? 	K-PS3-1 K-PS3-2	Sun & Heat	The sun warms Earth's surface. Places that get a lot of sunlight have warmer temperatures, and shaded places that get less sunlight have cooler temperatures. **DCI's: PS3.B**	Students **obtain and evaluate information** from a map of the pool. Analyzing the hot and cool surfaces, they **design a solution** to get a person across the pool without burning their feet. Students analyze an image of a playground and **construct an explanation** about what areas would be coolest and hottest. Students **conduct an investigation** to determine the warmest and coldest spots outside on a sunny day.	Students consider the **cause and effect** relationship between the amount of sunlight an area gets and its temperature.

Note: *New Mysteries will be added to this unit in the future to address K-ESS2-2, K-ESS3-1 and K-ESS3-3.*

Plant & Animal Secrets (6-9 weeks) *Plant and Animal Needs*

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

Profound Perspective: Animals and plants need things in order to survive, and their lives are *all* about meeting those needs… it's the secret to why they do the many strange and wonderful things that they do! Knowing how they meet their needs can even help you find plants and animals near where you live.

Kindergarten Life Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 Why do woodpeckers peck wood?	K-LS1-1	Survival 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.
Mystery 2 Read Along Where do animals live?	K-ESS3-1	Animal Homes	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.
Mystery 3 How can you find animals in the woods?	K-LS1-1	Survival 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.

Mystery 4 Read Along How do animals make their home in the forest? 	K-ESS2-2	Survival Needs: Environment Changes	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.
Mystery 5 How do plants and trees grow?	K-LS1-1	Plant Needs: Sunlight	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 **plan and carry out an investigation** to determine how light affects plant growth. They grow radish plants in light and dark conditions for four days and then **analyze their data**. Using this data, students **engage in an argument from evidence** about which plant is healthier and why.	Students study plant growth under different conditions to identify the **pattern** that all plants have survival needs.
Mystery 6 Read Along Why would you want an old log in your backyard? 	K-ESS3-3	Animal's 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.

Note: *New Mysteries will be added to this unit in the future to address K-ESS2-2, K-ESS3-1 and K-ESS3-3.*

Force Olympics (6-9 weeks) *Forces, Machines, & Engineering*

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

Profound Perspective: This unit will help students develop their first concept of "force," and the idea that by playing with forces and thinking about them, we can accomplish surprisingly big things.

Kindergarten Physical Science	Performance Expectations	Topics	Disciplinary Core Ideas (DCIs) (Mystery Conceptual Flow)	Scientific & Engineering Practices (SEPs)	Crosscutting Concepts (CCC)
Mystery 1 What's the biggest excavator?	Foundational for K-PS2-1 K-PS2-2	Pushes, Pulls & "Work Words"	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.
Mystery 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.
Mystery 3 How can you knock down a wall made of concrete?	K-PS2-1 K-PS2-2	Strength & Direction of Force	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.

Mystery 4 Read Along How can you knock down the most bowling pins? 	K-PS2-1	Strength & 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.
Mystery 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	Forces & 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.
Mystery 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 boo 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.

Note: *New Mysteries will be added to this unit in the future to address K-ESS2-2, K-ESS3-1 and K-ESS3-3.*