Mystery Science Alignment with Mississippi Science Standards

Mystery Science - Mississippi Alignment
Mystery Science aligns to the Mississippi College- and Career-Readiness Standards for Science (2018). Each lesson (exploration & hands-on activity) is designed to take one hour. 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, & readings.

Anchor Layer
If you are interested in anchoring phenomena or unit level projects, we suggest exploring our **Anchor Layer** feature.

mystery science

Last updated February 2, 2023

Mississippi Standards Alignment
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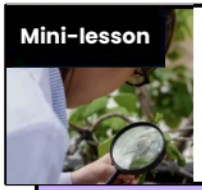
Animal Needs Unit (Animal Secrets)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Animal Needs: Food** Why do woodpeckers peck wood?	Students obtain information through virtual observations of different animal behaviors. They use this evidence to explain that one of the basic needs of animals is food.	**L.K.1B** Students will demonstrate an understanding of how animals (including humans) use their physical features and their senses to learn about their environment. (L.K.1B.1) **L.K.3B** Students will demonstrate an understanding of the interdependence of living things and the environment in which they live. (L.K.3B.1)
Lesson 2	**Animal Needs: Shelter Read-Along** Where do animals live?	Students obtain information through media about how different animal homes are built. They use this evidence to explain that animals need shelter.	**L.K.1B** Students will demonstrate an understanding of how animals (including humans) use their physical features and their senses to learn about their environment. (L.K.1B.1)
Lesson 3	**Animal Needs: Safety** How can you find animals in the woods?	Students obtain information through virtual observations of different animal behaviors. They use this evidence to explain that one of the basic needs of animals is shelter.	**L.K.1B** Students will demonstrate an understanding of how animals (including humans) use their physical features and their senses to learn about their environment. (L.K.1B.1)
Lesson 4	**Animals & Changing the Environment Read-Along** How do animals make their homes in the forest?	Students take a nature walk to look for evidence of animal homes.	**L.K.1B** Students will demonstrate an understanding of how animals (including humans) use their physical features and their senses to learn about their environment. (L.K.1B.1)

Mississippi Specific Standard:
L.K.1A.2 With teacher support, gain an understanding that scientists are humans who use observations to learn about the natural world.
The following mini-lessons can be used to support Mississippi Specific Science Standards.


Mini-lesson

L.K.1A.2

How do scientists know so much?

Mini-lesson

L.K.1A.2

How do scientists learn about wild animals?

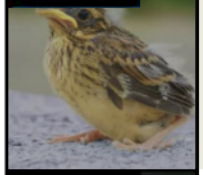
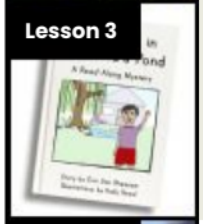
Plant Needs Unit (Plant Secrets)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	✨New!✨ **Living & Nonliving** Are plants alive?	Students make observations of plants in order to identify their needs and that they are, in fact, living things.	**L.K.1A** Students will demonstrate an understanding of living and nonliving things. (L.K.1A.1)
Lesson 2	**Plant Needs: Water & Light** How do plants and trees grow?	Students investigate to determine the basic needs of plants. They observe to identify ways young plants resemble the parent plant and how the plant changes as it proceeds through its life cycle.	**L.K.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle. (L.K.2.1, L.K.2.3) **L.K.3A** Students will demonstrate an understanding of what animals and plants need to live and grow. (L.K.3A.1)
Lesson 3	**Animal Needs & Changing the Environment** **Read-Along** Why would you want an old log in your backyard?	Students obtain evidence of living organisms by virtually keeping watch of a log and the living things that visit it.	**L.K.3A** Students will demonstrate an understanding of what animals and plants need to live and grow. (L.K.3A.2)

Mississippi Specific Standard: **L.K.4** Students will demonstrate an understanding that some groups of plants and animals are no longer living (extinct) because they were unable to meet their needs for survival.

***This unit is found under 1st Grade on our site**, but we recommend teaching some lessons in Kindergarten if you are following Mississippi Standards.*

Animal Traits & Survival Unit (Animal Superpowers)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1 	**Parent & Offspring Traits** How can you help a lost baby animal find its parents?	Students observe the traits of adult and baby animals in order to construct an explanation that most young animals are like, but not exactly like, their parents.	**L.K.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle. (L.K.2.4)
Lesson 2	*We **recommend teaching this in 2nd grade** if following Mississippi Standards.* ***Animal Structures & Survival*** *Why do birds have beaks?*	*beaks are well suited for eating different kinds of food. They explain which beak would help a particular bird survive in a particular environment.*	***L.2.3B** Students will demonstrate an understanding of the interdependence of living things.*
Lesson 3 	*We **recommend teaching this in 2nd grade** if following Mississippi Standards.* ***Read-Along*** *Why do baby ducks follow their mother?*	*behaviors of animal parents that help their offspring survive.*	***L.2.3B** Students will demonstrate an understanding of the interdependence of living things.*
Lesson 4	*We **recommend teaching this in 2nd grade** if following Mississippi Standards.* ***Camouflage & Animal Survival*** *Why are polar bears white?*	*parents and their offspring to construct an explanation about young plants and animals being similar, but not identical, to their parents.*	***L.2.3B** Students will demonstrate an understanding of the interdependence of living things.*
Lesson 5	**Inheritance & Variation of Traits Read-Along** Why do family members look alike?	Students identify parts of plants such as roots, branches, and leaves. They evaluate these plant parts and apply that information to design an umbrella that won't blow down in the wind.	**L.K.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle. (L.K.2.4)

Weather Patterns Unit (Circle of Seasons)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Local Weather & Daily Patterns Read-Along** How do you know what to wear for the weather?	Students track the weather daily and analyze the data by collecting, recording, and sharing their observations to observe patterns of weather changing throughout the day and from day-to-day.	**E.K.8A** Students will demonstrate an understanding of the pattern of seasonal changes on the Earth. (E.K.8A.1)
Lesson 2	**Seasonal Patterns** What will the weather be like on your birthday?	Students evaluate information in a series of unnamed drawings of each season. They use these clues to identify characteristics of each season and describe the yearly cyclical pattern.	**E.K.8A** Students will demonstrate an understanding of the pattern of seasonal changes on the Earth. (E.K.8A.1)
Lesson 3	**Animals Changing Their Environment** Why do birds lay eggs in the spring?	Students identify the reasons why birds lay eggs in the spring. Then, they develop a bird nest model and use this model as evidence for how animals can change the environment to meet their needs.	**E.K.8A** Students will demonstrate an understanding of the pattern of seasonal changes on the Earth. (E.K.8A.1)

Mississippi Specific Standard: **E.K.10** Students will demonstrate an understanding of how humans use Earth's resources.

Sunlight & Warmth Unit (Sunny Skies)

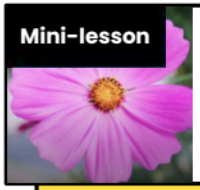
	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Sunlight, Heat, & Earth's Surface Read-Along** How could you walk barefoot across hot pavement without burning your feet?	Students make observations of the pavement heating up after being warmed by the Sun. Then, they design a solution to build a shade structure that can reduce the warming effect of sunlight.	**E.K.8B** Students will demonstrate an understanding that the Sun provides the Earth with heat and light.
Lesson 2	**Sunlight, Warming, & Engineering** How could you warm up a frozen playground?	Students carry out an investigation to test which materials can redirect the light and heat of sunlight. (*This lesson has students increase the warming effect of sunlight on an area.)	**E.K.8B** Students will demonstrate an understanding that the Sun provides the Earth with heat and light.
Lesson 3	**Sunlight & Warmth** Why does it get cold in winter?	Students construct an explanation for why marshmallows melt in one car and not in another car. Then, they conduct a virtual investigation to determine that the warmth of the Sun is the cause of the melted marshmallows.	**E.K.8B** Students will demonstrate an understanding that the Sun provides the Earth with heat and light. **P.K.5A** Students will demonstrate an understanding of the solid and liquid states of matter. (P.K.5A.1)

Mississippi Specific Standard: **P.K.5B** Students will demonstrate an understanding of how solid objects can be constructed from a smaller set.

Plant Traits & Survival Unit (Plant Superpowers)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	✨New!✨ **Plant Traits & Offspring** What will a baby plant look like when it grows up?	Students observe seedlings and adult plants and use their observations to identify the pattern that young plants are similar to their parent plants.	**L.1.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle. (L.1.2.1)
Lesson 2	**Plant Survival & Engineering** Why don't trees blow down in the wind?	Students learn how plants respond to light. They conduct an investigation to compare how the parts of a plant respond to light.	**L.1.1** Students will demonstrate an understanding of the basic needs and structures of plants. (L.1.1.1, L.1.1.2)
Lesson 3	**Plant Movement & Survival Read-Along** What do sunflowers do when you're not looking?	Students learn how plants respond to light. They conduct an investigation to compare how the parts of a plant respond to light.	**L.1.4** Students will demonstrate an understanding of the ways plants adapt to their environment in order to survive. (L.1.4.1)

The following mini-lessons can be used to support Mississippi Science Standards.

Mini-lesson 

L.1.1 (L.1.1.3)

How do flowers bloom in the spring?

Mini-lesson

L.1.2 (L.1.2.2)

Are butterflies the only animals that start out as caterpillars?

***This unit is found under 3rd grade on our site**, but we recommend teaching some lessons in 1st grade if you are following Mississippi Standards.*

Plant Life Cycle & Heredity Unit (Power of Flowers)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Pollination & Plant Reproduction** Why do plants grow flowers?	Students model the structure and function of flower parts that are responsible for creating seeds.	**L.1.3B** Students will demonstrate an understanding of the interdependence of flowering plants and pollinating insects.
Lesson 2	**Seed Dispersal & Plant Life Cycle** Why do plants give us fruit?	Students explore the function of fruits in plants and practice classification.	**L.1.3B** Students will demonstrate an understanding of the interdependence of flowering plants and pollinating insects.
Lesson 3	*We **recommend teaching this in 3rd grade** if following Mississippi Standards.* ***Selection*** *Why are some apples red and some green?*	*Students explore how human beings have developed fruits with specific traits through selection.*	*reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment..*
Lesson 4	*We **recommend teaching this in 3rd grade** if following Mississippi Standards.* ***Selection*** *How could you make the biggest fruit in the world?*	*have modified plants based on our knowledge of how plants change from generation to generation.*	*reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment..*

Mississippi Standards Alignment
1st Grade - Life Science

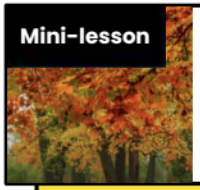
mystery science

***This unit is found under 2nd grade on our site**, but we recommend teaching all lessons in 1st grade if you are following Mississippi Standards.*

Plant Adaptations Unit (Plant Adventures)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	✨New!✨ **Seed Dispersal** How did a tree travel halfway around the world?	Students develop physical models of seed structures. They observe how structure affects the seed's function in dispersing away from the tree.	**L.1.1** Students will demonstrate an understanding of the basic needs and structures of plants. **L.1.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle.
Lesson 2	**Water, Sunlight, & Plant Growth** Could a plant survive without light?	Students conduct an investigation to determine that plants need water and light to grow.	**L.1.1** Students will demonstrate an understanding of the basic needs and structures of plants. **L.1.3A** Students will demonstrate an understanding of what plants need from the environment for growth and repair. (L.1.3A.1)
Lesson 3	**Light, Leaves, & Competition** Why do trees grow so tall?	Students observe that plants require light in order to fully grow and be healthy.	**L.1.4** Students will demonstrate an understanding of the ways plants adapt to their environment in order to survive. (L.1.4.2)
Lesson 4	**Adaptations & Habitat** Should you water a cactus?	Students observe that different plants require different amounts of light and water.	**L.1.4** Students will demonstrate an understanding of the ways plants adapt to their environment in order to survive. (L.1.4.2)
Lesson 5	**Adaptations & Habitat** Where do plants grow best?	Students practice thinking like gardeners, considering what plants need and how a simple habitat can change over time.	**L.1.4** Students will demonstrate an understanding of the ways plants adapt to their environment in order to survive. (L.1.4.2)

The following mini-lessons can be used to support Mississippi Science Standards.


Mini-lesson

L.1.4 (L.1.4.1)

Why do leaves change color in the fall?

Mini-lesson

L.1.4 (L.1.4.1)

Why don't all trees lose their leaves in the fall?

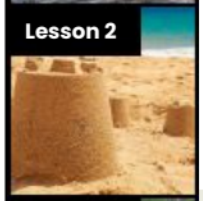
***This unit is found under Kindergarten on our site**, but we recommend teaching all lessons in 1st grade if you are following Mississippi Standards.*

Severe Weather Unit (Wild Weather)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Severe Weather & Preparation Read-Along** How can you get ready for a big storm?	Students obtain information of different types of severe weather to observe and describe how the weather changes during these events and what students can do to prepare and stay safe.	**L.1.9A** Students will demonstrate an understanding of the patterns of weather by describing, recording, and analyzing weather data to answer questions about daily and seasonal weather patterns.
Lesson 2	**Wind & Storms** Have you ever watched a storm?	Students create a simple tool that allows them to observe how hard the wind is blowing. They use this tool to observe weather changes and describe the pattern of faster wind speeds right before a storm.	**L.1.9A** Students will demonstrate an understanding of the patterns of weather by describing, recording, and analyzing weather data to answer questions about daily and seasonal weather patterns.
Lesson 3	**Weather Conditions** How many different kinds of weather are there?	Students obtain information through observations of the weather. They communicate the information by acting as weather watchers and creating drawings of the weather conditions.	**L.1.9A** Students will demonstrate an understanding of the patterns of weather by describing, recording, and analyzing weather data to answer questions about daily and seasonal weather patterns.

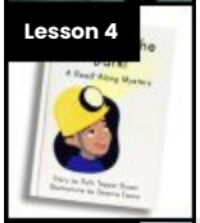
***This unit is found under 2nd grade on our site**, but we recommend teaching all lessons in 1st grade if you are following Mississippi Standards.*

Erosion & Earth's Surface Unit (Work of Water)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Mapping & Earth's Surface Features** If you floated down a river, where would you end up?	Students develop a model of the Earth's surface and use it to discover an important principle about how rivers work: rivers flow downhill, from high places to low places.	**E.1.9B** Students will demonstrate an understanding of models (drawings or maps) to describe how water and land are distributed on Earth. (E.1.9B.1)
Lesson 2 	**Rocks, Sand, & Erosion** Why is there sand at the beach?	Students investigate the effects of rocks tumbling in a river. Based on their observations, they construct an explanation for why rocks on the top of mountains are much bigger than the sand at the beach.	**E.1.9B** Students will demonstrate an understanding of models (drawings or maps) to describe how water and land are distributed on Earth. (E.1.9B.3)
Lesson 3	**Mapping & Severe Weather** Where do flash floods happen?	Students use a model (i.e. a map) to examine the different factors, including the shapes and kinds of land, that contribute to flash floods. They use this to predict where flash floods are most likely to happen.	**E.1.9B** Students will demonstrate an understanding of models (drawings or maps) to describe how water and land are distributed on Earth.
Lesson 4	*We **recommend teaching this in 2nd grade** if following Mississippi Standards.* *What's strong enough to make a canyon?*	*investigate how some Earth events can occur quickly, while others occur slowly.*	*humans use Earth's resources.*
Lesson 5	*We **recommend teaching this in 2nd grade** if following Mississippi Standards.* ***Erosion & Engineering*** *How can you stop a landslide?*	*Students compare multiple solutions for preventing erosion.*	***E.2.10** Students will demonstrate an understanding of how humans use Earth's resources.*

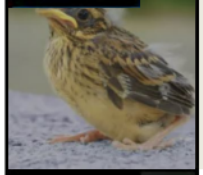
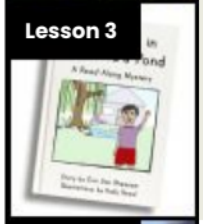
Mississippi Specific Standard: **E.1.10** Students will demonstrate an understanding of human dependence on clean and renewable water resources.

Light, Sound, & Communication Unit (Lights & Sounds)

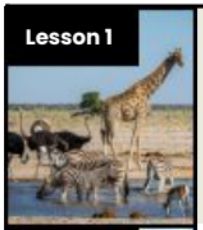
	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Sounds & Vibrations** How do they make silly sounds in cartoons?	Students explore how to make different sounds with everyday objects. They construct an explanation that objects vibrate when they make a sound, and if the vibration stops, the sound stops.	**P.1.6B** Students will demonstrate an understanding of sound.
Lesson 2	**Sounds & Vibrations Read-Along** Where do sounds come from?	Students create three different sound makers and construct an explanation about where the vibrations are happening in each sound experiment.	**P.1.6B** Students will demonstrate an understanding of sound.
Lesson 3	**Light, Materials, Transparent & Opaque** What if there were no windows?	Students investigate the properties of different materials that they can and cannot see through. Then they create a stained glass window using tissue paper to explore how materials interact with light.	**P.1.6A** Students will demonstrate an understanding that light is required to make objects visible.
Lesson 4 	**Light & Illumination Read-Along** Can you see in the dark?	Students look inside a completely dark box to determine if they can see the shape of the object inside. They allow more light into the box to illuminate the object and allow them to see it. Students use their observations explain that objects need light to be seen.	**P.1.6A** Students will demonstrate an understanding that light is required to make objects visible.
Lesson 5	**Light, Communication, & Engineering** How could you send a secret message to someone far away?	Students are presented with the problem that they need to send a message at night, without using noise. They design a solution to create a color-coded message system and communicate with light signals.	**P.1.6A** Students will demonstrate an understanding that light is required to make objects visible.
Lesson 6	**Lights, Sounds, & Communication Read-Along** How do boats find their way in the fog?	Students obtain information about light and sound signals. They analyze different sounds with eyes closed to determine which type of sound they hear.	**P.1.6A** Students will demonstrate an understanding that light is required to make objects visible.

***This unit is found under 1st Grade on our site**, but we recommend teaching some lessons in 2nd grade if you are following Mississippi Standards.*

Animal Traits & Survival Unit (Animal Superpowers)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1 	***Parent & Offspring Traits*** *How can you help a lost baby animal find its parents?*	*Students observe the traits of adult and baby animals in order to construct an explanation that most young animals are like, but not exactly like, their parents.*	***L.K.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle. (L.K.2.4)*
Lesson 2	**Animal Structures & Survival** Why do birds have beaks?	Students investigate how different bird beaks are well suited for eating different kinds of food. They explain which beak would help a particular bird survive in a particular environment.	**L.2.3B** Students will demonstrate an understanding of the interdependence of living things.
Lesson 3 	**Animal Behavior & Offspring Survival Read-Along** Why do baby ducks follow their mother?	Students obtain information about the behaviors of animal parents that help their offspring survive.	**L.2.3B** Students will demonstrate an understanding of the interdependence of living things.
Lesson 4	**Camouflage & Animal Survival** Why are polar bears white?	Students use observations of animal parents and their offspring to construct an explanation about young plants and animals being similar, but not identical, to their parents.	**L.2.3B** Students will demonstrate an understanding of the interdependence of living things.
Lesson 5	***Inheritance & Variation of Traits Read-Along*** *Why do family members look alike?*	*Students identify parts of plants such as roots, branches, and leaves. They evaluate these plant parts and apply that information to design an umbrella that won't blow down in the wind.*	***L.K.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle. (L.K.2.4)*

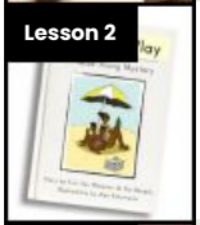
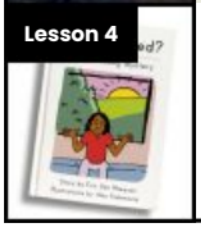
Animal Biodiversity Unit (Animal Adventures)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1 	**Biodiversity & Classification** How many different kinds of animals are there?	Students observe the traits of different animals and use that information to organize them into groups based on their characteristics.	**L.2.1** Students will demonstrate an understanding of the classification of animals based on physical characteristics.
Lesson 2	**Habitat Diversity** Why would a wild animal visit a playground?	Students observe animals, plants, and the physical characteristics of two different habitats. They collect and analyze data to compare the biodiversity between the two habitats.	**L.2.3A** Students will demonstrate an understanding of the interdependence of living things and the environment in which they live. **L.2.4** Students will demonstrate an understanding of the ways animals adapt to their environment in order to survive.
Lesson 3	**Biodiversity, Habitats, & Species** Why do frogs say "ribbit"?	Students identify frogs based on their unique calls and use that information to determine the level of frog species diversity within multiple habitats.	**L.2.3A** Students will demonstrate an understanding of the interdependence of living things and the environment in which they live.
Lesson 4	**Biodiversity & Engineering** How could you get more birds to visit a bird feeder?	Students investigate which kinds of birds are likely to visit a bird feeder based on what they eat and design and build a prototype bird feeder that attracts a specific type of bird.	**L.2.3A** Students will demonstrate an understanding of the interdependence of living things and the environment in which they live. **L.2.3B** Students will demonstrate an understanding of the interdependence of living things.

Mississippi Specific Standard: **L.2.2** Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle.

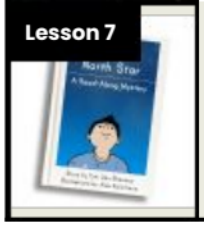
***This unit is found under 1st Grade on our site**, but we recommend teaching all lessons in 2nd grade if you are following Mississippi Standards.*

Day Patterns Unit (Sun & Shadows)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Sun, Shadows, & Daily Patterns** Could a statue's shadow move?	Students observe how shadows change as time passes, or as the Sun moves across the sky. They analyze how to move a light source to change the shape and direction of shadows, constructing an explanation of what causes a shadow to move.	**E.2.8** Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. (E.2.8.5)
Lesson 2 	**Sun, Shadows, & Daily Patterns Read-Along** What does your shadow do when you're not looking?	Students conduct an investigation to gather information about how their shadow changes throughout the day.	**E.2.8** Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. (E.2.8.5)
Lesson 3	**Sun & Daily Patterns** How can the Sun help you if you're lost?	Students develop a Sun Finder, a model of the Sun's movement across the sky. They use this model to reason about how the Sun can help guide them during the day.	**E.2.8** Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. (E.2.8.5)
Lesson 4 	**Daylight & Seasonal Patterns Read-Along** Why do you have to go to bed early in the summer?	Students obtain information about the seasonal patterns of sunrise and sunset.	**E.2.8** Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. (E.2.8.2)

***This unit is found under 1st Grade on our site**, but we recommend teaching all lessons in 2nd grade if you are following Mississippi Standards.*

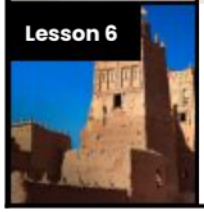
Night Patterns Unit (Moon & Stars)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 5	✨New!✨ **Moon Phases & Patterns** When can you see the full moon?	Students record observations of the Moon's shape using a series of photos collected over the course of four weeks. Using this information, students discover that the Moon follows a cyclical pattern, which they can use to predict when a full moon will appear.	**E.2.8** Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. (E.2.8.3, E.2.8.5)
Lesson 6	**Stars & Daily Patterns** Why do stars come out at night?	Students develop and use a model of the Big Dipper in the night sky. After conducting a simple investigation, students construct an explanation for why stars are only visible in the night sky.	**E.2.8** Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. (E.2.8.1)
Lesson 7 	**Stars & Seasonal Patterns Read-Along** How can stars help you if you get lost?	Students observe that groups of stars in the sky form a pattern: constellations. Even though the Big Dipper changes its spot in the sky in different seasons, it always points to the North Star.	**E.2.8** Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. (E.2.8.3)

Erosion & Earth's Surface Unit (Work of Water)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	*We **recommend teaching this in 1st grade** if following Mississippi Standards.* *If you floated down a river, where would you end up?*	*surface and use it to discover an important principle about how rivers work: rivers flow downhill, from high places to low places.*	***E.1.9** Students will demonstrate an understanding of models (drawings or maps) to describe how water and land are distributed on Earth.*
Lesson 2	*We **recommend teaching this in 1st grade** if following Mississippi Standards.* ***Rocks, Sand, & Erosion*** *Why is there sand at the beach?*	*observations, they construct an explanation for why rocks on the top of mountains are much bigger than the sand at the beach.*	***E.1.9** Students will demonstrate an understanding of models (drawings or maps) to describe how water and land are distributed on Earth.*
Lesson 3	*We **recommend teaching this in 1st grade** if following Mississippi Standards.* ***Mapping & Severe Weather*** *Where do flash floods happen?*	*the shapes and kinds of land, that contribute to flash floods. They use this to predict where flash floods are most likely to happen.*	***E.1.9** Students will demonstrate an understanding of models (drawings or maps) to describe how water and land are distributed on Earth.*
Lesson 4	**Erosion, Earth's Surface, & Landforms** What's strong enough to make a canyon?	Students create a model landform and investigate how some Earth events can occur quickly, while others occur slowly.	**E.2.10** Students will demonstrate an understanding of how humans use Earth's resources. (E.2.10.4)
Lesson 5	**Erosion & Engineering** How can you stop a landslide?	Students compare multiple solutions for preventing erosion.	**E.2.10** Students will demonstrate an understanding of how humans use Earth's resources. (E.2.10.5)

Material Properties Unit (Material Magic)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Materials, Properties, & Engineering** Why do we wear clothes?	Students investigate different material properties, such as flexibility and absorbency, and use those properties to design and build a hat that protects them from the sun.	**P.2.5** Students will demonstrate an understanding of the properties of matter.
Lesson 2	**Classify Materials, Insulators, and Properties** Can you really fry an egg on a hot sidewalk?	Students conduct an investigation of conductors and insulators in order to determine which are best suited for allowing people to handle hot items.	**P.2.5** Students will demonstrate an understanding of the properties of matter.
Lesson 3	**Heating, Cooling, & Phases of Matter** Why are so many toys made out of plastic?	Student conduct an investigation of different materials in order to determine which are most and least easily melted.	**P.2.5** Students will demonstrate an understanding of the properties of matter.
Lesson 4	**Inventions & Engineering** What materials might be invented in the future?	Students design a new invention that takes advantage of the unique properties of a futuristic material.	**P.2.5** Students will demonstrate an understanding of the properties of matter.
Lesson 5	**Materials, Properties, & Engineering** Could you build a house out of paper?	Students construct an evidence- based account of how a structure built of paper can be disassembled and rebuilt in new ways.	**P.2.5** Students will demonstrate an understanding of the properties of matter.
Lesson 6 	**Soil Properties** How do you build a city out of mud?	Students conduct an investigation where they examine three different soil models. They use this information to determine which type of soil has the properties that will result in the best mud that can be used to build a house.	**E.2.10** Students will demonstrate an understanding of how humans use Earth's resources.

***This unit is found under Kindergarten on our site**, but we recommend teaching all lessons in 2nd grade if you are following Mississippi Standards.*

Pushes & Pulls Unit (Force Olympics)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Pushes & Pulls** What's the biggest excavator?	Students observe different machines and use those observations as evidence for why machines make work easier.	**Foundational for P.2.6** Students will demonstrate an understanding of how the motion of objects is affected by pushes, pulls, and friction on an object.
Lesson 2	**Pushes, Pulls, & "Work Words" Read-Along** Why do builders need so many big machines?	Students observe construction equipment being used in different ways to move objects.	**Foundational for P.2.6** Students will demonstrate an understanding of how the motion of objects is affected by pushes, pulls, and friction on an object.
Lesson 3	**Motion, Speed, & Strength** How can you knock down a wall made of concrete?	Students carry out an investigation to determine how far back they should pull a model wrecking ball to knock down a wall, but not the houses behind it.	**P.2.6** Students will demonstrate an understanding of how the motion of objects is affected by pushes, pulls, and friction on an object. (P.2.6.1)
Lesson 4	**Speed & Direction of Force Read-Along** How can you knock down the most bowling pins?	Students play a game of bumper bowling to observe the way that objects can move in straight lines, zigzags, and back and forth.	**P.2.6** Students will demonstrate an understanding of how the motion of objects is affected by pushes, pulls, and friction on an object. (P.2.6.1)
Lesson 5	**Direction of Motion & Engineering** How can we protect a mountain town from falling rocks?	Students conduct an investigation of how to protect a town from a falling boulder. They design a solution to safely guide the direction of the boulder away from the town.	**P.2.6** Students will demonstrate an understanding of how the motion of objects is affected by pushes, pulls, and friction on an object. (P.2.6.3)
Lesson 6	**Forces & Engineering Read-Along** How could you invent a trap?	Students define a problem they would like to solve and then design a solution using what they know about the locations of objects and how they can move.	**P.2.6** Students will demonstrate an understanding of how the motion of objects is affected by pushes, pulls, and friction on an object. (P.2.6.3)

Fossils, Animal Survival, & Heredity Unit (Animals Through Time)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Habitats, Fossils, & Environments Over Time** Where can you find whales in a desert?	Students explore the idea that the rock under our feet sometimes contains fossils, and investigate how these fossils reveal changes in habitats through time.	**L.3.4** Students will demonstrate an understanding of how adaptations allow animals to satisfy life needs and respond both physically and behaviorally to their environment.
Lesson 2	✂️ **Revision Coming Spring '23** ✂️ **Fossil Evidence & Classification** How do we know what dinosaurs looked like?	Students learn how we can infer what the outside of an animal looked like by using clues about their skeleton.	**L.3.4** Students will demonstrate an understanding of how adaptations allow animals to satisfy life needs and respond both physically and behaviorally to their environment.
Lesson 3	**Fossil Evidence, Trace Fossils, & Animal Behavior** Can you outrun a dinosaur?	Students learn how fossilized animal tracks can tell us a great deal about the animals that left them.	**L.3.4** Students will demonstrate an understanding of how adaptations allow animals to satisfy life needs and respond both physically and behaviorally to their environment.

Fossils, Animal Survival, & Heredity Unit continues on the next page

Fossils, Animal Survival, & Heredity Unit (Animals Through Time)

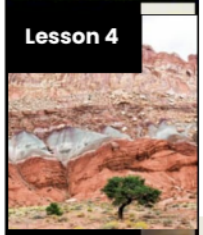
	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 4	**Trait Variation, Inheritance, & Artificial Selection** What kinds of animals might there be in the future?	Students analyze the traits of parent dogs and their offspring, constructing an explanation about which traits a puppy gets from each parent.	**L.3.2** Students will demonstrate an understanding that through reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment..
Lesson 5	**Trait Variation, Natural Selection, & Survival** Can selection happen without people?	Students compare the structures of lizards that live on an island. They simulate multiple generations of these lizards, and analyze and interpret the data to understand how these structures aid in their survival.	**L.3.1** Students will demonstrate an understanding of internal and external structures in plants and animals and how they relate to their growth, survival, behavior, and reproduction within an environment. **L.3.2** Students will demonstrate an understanding that through reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment. **L.3.4** Students will demonstrate an understanding of how adaptations allow animals to satisfy life needs and respond both physically and behaviorally to their environment.
Lesson 6	**Animal Groups & Survival** Why do dogs wag their tails?	Students observe animals that live in groups in order to obtain, evaluate, and communicate information about animal social behavior. Students use evidence to show how animals form groups to help them survive.	**L.3.4** Students will demonstrate an understanding of how adaptations allow animals to satisfy life needs and respond both physically and behaviorally to their environment.
Lesson 7	**Traits & Environmental Variation** How long can people (and animals) survive in outer space?	Students measure and compare their own physical traits (arm strength, balance, and height) and analyze the information to construct an explanation for how the environment can influence traits.	**L.3.2** Students will demonstrate an understanding that through reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment.

Plant Life Cycle & Heredity Unit (Power of Flowers)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	*We **recommend teaching this in 1st grade** if following Mississippi Standards.* ***Pollination & Plant Reproduction*** *Why do plants grow flowers?*	*Students model the structure and function of flower parts that are responsible for creating seeds.*	***L.1.3B** Students will demonstrate an understanding of the interdependence of flowering plants and pollinating insects.*
Lesson 2	*We **recommend teaching this in 1st grade** if following Mississippi Standards.* ***Seed Dispersal & Plant Life Cycle*** *Why do plants give us fruit?*	*Students explore the function of fruits in plants and practice classification.*	***L.1.3B** Students will demonstrate an understanding of the interdependence of flowering plants and pollinating insects.*
Lesson 3	**🌅Lesson Sunset Summer '23 🌅** **Trait Variation, Inheritance, & Artificial Selection** Why are some apples red and some green?	Students explore how human beings have developed fruits with specific traits through selection.	**L.3.2** Students will demonstrate an understanding that through reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment..
Lesson 4	**Trait Variation, Inheritance, & Artificial Selection** How could you make the biggest fruit in the world?	Students investigate how human beings have modified plants based on our knowledge of how plants change from generation to generation.	**L.3.2** Students will demonstrate an understanding that through reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment..

***This unit is found under 4th grade on our site**, but we recommend teaching all lessons in 3rd grade if you are following Mississippi Standards.*

Earth's Features & Processes Unit (The Birth of Rocks)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Volcanoes & Patterns of Earth's Features** Could a volcano pop up where you live?	Students use coordinates to develop a map of volcanoes to discover a pattern of where volcanoes exist on Earth. Students identify the pattern of volcanoes in the "Ring of Fire."	**E.3.7B** Students will demonstrate an understanding of the composition of Earth and the processes which change Earth's landforms. (E.3.7B.2)
Lesson 2	**Volcanoes & Rock Cycle** Why do some volcanoes explode?	Students investigate the properties of thin and thick lava by attempting to create air bubbles. Students realize that thick lava will cause a volcano to explode, while thin lava will not.	**E.3.7B** Students will demonstrate an understanding of the composition of Earth and the processes which change Earth's landforms. (E.3.7B.2)
Lesson 3	**Weathering & Erosion** Will a mountain last forever?	Students make observations of the effects of weathering to discover that rocks will become rounded and break into small pieces when they tumble down a mountain.	**E.3.7B** Students will demonstrate an understanding of the composition of Earth and the processes which change Earth's landforms. (E.3.7B.3) **E.3.7A** Students will demonstrate an understanding of the various processes involved in the rock cycle, superposition of rock layers, and fossil formation.
 Lesson 4	✨New ✨ **Sedimentary Rock & Fossils** What did your town look like 100 million years ago?	Students create a model canyon and use the pattern of fossils found in each rock layer to support the explanation that the landscape has changed many times over millions of years.	**E.3.7A** Students will demonstrate an understanding of the various processes involved in the rock cycle, superposition of rock layers, and fossil formation. (E.3.7A.1, E.3.7A.3) **E.3.10** Students will demonstrate an understanding that all materials, energy, and fuels that humans use are derived from natural sources.
Lesson 5	**Erosion, Natural Hazards, & Engineering** How could you survive a landslide?	Students generate multiple possible solutions to protect homes from a landslide. Students realize that there are many causes for the erosion that causes rocks to fall in landslides.	**E.3.9** Students will demonstrate an understanding of how the Earth's systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes. (E.3.9.2)

***This unit is found under 5th Grade on our site**, but we recommend teaching some lessons in 3rd grade if you are following Mississippi Standards.*

Water Cycle & Earth's Systems Unit (Watery Planet)

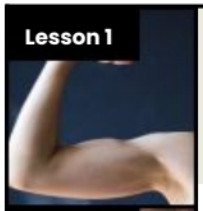
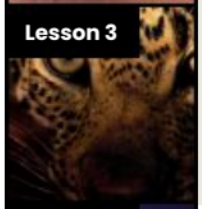
	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Hydrosphere & The Roles of Water** How much water is in the world?	Students analyze and interpret data from world maps to determine the relative amounts of fresh, salt, and frozen water. Students figure out that while the Earth has a lot of water, most of Earth's water is not fresh or accessible.	**E.3.9** Students will demonstrate an understanding of how the Earth's systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes. (E.3.9.3)
Lesson 2	*We **recommend teaching this in 5th grade** if following Mississippi Standards.* ***Mixtures & Solutions*** *How much salt is in the ocean?*	*vanish when dissolved in water. Students measure and graph quantities to provide evidence that the salt is still in the solution, even though we can't see it.*	***P.5.5C** Students will demonstrate an understanding of the difference between physical and chemical changes. (P.5.5C.2, P.5.5C.3)*
Lesson 3	**Groundwater as a Natural Resource** When you turn on the faucet, where does the water come from?	Students learn most people get fresh water from underground sources. Students determine the best place to settle a town by considering features of the landscape & the characteristics of the plants that thrive there.	**E.3.9** Students will demonstrate an understanding of how the Earth's systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes. (E.3.9.1, E.3.9.2)
Lesson 4	*We **recommend teaching this in 4th grade** if following Mississippi Standards.* ***Water Cycle*** *Can we make it rain?*	*influences evaporation and condensation. Students figure out that higher ocean temperatures lead to more evaporation, thus leading to more rain.*	***E.4.9A** Students will demonstrate an understanding of how the water cycle is propelled by the sun's energy.*
Lesson 5	*We **recommend teaching this in 5th grade** if following Mississippi Standards.* ***Natural Disasters & Engineering*** *How can you save a town from a hurricane?*	*design solutions using different types of flood protection. They realize flooding is caused by severe rainfall generated by hurricanes. Hurricanes are created where ocean temperatures are warm.*	***E.5.10** Students will demonstrate an understanding of the effects of human interaction with Earth and how Earth's natural resources can be protected and conserved. (E.5.10.2)*

Forces, Motion, & Magnets Unit (Invisible Forces)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Balanced & Unbalanced Forces** How could you win a tug-of-war against a bunch of adults?	Students develop a mental model of the nature of forces and motion and use that model to explain the behavior of an elastic jumper.	**P.3.6** Students will demonstrate an understanding of magnets and the effects of pushes, pulls, and friction on the motion of objects. (P.3.6.1, P.3.6.2)
Lesson 2	**Balanced Forces & Engineering** What makes bridges so strong?	Students develop and design a bridge to be as strong as possible while working with limited materials.	**P.3.6** Students will demonstrate an understanding of magnets and the effects of pushes, pulls, and friction on the motion of objects. (P.3.6.1, P.3.6.2)
Lesson 3	✂️ **Revision Coming Summer '23** ✂️ **Friction & Pattern of Motion** How can you go faster down a slide?	Students plan and carry out investigations of the behaviors of different materials as they slide past one another.	**P.3.6** Students will demonstrate an understanding of magnets and the effects of pushes, pulls, and friction on the motion of objects. (P.3.6.1, P.3.6.2)
Lesson 4	**Magnets & Forces** What can magnets do?	Students investigate the properties of magnets and the fact that they exert forces that act at a distance.	**P.3.6** Students will demonstrate an understanding of magnets and the effects of pushes, pulls, and friction on the motion of objects. (P.3.6.3)
Lesson 5	**Magnets & Engineering** How can you unlock a door using a magnet?	Students investigate magnetic attraction and repulsion, and design a magnetic lock in the hands-on activity.	**P.3.6** Students will demonstrate an understanding of magnets and the effects of pushes, pulls, and friction on the motion of objects. (P.3.6.4)

Mississippi Specific Standard: **P.3.5** Students will demonstrate an understanding of the physical properties of matter to explain why matter can change states between a solid, liquid, or gas dependent upon the addition or removal of heat.

Human Body, Vision, & The Brain Unit (Human Machine)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
 Lesson 1	**Muscles & Skeleton** Why do your biceps bulge?	Students construct a model of the human hand to explain how muscles pull on bones to create movement.	**L.4.1** Students will demonstrate an understanding of the organization, functions, and interconnections of the major human body systems.
Lesson 2	**Light, Eyes, & Vision** What do people who are blind see?	Students develop a working model of an eye. They use the model to reason about how light reflects off an object and into the eye, helping an organism process information from the environment.	**P.4.6B** Students will demonstrate an understanding of the properties of light as forms of energy.
 Lesson 3	**Structure & Function of Eyes** How can some animals see in the dark?	Students use their eye model to discover that the pupil controls the amount of light let into the eye. In the dark, pupils get larger to let in more light.	**P.4.6B** Students will demonstrate an understanding of the properties of light as forms of energy.
Lesson 4	**Brain, Nerves, & Information Processing** How does your brain control your body?	Students investigate how their own brain works by testing their reflexes. They discover that the brain receives information from the senses, processes the information, and sends signals to the muscles to enable movement.	**L.4.1** Students will demonstrate an understanding of the organization, functions, and interconnections of the major human body systems.

The following mini-lessons can be used to support Mississippi Science Standards.

Mini-lesson

L.4.1

Why does our skeleton have so many bones?

Mini-lesson

L.4.1

What would happen if you didn't have a skull?

Mini-lesson

L.4.1

Why does the heart pump blood?

***This unit is found under 3rd Grade on our site**, but we recommend teaching all lessons in 4th grade if you are following Mississippi Standards.*

Life Cycles Unit (Circle of Life)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	✨New ✨ **Animal Life Cycles** How is your life like an alligator's life?	Students create models of several different animal life cycles and compare them to one another. They use these models to discover the pattern that all animals are born, grow, can have babies, and eventually die.	**L.4.2** Students will demonstrate an understanding of life cycles, including familiar plants and animals (e.g., reptiles, amphibians, or birds). (L.4.2.1, L.4.2.2)
Lesson 2	**Environmental Change & Engineering** What's the best way to get rid of mosquitoes?	Students obtain and evaluate information about mosquitoes from different sources. They analyze and interpret information about the mosquito life cycle to reduce the number of mosquitoes that live in a certain area.	**L.4.2** Students will demonstrate an understanding of life cycles, including familiar plants and animals (e.g., reptiles, amphibians, or birds). (L.4.2.1, L.4.2.2)
Lesson 3	✨New ✨ **Plant Life Cycles** Why are there so many different kinds of flowers?	Students play a game that models the stages of the plant life cycle. After playing the game students use the model to show how changes to one part of the life cycle affect all other stages.	**L.4.2** Students will demonstrate an understanding of life cycles, including familiar plants and animals (e.g., reptiles, amphibians, or birds). (L.4.2.1, L.4.2.2)

***This unit is found under 3rd Grade on our site**, but we recommend teaching all lessons in 4th grade if you are following Mississippi Standards.*

Weather & Climate Unit (Stormy Skies)

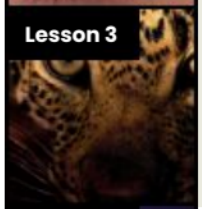
	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Water Cycle & Phases of Matter** Where do clouds come from?	Students obtain and combine information that water can change from liquid to gas, but that it is always made of tiny drops. Clouds are made of water that has evaporated.	**E.4.9A** Students will demonstrate an understanding of how the water cycle is propelled by the sun's energy. (E4.9A.1)
Lesson 2	**Local Weather Patterns & Weather Prediction** How can we predict when it's going to storm?	Students make observations of clouds and develop a tool to make predictions about what kind of weather might happen next.	**E.4.9B** Students will demonstrate an understanding of weather and climate patterns. (E4.9B.1)
Lesson 3	✨New ✨ **Seasonal Weather Patterns** Where's the best place to build a snow fort?	Students gather winter temperature data from three different towns. They represent the data in a table to compare the weather and decide which town is the best candidate to host a snow fort festival in future years.	**E.4.9B** Students will demonstrate an understanding of weather and climate patterns. (E4.9B.1)
Lesson 4	**Climate, Geography, & Global Weather Patterns** Why are some places always hot?	Students obtain and combine information to describe the different climate regions of the world.	**E.4.9B** Students will demonstrate an understanding of weather and climate patterns. (E4.9B.2)
Lesson 5	**Natural Hazards & Engineering** How can you keep a house from blowing away in a windstorm?	Students design and build solutions that reduce the hazards associated with strong winds that could damage buildings.	**E.4.9C** Students will demonstrate an understanding of how natural processes and human activities affect the features of Earth's landforms and oceans. (E4.9C.5)

***This unit is found under 5th Grade on our site**, but we recommend teaching somel lessons in 4th grade if you are following Mississippi Standards.*

Water Cycle & Earth's Systems Unit (Watery Planet)

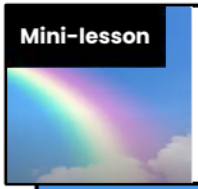
	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	*We **recommend teaching this in 3rd grade** if following Mississippi Standards.* ***Hydrosphere & The Roles of Water*** *How much water is in the world?*	*amounts of fresh, salt, and frozen water. Students figure out that while the Earth has a lot of water, most of Earth's water is not fresh or accessible.*	*Earth's systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes. (E.3.9.1, E.3.9.2)*
Lesson 2	*We **recommend teaching this in 5th grade** if following Mississippi Standards.* ***Mixtures & Solutions*** *How much salt is in the ocean?*	*vanish when dissolved in water. Students measure and graph quantities to provide evidence that the salt is still in the solution, even though we can't see it.*	***P.5.5C** Students will demonstrate an understanding of the difference between physical and chemical changes. (P.5.5C.2, P.5.5C.3)*
Lesson 3	*We **recommend teaching this in 3rd grade** if following Mississippi Standards.* *When you turn on the faucet, where does the water come from?*	*Students determine the best place to settle a town by considering features of the landscape & the characteristics of the plants that thrive there.*	*Earth's systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes. (E.3.9.1, E.3.9.2)*
Lesson 4	**Water Cycle** Can we make it rain?	Students create a model of the ocean and sky to investigate how temperature influences evaporation and condensation. Students figure out that higher ocean temperatures lead to more evaporation, thus leading to more rain.	**E.4.9A** Students will demonstrate an understanding of how the water cycle is propelled by the sun's energy. (E4.9A.1)
Lesson 5	*We **recommend teaching this in 5th grade** if following Mississippi Standards.* ***Natural Disasters & Engineering*** *How can you save a town from a hurricane?*	*design solutions using different types of flood protection. They realize flooding is caused by severe rainfall generated by hurricanes. Hurricanes are created where ocean temperatures are warm.*	***E.5.10** Students will demonstrate an understanding of the effects of human interaction with Earth and how Earth's natural resources can be protected and conserved. (E.5.10.2)*

Human Body, Vision, & The Brain Unit (Human Machine)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	***Muscles & Skeleton*** *Why do your biceps bulge?*	*Students construct a model of the human hand to explain how muscles pull on bones to create movement.*	***L.4.1*** *Students will demonstrate an understanding of the organization, functions, and interconnections of the major human body systems.*
Lesson 2	**Light, Eyes, & Vision** What do people who are blind see?	Students develop a working model of an eye. They use the model to reason about how light reflects off an object and into the eye, helping an organism process information from the environment.	**P.4.6B** Students will demonstrate an understanding of the properties of light as forms of energy.
Lesson 3 	**Structure & Function of Eyes** How can some animals see in the dark?	Students use their eye model to discover that the pupil controls the amount of light let into the eye. In the dark, pupils get larger to let in more light.	**P.4.6B** Students will demonstrate an understanding of the properties of light as forms of energy.
Lesson 4	***Brain, Nerves, & Information Processing*** *How does your brain control your body?*	*Students investigate how their own brain works by testing their reflexes. They discover that the brain receives information from the senses, processes the information, and sends signals to the muscles to enable movement.*	***L.4.1*** *Students will demonstrate an understanding of the organization, functions, and interconnections of the major human body systems.*

The following mini-lessons can be used to support Mississippi Science Standards.

Mini-lesson



P.4.6B

How is a rainbow made?

Mini-lesson

P.4.6B

Why is snow white?

Sound, Waves, & Communication Unit (Waves of Sound)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Sound, Vibration, & Engineering** How far can a whisper travel?	Students investigate sound energy using paper cup telephones. Students figure out that sound is a vibration that can travel through a medium.	**P.4.6C** Students will demonstrate an understanding of the properties of sound as a form of energy. (P.4.6C.1)
Lesson 2	**Sound & Vibrations** What would happen if you screamed in outer space?	Students construct a model of sound vibrations to explain how air is a medium that sound vibrations travel through.	**P.4.6C** Students will demonstrate an understanding of the properties of sound as a form of energy. (P.4.6C.1)
Lesson 3	**Sound Waves & Wavelength** Why are some sounds high and some sounds low?	Students make observations of vibrations and sound waves to discover that high pitch sounds vibrate faster and have short wavelengths and low pitch sounds vibrate slower and have long wavelengths.	**P.4.6C** Students will demonstrate an understanding of the properties of sound as a form of energy. (P.4.6C.2)

The following mini-lessons can be used to support Mississippi Science Standards.

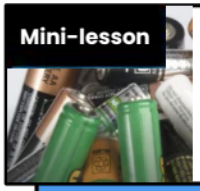
P.4.6C
(P.4.6C.3)

How do phones work?

Energy, Energy Transfer, & Electricity Unit (Energizing Everything)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 6	**Electrical Energy** What if there were no electricity?	Students design a flashlight with an on/off switch, using batteries, flights, and tin foil. Students figure out that electricity can be transformed to other forms of energy, such as movement, light, and heat.	**P.4.6A** Students will demonstrate an understanding of the common sources and uses of heat and electric energy and the materials used to transfer heat and electricity.
Lesson 7	**Heat Energy & Energy Transfer** How long did it take to travel across the country before cars and planes?	Students build a paper spinner and conduct an investigation to explain how heat makes things move. Students realize that heat energy can be transformed into motion energy using a turbine.	**P.4.6A** Students will demonstrate an understanding of the common sources and uses of heat and electric energy and the materials used to transfer heat and electricity.
Lesson 8	**Renewable Energy & Natural Resources** Where does energy come from?	Students evaluate the advantages and disadvantages of wind, water, and solar energy to power a town. Students obtain and evaluate information about the needs of each source of energy and analyze and interpret data about the town's resources.	**E.4.10** Students will demonstrate an understanding of the various sources of energy used for human needs along with their effectiveness and possible impacts. (E.4.10.1, E.4.10.2)

The following mini-lessons can be used to support Mississippi Science Standards.


Mini-lesson

P.4.6A

How do batteries work?

Ecosystems & The Food Web Unit (Web of Life)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Food Chains, Predators, Herbivores & Carnivores** Why would a hawk move to New York City?	Students construct models of food chains by linking cards discovering that different interrelationships exist between organisms.	**L.5.3B** Students will demonstrate an understanding of a healthy ecosystem with a stable web of life and the roles of living things within a food chain and/or food web, including producers, primary and secondary consumers, and decomposers.
Lesson 2	**Plant Needs: Air & Water** What do plants eat?	Students conduct an investigation and interpret data and figure out that water and air account for a plant's weight.	**L.5.3A** Students will demonstrate an understanding of photosynthesis and the transfer of energy from the sun into chemical energy necessary for plant growth and survival.
Lesson 3	**Decomposers & Matter Cycle** Where do fallen leaves go?	**L.5.3B** Students will demonstrate an understanding of a healthy ecosystem with a stable web of life and the roles of living things within a food chain and/or food web, including producers, primary and secondary consumers, and decomposers.	**L.5.3B** Students will demonstrate an understanding of a healthy ecosystem with a stable web of life and the roles of living things within a food chain and/or food web, including producers, primary and secondary consumers, and decomposers.
Lesson 4	**Decomposers, Nutrients, & Matter Cycle** Do worms really eat dirt?	Students make observations of worms to realize that worms act as decomposers to eat dead matter in an ecosystem and cycle nutrients into the soil.	**L.5.3B** Students will demonstrate an understanding of a healthy ecosystem with a stable web of life and the roles of living things within a food chain and/or food web, including producers, primary and secondary consumers, and decomposers.

Ecosystems & The Food Web Unit continues on the next page

Ecosystems & The Food Web Unit (Web of Life)

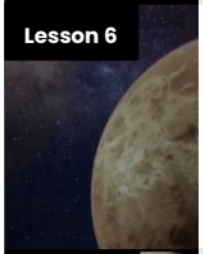
	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 5	**Ecosystems & Matter Cycle** Why do you have to clean a fish tank but not a pond?	Students develop a model of a pond ecosystem and realize that interrelationships exist between decomposers, plants, and animals. Students discover that each organism must be in balance for the pond ecosystem to function.	**L.5.3B** Students will demonstrate an understanding of a healthy ecosystem with a stable web of life and the roles of living things within a food chain and/or food web, including producers, primary and secondary consumers, and decomposers.
	Coming soon!	A new lesson is in the works!	**E.5.10** Students will demonstrate an understanding of the effects of human interaction with Earth and how Earth's natural resources can be protected and conserved. (E.5.10.1)
Lesson 6	**Food Webs & Flow of Energy** Why did the dinosaurs go extinct?	Students develop a model of a dinosaur food web. Students realize that blocking the sun's energy would have disastrous effects on the organisms that rely on this energy in the food web and cause the extinction of some entire species.	**L.5.3B** Students will demonstrate an understanding of a healthy ecosystem with a stable web of life and the roles of living things within a food chain and/or food web, including producers, primary and secondary consumers, and decomposers.

Stars & The Solar System Unit (Spaceship Earth)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Day, Night, & Earth's Rotation** How fast does the Earth spin?	Students model the rotation of the Earth and investigate why the Sun looks like it's moving across the sky. Using evidence they gathered in the investigation, students build a model that explains how the Earth's rotation around its own axis causes the Sun to appear to rise and set.	**E.5.8B** Students will demonstrate an understanding of the principles that govern moon phases, day and night, appearance of objects in the sky, and seasonal changes. (E.5.8B.4)
Lesson 2	**Earth's Rotation & Daily Shadow Patterns** Who set the first clock?	Students make a shadow clock (sundial) and investigate how the direction and length of shadows change with the position of the light shining on the sundial. Students realize that the Sun's position in the sky can be used to tell the time of day.	**E.5.8B** Students will demonstrate an understanding of the principles that govern moon phases, day and night, appearance of objects in the sky, and seasonal changes. (E.5.8B.4)
Lesson 3	**Seasonal Changes & Shadow Length** How can the Sun tell you the season?	Students examine photos taken at different times of year and figure out the time of year that each photo was taken. Students discover that the Sun's path changes with the seasons, as does the time of sunrise and sunset. The Sun is always highest in the sky at noon, but that height changes with the season.	**E.5.8B** Students will demonstrate an understanding of the principles that govern moon phases, day and night, appearance of objects in the sky, and seasonal changes. (E.5.8B.2, E.5.8A.3)
Lesson 4	**Seasonal Patterns & Earth's Orbit** Why do the stars change with the seasons?	Students build a model of the universe and use it to explain why different stars are visible at different times of year. Using evidence from this model, students make an argument that supports the claim that the Earth orbits the Sun.	**E.5.8A** Students will demonstrate an understanding of the locations of objects in the universe. (E.5.8A.3)

Stars & The Solar System Unit continues on the next page

Stars & The Solar System Unit (Spaceship Earth)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 5	**Moon Phases, Lunar Cycle** Why does the Moon change shape?	Students use a physical model of the Sun and Moon to investigate how the Moon's phase relates to its position relative to the Sun. Students notice that the Moon's phases repeat in a predictable pattern.	**E.5.8B** Students will demonstrate an understanding of the principles that govern moon phases, day and night, appearance of objects in the sky, and seasonal changes. (E.5.8B.1 , E.5.8B.2)
Lesson 6 	✨New!✨ **Solar System & Sun Brightness** How can the Sun help us explore other planets?	Students gather evidence to support an argument that the apparent brightness of the Sun is dependent upon an observer's distance from the Sun. They construct a model of the solar system and gather observations of the Sun's apparent brightness from each planet within their model.	**E.5.8A** Students will demonstrate an understanding of the locations of objects in the universe. (E.5.8A.1, E.5.8A.2)
Lesson 7	**Gravity** Why is gravity different on other planets?	Using mathematics and computational thinking, students calculate how high they could jump on planets and moons that have stronger or weaker gravity than Earth. Students analyze and interpret this data to construct an explanation for why the amount of gravity is different on other planets.	**P.5.6** Students will demonstrate an understanding of the factors that affect the motion of an object through a study of Newton's Laws of Motion. (P.5.6.1) **E.5.8A** Students will demonstrate an understanding of the locations of objects in the universe. (E.5.8A.1)
Lesson 8	**Star Brightness & Habitable Planets** Could there be life on other planets?	Students discover that the Earth is in the "Goldilocks Zone" — a distance from the Sun with the right amount of light and heat for life to exist. Students evaluate other solar systems, comparing their stars to our Sun. Based on their analysis, students plan a space mission to a planet with conditions similar to those on Earth.	**E.5.8A** Students will demonstrate an understanding of the locations of objects in the universe. (E.5.8A.2)

***This unit is found under 4th grade on our site**, but we recommend teaching some lessons in 5th grade if you are following Mississippi Standards.*

Energy, Energy Transfer, & Electricity Unit (Energizing Everything)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Speed & Energy** How is your body similar to a car?	Students learn about stored energy and about the relationship between motion and energy. Students build models of an amusement park ride and discover how energy can be stored in materials. Stored energy can be converted to speed.	**P.5.6** Students will demonstrate an understanding of the factors that affect the motion of an object through a study of Newton's Laws of Motion.
Lesson 2	**Collisions & Energy Transfer** What makes roller coasters go so fast?	Students build a model of a roller coaster and carry out an investigation using marbles. Students learn that lifting an object up stores energy in the object. When the object falls, that stored energy is released. They realize that energy is transferred when objects collide.	**P.5.6** Students will demonstrate an understanding of the factors that affect the motion of an object through a study of Newton's Laws of Motion.
Lesson 3	✂️ **Revision Coming Spring 2023** ✂️ **Energy Transfer & Engineering** Why is the first hill of a roller coaster always the highest?	Using a model roller coaster, students conduct an investigation to determine that a hill's height determines the amount of energy stored in a marble at the top of the hill. Students figure out that the greater the height of an object, the more energy it stores and the faster it will move when released or dropped.	**P.5.6** Students will demonstrate an understanding of the factors that affect the motion of an object through a study of Newton's Laws of Motion.
Lesson 4	**Energy Transfer & Engineering** Could you knock down a building using only dominoes?	Students experiment with ways to store and release energy, creating the beginning of a chain reaction machine with a lever and a ramp. Students figure out that a domino standing on end is storing energy, only requiring a small amount of energy (a tiny push) to release the stored energy.	**P.5.6** Students will demonstrate an understanding of the factors that affect the motion of an object through a study of Newton's Laws of Motion.
Lesson 5	**Energy Transfer & Engineering** Can you build a chain reaction machine?	Students continue to build a chain reaction machine — identifying a goal, brainstorming and testing multiple ideas, and determining an optimal solution. The chain reaction machine uses multiple components to transfer energy from one part to the next.	**P.5.6** Students will demonstrate an understanding of the factors that affect the motion of an object through a study of Newton's Laws of Motion.

***This unit is found under 5th Grade on our site**, but we recommend teaching mostl lessons in 4th grade if you are following Mississippi Standards.*

Water Cycle & Earth's Systems Unit (Watery Planet)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	*We **recommend teaching this in 3rd grade** if following Mississippi Standards.* ***Hydrosphere & The Roles of Water*** *How much water is in the world?*	*amounts of fresh, salt, and frozen water. Students figure out that while the Earth has a lot of water, most of Earth's water is not fresh or accessible.*	*Earth's systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes. (E.3.9.1, E.3.9.2)*
Lesson 2	**Mixtures & Solutions** How much salt is in the ocean?	Students create a model ocean to observe how salt seems to completely vanish when dissolved in water. Students measure and graph quantities to provide evidence that the salt is still in the solution, even though we can't see it.	**P.5.5B** Students will demonstrate an understanding of mixtures and solutions. (P.5.5B.1) **P.5.5C** Students will demonstrate an understanding of the difference between physical and chemical changes. (P.5.5C.2, P.5.5C.3)
Lesson 3	*We **recommend teaching this in 3rd grade** if following Mississippi Standards.* *When you turn on the faucet, where does the water come from?*	*Students determine the best place to settle a town by considering features of the landscape & the characteristics of the plants that thrive there.*	*Earth's systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes. (E.3.9.1, E.3.9.2)*
Lesson 4	*We **recommend teaching this in 4th grade** if following Mississippi Standards.* ***Water Cycle*** *Can we make it rain?*	*influences evaporation and condensation. Students figure out that higher ocean temperatures lead to more evaporation, thus leading to more rain.*	***E.4.9A** Students will demonstrate an understanding of how the water cycle is propelled by the sun's energy.*
Lesson 5	**Natural Disasters & Engineering** How can you save a town from a hurricane?	Students define the problem that a town needs protection from flooding. They design solutions using different types of flood protection. They realize flooding is caused by severe rainfall generated by hurricanes. Hurricanes are created where ocean temperatures are warm.	**E.5.10** Students will demonstrate an understanding of the effects of human interaction with Earth and how Earth's natural resources can be protected and conserved. (E.5.10.2)

Chemical Reactions & Properties of Matter Unit (Chemical Magic)

	Topic & Guiding Question	Student Objectives	Mississippi Standards for Science (2018)
Lesson 1	**Chemistry & Conservation of Matter** Are magic potions real?	Students observe that a salt and vinegar solution will turn a dull penny shiny again indicating that substances can change other substances.	**Foundational for P.5.5B** Students will demonstrate an understanding of mixtures and solutions.
Lesson 2	**Dissolving & Particulate Nature of Matter** Could you transform something worthless into gold?	Students coat a steel nail in copper by placing it into the solution that dissolved bits of the penny. Students realize that substances can change to become particles too small to be seen, but they still exist.	**Foundational for P.5.5B** Students will demonstrate an understanding of mixtures and solutions.
Lesson 3	**Acids, Reactions, & Properties of Matter** What would happen if you drank a glass of acid?	Students figure out that acids are very reactive substances. Students investigate reactions between different substances to determine how known acids react with other materials.	**P.5.5A** Students will demonstrate an understanding of the physical properties of matter.
Lesson 4	**Chemical Reactions** What do fireworks, rubber, and Silly Putty have in common?	Students combine different substances together to discover that chemical reactions can create new substances.	**P.5.5C** Students will demonstrate an understanding of the difference between physical and chemical changes. (P.5.5C.1)
Lesson 5	**Gases & Particle Models** Why do some things explode?	Students investigate and model the reaction between baking soda and vinegar. They figure out that gases are made of particles too small to be seen.	**P.5.5A** Students will demonstrate an understanding of the physical properties of matter.