

# Mystery Science Alignment with Florida Science Standards



**Mystery Science is a hands-on curriculum that aligns with the Florida Next Generation Sunshine State Standards.**

Mystery Science's units of study contain:

- Hands-on, easy-prep activities with EVERY lesson
- Engaging, real-world investigative phenomena
- Thoughtful discussions to build background knowledge
- Lesson & unit assessments to evaluate comprehension
- Curated, cross-curricular extensions

**Mystery Science also offers the Anchor Layer**, which enriches the unit with an anchor phenomenon, incorporates anchor connections after each lesson, & concludes the unit with a performance task.

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**Animal Needs Unit (Animal Secrets)**

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p> 	<p><b>Animal Needs: Food</b></p> <p>Why do woodpeckers peck wood?</p>	<p>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.</p>	<p><b>K.L.14.3</b> Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p>
<p><b>Lesson 2</b></p> 	<p><b>Animal Needs: Shelter Read-Along</b></p> <p>Where do animals live?</p>	<p>Students obtain information through media about how different animal homes are built. They use this evidence to explain that animals need shelter.</p>	<p><b>K.L.14.3</b> Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p>
<p><b>Lesson 3</b></p> 	<p><b>Animal Needs: Safety</b></p> <p>How can you find animals in the woods?</p>	<p>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.</p>	<p><b>K.L.14.3</b> Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p>
<p><b>Lesson 4</b></p> 	<p><b>Animals &amp; Changing the Environment Read-Along</b></p> <p>How do animals make their homes in the forest?</p>	<p>Students take a nature walk to look for evidence of animal homes.</p>	<p><b>K.L.14.3</b> Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p>

**Plant Needs Unit** (Plant Secrets)





	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Living &amp; Nonliving</b></p> <p>Are plants alive?</p>	<p>Students make observations of plants in order to identify their needs and that they are, in fact, living things.</p>	<p><b>K.L.14.3</b> Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p>
 <p><b>Lesson 2</b></p>	<p><b>Plant Needs: Water &amp; Light</b></p> <p>How do plants and trees grow?</p>	<p>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.</p>	<p><b>K.L.14.3</b> Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p>
 <p><b>Lesson 3</b></p>	<p><b>Human Impacts on the Environment Read-Along</b></p> <p>Why would you want an old log in your backyard?</p>	<p>Students obtain evidence of living organisms by virtually keeping watch of a log and the living things that visit it.</p>	<p><b>K.L.14.3</b> Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p>

*Florida Specific Standard: K.L.14.1* Recognize the five senses and related body parts.

*Florida Specific Standard: K.L.14.2* Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life.




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

## Day Patterns Unit (Sun & Shadows)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Sun, Shadows, &amp; Daily Patterns</b></p> <p>Could a statue's shadow move?</p>	<p>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.</p>	<p><b>K.E.5.2</b> Recognize the repeating pattern of day and night.</p>
 <p><b>Lesson 2</b></p>	<p><b>Sun, Shadows, &amp; Daily Patterns Read-Along</b></p> <p>What does your shadow do when you're not looking?</p>	<p>Students conduct an investigation to gather information about how their shadow changes throughout the day.</p>	<p><b>K.E.5.2</b> Recognize the repeating pattern of day and night.</p>
 <p><b>Lesson 3</b></p>	<p><b>Sun &amp; Daily Patterns</b></p> <p>How can the Sun help you if you're lost?</p>	<p>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.</p>	<p><b>K.E.5.2</b> Recognize the repeating pattern of day and night.</p> <p><b>K.E.5.3</b> Recognize that the Sun can only be seen in the daytime.</p>
 <p><b>Lesson 4</b></p>	<p><b>Daylight &amp; Seasonal Patterns Read-Along</b></p> <p>Why do you have to go to bed early in the summer?</p>	<p>Students obtain information about the seasonal patterns of sunrise and sunset.</p>	<p><b>K.E.5.2</b> Recognize the repeating pattern of day and night.</p> <p><b>K.E.5.3</b> Recognize that the Sun can only be seen in the daytime.</p>

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

## Night Patterns Unit (Moon & Stars)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<b>Lesson 1</b> 	<b>Moon Phases &amp; Patterns</b>  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.	<b>K.E.5.4</b> Observe that sometimes the Moon can be seen at night and sometimes during the day.
<b>Lesson 2</b> 	Why do stars come out at night?	Dipper in the night sky. After conducting a simple investigation, students construct an explanation for why stars are only visible in the night sky.	anyone can easily count and that they are not scattered evenly in the sky.
<b>Lesson 3</b> 	How can stars help you if you get lost?	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.	<b>1.E.5.1</b> Observe and discuss that there are more stars in the sky than the sky.  <b>1.E.5.3</b> Investigate how magnifiers make things appear bigger and help people see things they could not see without them.

*Florida Specific Standard:*

- K.E.5.5** Observe that things can be big and things can be small as seen from Earth.
- K.E.5.6** Observe that some objects are far away and some are nearby as seen from Earth. The following mini-lesson can be used to support Florida Specific Science Standards.

*Florida Specific Standard:*

- K.E.5.1** Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up. The following mini-lesson can be used to support Florida Specific Science Standards.

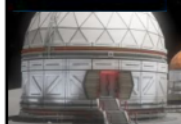
**Mini-lesson**



**K.E.5.5, K.E.5.6**

What is the Moon made of?

**Mini-lesson**









**K.E.5.1**







What would it be like to live on the Moon?

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

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


	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b> <b>Sounds &amp; Vibrations</b></p> <p>How do they make silly sounds in cartoons?</p>	<p><b>Sounds &amp; Vibrations</b></p> <p>How do they make silly sounds in cartoons?</p>	<p>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>	<p><b>K.P.10.1</b> Observe that things that make sound vibrate.</p>
 <p><b>Lesson 2</b> <b>Sounds &amp; Vibrations Read-Along</b></p> <p>Where do sounds come from?</p>	<p><b>Sounds &amp; Vibrations Read-Along</b></p> <p>Where do sounds come from?</p>	<p>Students create three different sound makers and construct an explanation about where the vibrations are happening in each sound experiment.</p>	<p><b>K.P.10.1</b> Observe that things that make sound vibrate.</p>
 <p><b>Lesson 3</b> <b>Light, Materials, Transparent &amp; Opaque</b></p> <p>What if there were no windows?</p>	<p><b>Light, Materials, Transparent &amp; Opaque</b></p> <p>What if there were no windows?</p>	<p>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>	<p><b>K.P.8.1</b> Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light) and texture.</p>
 <p><b>Lesson 4</b> <b>Light &amp; Illumination Read-Along</b></p> <p>Can you see in the dark?</p>	<p><b>Light &amp; Illumination Read-Along</b></p> <p>Can you see in the dark?</p>	<p><i>We recommend teaching this in 3rd Grade if following Florida Standards.</i></p> <p><i>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.</i></p>	<p><i>sound, electrical, and mechanical.</i></p> <p><b>3.P.10.3</b> Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.</p>
 <p><b>Lesson 5</b> <b>Light, Sounds, &amp; Communication Read-Along</b></p> <p>How could you send a secret message to someone far away?</p>	<p><b>Light, Sounds, &amp; Communication Read-Along</b></p> <p>How could you send a secret message to someone far away?</p>	<p><i>We recommend teaching this in 3rd Grade if following Florida Standards.</i></p> <p><i>night, without using noise. They design a solution to create a color-coded message system and communicate with light signals.</i></p>	<p><i>sound, electrical, and mechanical.</i></p> <p><b>3.P.10.3</b> Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.</p>
 <p><b>Lesson 6</b> <b>Lights, Sounds, &amp; Communication Read-Along</b></p> <p>How do boats find their way in the fog?</p>	<p><b>Lights, Sounds, &amp; Communication Read-Along</b></p> <p>How do boats find their way in the fog?</p>	<p>Students obtain information about light and sound signals. They analyze different sounds with eyes closed to determine which type of sound they hear.</p>	<p><b>K.P.10.1</b> Observe that things that make sound vibrate.</p>

**Pushes & Pulls Unit (Force Olympics)**

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Pushes &amp; Pulls</b></p> <p>What's the biggest excavator?</p>	<p>Students observe different machines and use those observations as evidence for why machines make work easier.</p>	<p><b>K.P.12.1</b> Investigate that things move in different ways, such as fast, slow, etc.</p> <p><b>K.P.13.1</b> Observe that a push or pull can change the way an object is moving.</p>
 <p><b>Lesson 2</b></p>	<p><b>Pushes, Pulls, &amp; "Work Words" Read-Along</b></p> <p>Why do builders need so many big machines?</p>	<p>Students observe construction equipment being used in different ways to move objects.</p>	<p><b>K.P.12.1</b> Investigate that things move in different ways, such as fast, slow, etc.</p> <p><b>K.P.13.1</b> Observe that a push or pull can change the way an object is moving.</p>
 <p><b>Lesson 3</b></p>	<p><b>We recommend teaching this in 1st Grade if following Florida Standards.</b></p> <p>How can you knock down a wall made of concrete?</p>	<p>Students use a model wrecking ball to knock down a wall, but not the houses behind it.</p>	<p><b>1.P.13.1</b> Demonstrate that the way to change the motion of an object is by applying a push or a pull.</p>
 <p><b>Lesson 4</b></p>	<p><b>We recommend teaching this in 1st Grade if following Florida Standards.</b></p> <p>How can you knock down the most bowling pins?</p>	<p>Students observe the way that objects can move in straight lines, zigzags, and back and forth.</p>	<p><b>1.P.13.1</b> Demonstrate that the way to change the motion of an object is by applying a push or a pull.</p>
 <p><b>Lesson 5</b></p>	<p><b>We recommend teaching this in 1st Grade if following Florida Standards.</b></p> <p>How can we protect a mountain town from falling rocks?</p>	<p>They design a solution to safely guide the direction of the boulder away from the town.</p>	<p><b>1.P.13.1</b> Demonstrate that the way to change the motion of an object is by applying a push or a pull.</p>
 <p><b>Lesson 6</b></p>	<p><b>We recommend teaching this in 1st Grade if following Florida Standards.</b></p> <p>How could you invent a trap?</p>	<p>Students use what they know about the locations of objects and how they can move.</p>	<p><b>1.P.13.1</b> Demonstrate that the way to change the motion of an object is by applying a push or a pull.</p>

*Florida Specific Standard:*  
**K.P.9.1** Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.  
The following mini-lesson can be used to support Florida Specific Science Standards.

**Mini-lesson**








**K.P.9.1**

What's the biggest apple in the world?



**Animal Traits & Survival Unit** (Animal Superpowers)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Parent &amp; Offspring Traits</b></p> <p>How can you help a lost baby animal find its parents?</p>	<p>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.</p>	<p><b>1.L.16.1</b> Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.</p>
 <p><b>Lesson 2</b></p>	<p><b>Animal Structures &amp; Survival</b></p> <p>Why do birds have beaks?</p>	<p>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.</p>	<p><b>1.L.17.1</b> Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.</p>
 <p><b>Lesson 3</b></p>	<p><b>Animal Behavior &amp; Offspring Survival Read-Along</b></p> <p>Why do baby ducks follow their mother?</p>	<p>Students obtain information about the behaviors of animal parents that help their offspring survive.</p>	<p><b>1.L.17.1</b> Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.</p>
 <p><b>Lesson 4</b></p>	<p><b>Camouflage &amp; Animal Survival</b></p> <p>Why are polar bears white?</p>	<p>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.</p>	<p><b>1.L.17.1</b> Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.</p>
 <p><b>Lesson 5</b></p>	<p><b>Inheritance &amp; Variation of Traits Read-Along</b></p> <p>Why do family members look alike?</p>	<p>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.</p>	<p><b>1.L.16.1</b> Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.</p>

**This concept is covered in Kindergarten**


*Florida Specific Standard:*

**1.L.14.3** Differentiate between living and nonliving things.

*Florida Specific Standard:*

**1.L.14.1** Make observations of living things and their environments using the five senses. The following mini-lesson can be used to support Florida Specific Science Standards.




**Mini-lesson**



**1.L.14.1**

How do scientists learn about wild animals?




**Plant Traits & Survival Unit** (Plant Superpowers)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p> <p><b>Plant Traits &amp; Offspring</b></p> <p>What will a baby plant look like when it grows up?</p>	<p>Students observe seedlings and adult plants and use their observations to identify the pattern that young plants are similar to their parent plants.</p>	<p><b>1.L.16.1</b> Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.</p> <p><b>1.L.14.2</b> Identify the major parts of plants, including stem, roots, leaves, and flowers.</p>	
 <p><b>Lesson 2</b></p> <p><b>Plant Survival &amp; Engineering</b></p> <p>Why don't trees blow down in the wind?</p>	<p>Students learn how plants respond to light. They conduct an investigation to compare how the parts of a plant respond to light.</p>	<p><b>1.L.14.2</b> Identify the major parts of plants, including stem, roots, leaves, and flowers.</p>	
 <p><b>Lesson 3</b></p> <p><b>Plant Movement &amp; Survival Read-Along</b></p> <p>What do sunflowers do when you're not looking?</p>	<p>Students learn how plants respond to light. They conduct an investigation to compare how the parts of a plant respond to light.</p>	<p><b>1.L.14.2</b> Identify the major parts of plants, including stem, roots, leaves, and flowers.</p>	

*Florida Specific Standard: 1.E.5.2* Explore the Law of Gravity by demonstrating that Earth's gravity pulls any object on or near Earth toward it even though nothing is touching the object.

*Florida Specific Standard: 1.E.5.4* Identify the beneficial and harmful properties of the Sun.

**Night Patterns Unit (Moon & Stars)**






	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p> 	<p>We <b>recommend teaching this in Kindergarten</b> if following Florida Standards.</p> <p><b>Moon Phases &amp; Patterns</b></p> <p>When can you see the full moon?</p>	<p>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.</p>	<p><b>K.E.5.4</b> Observe that sometimes the Moon can be seen at night and sometimes during the day.</p>
<p><b>Lesson 2</b></p> 	<p><b>Stars &amp; Daily Patterns</b></p> <p>Why do stars come out at night?</p>	<p>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.</p>	<p><b>1.E.5.1</b> Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky.</p>
<p><b>Lesson 3</b></p> 	<p><b>Stars &amp; Seasonal Patterns Read-Along</b></p> <p>How can stars help you if you get lost?</p>	<p>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.</p>	<p><b>1.E.5.1</b> Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky.</p> <p><b>1.E.5.3</b> Investigate how magnifiers make things appear bigger and help people see things they could not see without them.</p>

**This concept is covered in 5th Grade**

*Florida Specific Standard: 3.E.5.4* Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome.

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







## Erosion & Earth’s Surface Unit (Work of Water)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Mapping &amp; Earth’s Surface Features</b></p> <p>If you floated down a river, where would you end up?</p>	<p>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.</p>	<p><b>1.E.6.1</b> Recognize that water, rocks, soil, and living organisms are found on Earth’s surface.</p>
 <p><b>Lesson 2</b></p>	<p>We <b>recommend teaching this in 2nd Grade</b> if following Florida Standards.</p> <p><b>Rocks, Sand, &amp; Erosion</b></p> <p>Why is there sand at the beach?</p>	<p><i>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.</i></p>	<p><i>many sizes and shapes.</i></p> <p><b>2.E.6.2</b> Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed.</p>
 <p><b>Lesson 3</b></p>	<p><b>Mapping &amp; Severe Weather</b></p> <p>Where do flash floods happen?</p>	<p>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.</p>	<p><b>1.E.6.3</b> Recognize that some things in the world around us happen fast and some happen slowly.</p>
 <p><b>Lesson 4</b></p>	<p><b>Erosion, Earth’s Surface, &amp; Landforms</b></p> <p>What’s strong enough to make a canyon?</p>	<p>Students create a model landform and investigate how some Earth events can occur quickly, while others occur slowly.</p>	<p><b>1.E.6.3</b> Recognize that some things in the world around us happen fast and some happen slowly.</p>
 <p><b>Lesson 5</b></p>	<p><b>Erosion &amp; Engineering</b></p> <p>How can you stop a landslide?</p>	<p>Students compare multiple solutions for preventing erosion.</p>	<p><b>1.E.6.3</b> Recognize that some things in the world around us happen fast and some happen slowly.</p>

*Florida Specific Standard: 1.E.6.2* Describe the need for water and how to be safe around water.

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





## Pushes & Pulls Unit (Force Olympics)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<b>Lesson 1</b> 	<p>We <b>recommend teaching this in Kindergarten</b> if following Florida Standards.</p> <p>What's the biggest excavator?</p>	<p>use those observations as evidence for why machines make work easier.</p>	<p><b>K.P.13.1</b> Observe that a push or pull can change the way an object is moving.</p>
<b>Lesson 2</b> 	<p>We <b>recommend teaching this in Kindergarten</b> if following Florida Standards.</p> <p><b>Read-Along</b></p> <p>Why do builders need so many big machines?</p>	<p>Students observe construction equipment being used in different ways to move objects.</p>	<p>fast, slow, etc.</p> <p><b>K.P.13.1</b> Observe that a push or pull can change the way an object is moving.</p>
<b>Lesson 3</b> 	<p><b>Motion, Speed, &amp; Strength</b></p> <p>How can you knock down a wall made of concrete?</p>	<p>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>	<p><b>1.P.13.1</b> Demonstrate that the way to change the motion of an object is by applying a push or a pull.</p>
<b>Lesson 4</b> 	<p><b>Speed &amp; Direction of Force</b></p> <p><b>Read-Along</b></p> <p>How can you knock down the most bowling pins?</p>	<p>Students play a game of bumper bowling to observe the way that objects can move in straight lines, zigzags, and back and forth.</p>	<p><b>1.P.13.1</b> Demonstrate that the way to change the motion of an object is by applying a push or a pull.</p>
<b>Lesson 5</b> 	<p><b>Direction of Motion &amp; Engineering</b></p> <p>How can we protect a mountain town from falling rocks?</p>	<p>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>	<p><b>1.P.12.1</b> Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.</p>
<b>Lesson 6</b> 	<p><b>Forces &amp; Engineering</b></p> <p><b>Read-Along</b></p> <p>How could you invent a trap?</p>	<p>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>	<p><b>1.P.13.1</b> Demonstrate that the way to change the motion of an object is by applying a push or a pull.</p>

**This concept is covered in Kindergarten and 2nd Grade**

*Florida Specific Standard: 1.P.8.1 Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float.*

## Animal Biodiversity Unit (Animal Adventures)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<b>Lesson 1</b> 	<p>We <b>recommend teaching this in 3rd grade</b> if following Florida Standards.</p> <p>How many different kinds of animals are there?</p>	<p>animals and use that information to organize them into groups based on their characteristics.</p>	<p>invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.</p>
<b>Lesson 2</b> 	<p><b>Habitat Diversity</b></p> <p>Why would a wild animal visit a playground?</p>	<p>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.</p>	<p><b>2.L.17.2</b> Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.</p> <p><b>2.L.17.1</b> Compare and contrast the basic needs that all living things, including humans, have for survival.</p>
<b>Lesson 3</b> 	<p><b>Biodiversity, Habitats, &amp; Species</b></p> <p>Why do frogs say “ribbit”?</p>	<p>Students identify frogs based on their unique calls and use that information to determine the level of frog species diversity within multiple habitats.</p>	<p><b>2.L.17.2</b> Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.</p>
<b>Lesson 4</b> 	<p><b>Biodiversity &amp; Engineering</b></p> <p>How could you get more birds to visit a bird feeder?</p>	<p>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.</p>	<p><b>2.L.17.2</b> Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.</p>

Florida Specific Standard:

**2.L.16.1** Observe and describe major stages in the life cycle of plants and animals, including beans and butterflies.  
The following mini-lesson can be used to support Florida Specific Science Standards.

Florida Specific Standard:

**2.L.14.1** Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions.  
The following mini-lesson can be used to support Florida Specific Science Standards.

**Mini-lesson**

**2.L.16.1**

Are butterflies the only animals that start out as caterpillars?




**Mini-lesson**

**2.L.14.1**

Why does our skeleton have so many bones?

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

## Severe Weather Unit (Wild Weather)




	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<b>Lesson 1</b> 	<b>Severe Weather &amp; Preparation Read-Along</b>  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.	<b>2.E.7.5</b> State the importance of preparing for severe weather, lightning, and other weather related events.
<b>Lesson 2</b> 	<b>Wind &amp; Storms</b>  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.	<b>2.E.7.4</b> Investigate that air is all around us and that moving air is wind.  <b>2.E.7.1</b> Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.
<b>Lesson 3</b> 	<b>Weather Conditions</b>  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.	<b>2.E.7.1</b> Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.

**This concept is covered in 5th Grade**

*Florida Specific Standard: 2.P.8.5 Measure and compare temperatures taken every day at the same time.*


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

## Weather Patterns Unit (Circle of Seasons)


	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p> 	<p><b>Daily Weather Patterns Read-Along</b></p> <p>How do you know what to wear for the weather?</p>	<p>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.</p>	<p><b>2.E.7.1</b> Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.</p>
<p><b>Lesson 2</b></p> 	<p><b>Seasonal Weather Patterns</b></p> <p>What will the weather be like on your birthday?</p>	<p>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.</p>	<p><b>2.E.7.1</b> Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.</p>
<p><b>Lesson 3</b></p> 	<p><b>Animals Changing Their Environment</b></p> <p>Why do birds lay eggs in the spring?</p>	<p>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.</p>	<p><b>2.E.7.1</b> Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.</p>



## Erosion & Earth’s Surface Unit (Work of Water)







	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 2</b> <b>Rocks, Sand, &amp; Erosion</b> Why is there sand at the beach?</p>		<p>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.</p>	<p><b>2.E.6.1</b> Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes.</p> <p><b>2.E.6.2</b> Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed.</p>

## Weather & Climate Unit (Stormy Skies)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b> <b>Water Cycle &amp; States of Matter</b> Where do clouds come from?</p>		<p>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.</p>	<p><b>2.P.8.4</b> Observe and describe water in its solid, liquid, and gaseous states.</p> <p><b>2.E.7.3</b> Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate).</p>

Florida Specific Standard: **2.E.7.2** Investigate by observing and measuring, that the Sun’s energy directly and indirectly warms the water, land, and air.

## Material Properties Unit (Material Magic)






	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p> 	<p><b>Material Properties &amp; Engineering</b></p> <p>Why do we wear clothes?</p>	<p>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>	<p><b>2.P.9.1</b> Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration.</p> <p><b>2.P.8.1</b> Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets.</p>
<p><b>Lesson 2</b></p> 	<p><b>Classify Materials: Insulators</b></p> <p>Can you really fry an egg on a hot sidewalk?</p>	<p>Students conduct an investigation of conductors and insulators in order to determine which are best suited for allowing people to handle hot items.</p>	<p><b>2.P.10.1</b> Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes, and power their cars.</p>
<p><b>Lesson 3</b></p> 	<p><b>Heating, Cooling, &amp; Phases of Matter</b></p> <p>Why are so many toys made out of plastic?</p>	<p>Student conduct an investigation of different materials in order to determine which are most and least easily melted.</p>	<p><b>2.P.8.2</b> Identify objects and materials as solid, liquid, or gas.</p> <p><b>2.P.9.1</b> Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration.</p>
<p><b>Lesson 4</b></p> 	<p><b>Inventions &amp; Engineering</b></p> <p>What materials might be invented in the future?</p>	<p>Students design a new invention that takes advantage of the unique properties of a futuristic material.</p>	<p><b>2.P.8.1</b> Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets.</p>
<p><b>Lesson 5</b></p> 	<p><b>Materials, Properties, &amp; Engineering</b></p> <p>Could you build a house out of paper?</p>	<p>Students construct an evidence-based account of how a structure built of paper can be disassembled and rebuilt in new ways.</p>	<p><b>2.P.9.1</b> Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration.</p>
<p><b>Lesson 6</b></p> 	<p><b>Soil &amp; Properties</b></p> <p>How do you build a city out of mud?</p>	<p>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.</p>	<p><b>2.E.6.3</b> Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.</p>

Florida Specific Standard: **2.P.8.6** Measure and compare the volume of liquids using containers of various shapes and sizes.

Florida Specific Standard: **2.P.8.3** Recognize that solids have definite shape and that liquids and gases take the shape of their container.

*This unit is found under 3rd grade on our site, but we recommend teaching lessons in 2nd grade if you are following Florida Standards.*




**Forces, Motion, & Magnets Unit (Invisible Forces)**

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p> 	<p><b>Balanced &amp; Unbalanced Forces</b></p> <p>How could you win a tug-of-war against a bunch of adults?</p>	<p>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>	<p><b>2.P.13.1</b> Investigate the effect of applying various pushes and pulls on different objects.</p> <p><b>2.P.13.4</b> Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.</p>
<p><b>Lesson 2</b></p> 	<p><b>Balanced Forces &amp; Engineering</b></p> <p>What makes bridges so strong?</p>	<p>Students develop and design a bridge to be as strong as possible while working with limited materials.</p>	<p><b>2.P.13.3</b> Recognize that objects are pulled toward the ground unless something holds them up.</p>
<p><b>Lesson 3</b></p> 	<p><b>Pattern of Motion, Gravity, &amp; Friction</b></p> <p>How high can you swing on a flying trapeze?</p>	<p>Students make observations and measurements of a trapeze model. Then, using that information they predict the motion of a real trapeze.</p>	<p><b>2.P.13.1</b> Investigate the effect of applying various pushes and pulls on different objects.</p> <p><b>2.P.13.4</b> Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.</p>
<p><b>Lesson 4</b></p> 	<p>We <b>recommend teaching this in 4th grade</b> if following Florida Standards.</p> <p><b>Magnets &amp; Forces</b></p> <p>What can magnets do?</p>	<p><i>Students investigate the properties of magnets and the fact that they exert forces that act at a distance.</i></p>	<p><b>4.P.8.4</b> Investigate and describe that magnets can attract materials and attract and repel other magnets.</p>
<p><b>Lesson 5</b></p> 	<p>We <b>recommend teaching this in 4th grade</b> if following Florida Standards.</p> <p><b>Magnets &amp; Engineering</b></p> <p>How can you unlock a door using a magnet?</p>	<p><i>Students investigate magnetic attraction and repulsion, and design a magnetic lock in the hands-on activity.</i></p>	<p><b>4.P.8.4</b> Investigate and describe that magnets can attract materials and attract and repel other magnets.</p>

**This concept is covered in 4th Grade**


*Florida Specific Standard: 2.P.13.2 Demonstrate that magnets can be used to make some things move without touching them.*

## Fossils & Changing Environments Unit (Animals Through Time)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b> <b>Habitats, Fossils, &amp; Environments Over Time</b> Where can you find whales in a desert?</p>	<p>Students explore the idea that the rock under our feet sometimes contains fossils, and investigate how these fossils reveal changes in habitats through time.</p>	<p><b>3.L.11.1</b> Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.</p>	
 <p><b>Lesson 2</b> <b>Fossil Evidence &amp; Dinosaurs</b> How do we know what dinosaurs looked like?</p>	<p>Students learn how we can infer what the outside of an animal looked like by using clues about their skeleton.</p>	<p><b>3.L.11.1</b> Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.</p>	
 <p><b>Lesson 3</b> <b>Trace Fossil Evidence &amp; Animal Movement</b> Can you outrun a dinosaur?</p>	<p>Students learn how fossilized animal tracks can tell us a great deal about the animals that left them.</p>	<p><b>3.L.11.1</b> Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.</p>	

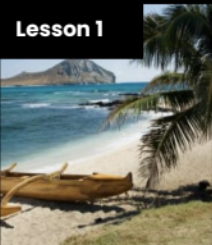



*This unit is found under 2nd grade on our site, but we recommend teaching lessons in 3rd grade if you are following Florida Standards.*

## Animal Biodiversity Unit (Animal Adventures)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b> <b>Biodiversity &amp; Classification</b> How many different kinds of animals are there?</p>	<p>Students observe the traits of different animals and use that information to organize them into groups based on their characteristics.</p>	<p><b>3.L.15.1</b> Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.</p>	

*This unit is found under 2nd grade on our site, but we recommend teaching lessons in 3rd grade if you are following Florida Standards.*

**Plant Adaptations Unit (Plant Adventures)**

Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p>  <p><b>Seed Dispersal</b></p> <p>How did a tree travel halfway around the world?</p>	<p>Students develop physical models of seed structures. They observe how structure affects the seed's function in dispersing away from the tree.</p>	<p><b>3.L.14.1</b> Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.</p>
<p><b>Lesson 2</b></p>  <p><b>Animal Seed Dispersal</b></p> <p>Why do seeds have so many different shapes?</p>	<p>Students develop a model of a furry animal and then use it to test how far seed models with different structures can travel.</p>	<p><b>3.L.14.1</b> Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.</p>
<p><b>Lesson 3</b></p>  <p><b>Water, Sunlight, &amp; Plant Growth</b></p> <p>Could a plant survive without light?</p>	<p>Students conduct an investigation to determine that plants need water and light to grow.</p>	<p><b>3.L.14.2</b> Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.</p> <p><b>3.L.17.2</b> Recognize that plants use energy from the Sun, air, and water to make their own food.</p>
<p><b>Lesson 4</b></p>  <p><b>Plant Needs &amp; Habitats</b></p> <p>How much water should you give a plant?</p>	<p>Students plan and conduct a series of virtual experiments in order to determine how much water and sunlight a set of mystery plants need in order to stay healthy and survive.</p>	<p><b>3.L.14.2</b> Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.</p>

*Florida Specific Standard:*

**3.L.15.2** Classify flowering and nonflowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics.

The following mini-lesson can be used to support Florida Specific Science Standards.

**Mini-lesson**

**3.L.15.2**

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



*Florida Specific Standard:*

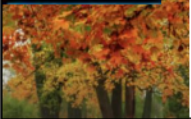
**3.L.17.1** Describe how animals and plants respond to changing seasons.

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

**Mini-lesson**

**3.L.17.1**

Why do leaves change color in the fall?



**Mini-lesson**

**3.L.17.1**

Where do bugs go in winter?



**Mini-lesson**

**3.L.17.1**

Why do bears hibernate?



**Mini-lesson**

**3.L.17.1**


Why do animals come back after going to warm places in the winter?



*Florida Specific Standard:*

**3.E.5.2** Identify the Sun as a star that emits energy; some of it in the form of light.


The following mini-lesson can be used to support Florida Specific Science Standards.

<b>Mini-lesson</b>	<b>3.E.5.2</b>
	How close could an astronaut get to the Sun?

*Florida Specific Standard:*

**3.E.5.5** Investigate that the number of stars that can be seen through telescope is dramatically greater than those seen by the unaided eye.

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

<b>Mini-lesson</b>	<b>3.E.5.5</b>
	Who created the constellations?

**These concepts are covered in 5th Grade**



*Florida Specific Standard:* **3.E.5.1** Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light.

*Florida Specific Standard:* **3.E.5.3** Recognize that the Sun appears large and bright because it is the closest star to Earth.



*Florida Specific Standard:* **3.E.5.4** Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome.

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

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

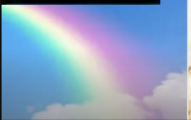
	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 4</b> A Book About Mystery</p>	<p><b>Light &amp; Illumination Read-Along</b></p> <p>Can you see in the dark?</p>	<p>Students look inside a completely dark box to determine if they can see the shape 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>	<p><b>3.P.10.1</b> Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.</p> <p><b>3.P.10.3</b> Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.</p>
 <p><b>Lesson 5</b> A Secret Message</p>	<p><b>Light, Communication, &amp; Engineering</b></p> <p>How could you send a secret message to someone far away?</p>	<p>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>	<p><b>3.P.10.1</b> Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.</p> <p><b>3.P.10.3</b> Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.</p>

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

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 2</b> Human Eye</p>	<p><b>Light, Eyes, &amp; Vision</b></p> <p>What do people who are blind see?</p>	<p>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>	<p><b>3.P.10.3</b> Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.</p> <p><b>Foundational for 3.P.10.4</b> Demonstrate that light can be reflected, refracted, and absorbed.</p>
 <p><b>Lesson 3</b> Animal Eye</p>	<p><b>Structure &amp; Function of Eyes</b></p> <p>How can some animals see in the dark?</p>	<p>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>	<p><b>3.P.10.3</b> Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.</p>

*Florida Specific Standard: 3.P.10.4* Demonstrate that light can be reflected, refracted, and absorbed. The following mini-lessons can be used to support Florida Specific Science Standards.

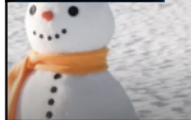
**Mini-lesson**



**3.P.10.4**

How is a rainbow made?

**Mini-lesson**






**3.P.10.4**

Why is snow white?



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

## Sunlight & Warmth Unit (Sunny Skies)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<b>Lesson 1</b> 	<b>Sunlight, Heat, &amp; Earth's Surface</b> <b>Read-Along</b>  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.	<b>3.E.6.1</b> Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.
<b>Lesson 2</b> 	<b>Sunlight, Warming, &amp; Engineering</b>  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.)	<b>3.E.6.1</b> Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.  <b>3.E.5.2</b> Identify the Sun as a star that emits energy; some of it in the form of light.  <b>3.P.10.4</b> Demonstrate that light can be reflected, refracted, and absorbed.
<b>Lesson 3</b> 	<b>Sunlight &amp; Warmth</b>  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.	<b>3.E.6.1</b> Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.  <b>3.E.5.2</b> Identify the Sun as a star that emits energy; some of it in the form of light.

*Florida Specific Standard: 3.P.9.1* Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.






*Florida Specific Standard: 3.P.8.1* Measure and compare temperatures of various samples of solids and liquids.

*Florida Specific Standard: 3.P.8.2* Measure and compare the mass and volume of solids and liquids.

*Florida Specific Standard: 3.P.8.3* Compare materials and objects according to properties such as size, shape, color, texture, and hardness.

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

✓ **Energy & Energy Transfer Unit** (Energizing Everything)






	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Speed &amp; Energy</b></p> <p>How is your body similar to a car?</p>	<p>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>	<p><b>3.P.10.2</b> Recognize that energy has the ability to cause motion or create change.</p>
 <p><b>Lesson 2</b></p>	<p><b>Gravitational Energy, Speed, &amp; Collisions</b></p> <p>What makes roller coasters go so fast?</p>	<p>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>	<p><b>3.P.10.2</b> Recognize that energy has the ability to cause motion or create change.</p> <p><b>3.P.10.1</b> Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.</p>
 <p><b>Lesson 3</b></p>	<p><b>Collisions &amp; Energy Transfer</b></p> <p>How can marbles save the world?</p>	<p>Students investigate how energy transfers when objects collide. In the activity, Bumper Jumper, students ask questions and make predictions about how far a marble will launch over a jump after colliding with other objects.</p>	<p><b>3.P.10.2</b> Recognize that energy has the ability to cause motion or create change.</p> <p><b>3.P.10.1</b> Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.</p>
 <p><b>Lesson 4</b></p>	<p><b>Energy Transfer &amp; Engineering</b></p> <p>Could you knock down a building using only dominoes?</p>	<p>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>	<p><b>3.P.10.2</b> Recognize that energy has the ability to cause motion or create change.</p>
 <p><b>Lesson 5</b></p>	<p><b>Energy Transfer &amp; Engineering</b></p> <p>Can you build a chain reaction machine?</p>	<p>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>	<p><b>3.P.10.2</b> Recognize that energy has the ability to cause motion or create change.</p>

*Florida Specific Standard: 3.P.11.1 Investigate, observe, and explain that things that give off light often also give off heat.*

*Florida Specific Standard: 3.P.11.2 Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together.*






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

## Life Cycles Unit (Circle of Life)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p> <p><b>Animal Life Cycles</b></p> <p>How is your life like an alligator's life?</p>	<p>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.</p>	<p><b>4.L.16.4</b> Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.</p>	
 <p><b>Lesson 2</b></p> <p><b>Environmental Change &amp; Engineering</b></p> <p>What's the best way to get rid of mosquitoes?</p>	<p>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.</p>	<p><b>4.L.17.4</b> Recognize ways plants and animals, including humans, can impact the environment.</p>	
 <p><b>Lesson 3</b></p> <p><b>Pollination &amp; Plant Reproduction</b></p> <p>Why do plants grow flowers?</p>	<p>Students model the structure and function of flower parts that are responsible for creating seeds.</p>	<p><b>4.L.16.1</b> Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.</p>	
 <p><b>Lesson 4</b></p> <p><b>Fruit, Seeds, &amp; Plant Reproduction</b></p> <p>Why do plants give us fruit?</p>	<p>Students explore the function of fruits in plants and practice classification.</p>	<p><b>4.L.16.1</b> Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.</p>	
 <p><b>Lesson 5</b></p> <p><b>Plant Life Cycles</b></p> <p>Why are there so many different kinds of flowers?</p>	<p>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.</p>	<p><b>4.L.16.4</b> Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.</p> <p><b>4.L.16.1</b> Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.</p>	





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

## Heredity, Survival, & Selection Unit (Fates of Traits)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>We recommend teaching this in 5th grade if following Florida Standards.</b></p> <p><b>Traits &amp; Inheritance</b></p> <p>How do you identify a mysterious fruit?</p>	<p>unknown fruit. They look for similarities and differences in the leaves, flowers, and fruits of plants to sort them into groups and identify patterns of inheritance.</p>	<p><b>Foundational for 5.L.15.1</b> Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.</p>
 <p><b>Lesson 2</b></p>	<p><b>We recommend teaching this in 5th grade if following Florida Standards.</b></p> <p><b>Trait Variation, Inheritance, &amp; Artificial Selection</b></p> <p>What do dogs and pigeons have in common?</p>	<p>They interpret this data to discover that the variation and inheritance of traits creates a pattern that explains why we see such extreme traits in artificially selected animal breeds.</p>	<p><b>Foundational for 5.L.15.1</b> Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.</p>
 <p><b>Lesson 3</b></p>	<p><b>We recommend teaching this in 5th grade if following Florida Standards.</b></p> <p><b>Trait Variation, Survival, &amp; Natural Selection</b></p> <p>How could a lizard's toes help it survive?</p>	<p>generations of these lizards, and analyze and interpret the data to understand how these structures aid in their survival.</p>	<p><b>5.L.15.1</b> Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.</p> <p><b>5.L.17.1</b> Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.</p>
 <p><b>Lesson 4</b></p>	<p><b>Animal Groups &amp; Survival</b></p> <p>Why do dogs wag their tails?</p>	<p>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.</p>	<p><b>4.L.16.3</b> Recognize that animal behaviors may be shaped by heredity and learning.</p>
 <p><b>Lesson 5</b></p>	<p><b>Traits &amp; Environmental Variation</b></p> <p>How long can people (and animals) survive in outer space?</p>	<p>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.</p>	<p><b>4.L.16.2</b> Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.</p>

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




## Ecosystems & The Food Web Unit (Web of Life)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Food Chains, Producers, &amp; Consumers</b></p> <p>Why would a hawk move to New York City?</p>	<p>Students construct models of food chains by linking cards discovering that different interrelationships exist between organisms.</p>	<p><b>4L.17.2</b> Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.</p>
 <p><b>Lesson 2</b></p>	<p><b>Matter &amp; Plant Growth</b></p> <p>What do plants eat?</p>	<p>Students conduct an investigation and interpret data and figure out that water and air account for a plant's weight.</p>	<p><b>4L.17.2</b> Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.</p>
 <p><b>Lesson 3</b></p>	<p><b>Decomposers &amp; Matter Cycle</b></p> <p>Where do fallen leaves go?</p>	<p>Students conduct an investigation to test how mold grows under different conditions to decompose food. Students realize that decomposers, like mold, break down and consume dead plant material.</p>	<p><b>4L.17.2</b> Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.</p> <p><b>4.P.9.1</b> Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.</p>
 <p><b>Lesson 4</b></p>	<p><b>Decomposers, Nutrients, &amp; Matter Cycle</b></p> <p>Do worms really eat dirt?</p>	<p>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.</p>	<p><b>4L.17.2</b> Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.</p> <p><b>4.P.9.1</b> Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.</p>

Ecosystems & The Food Web Unit continues on the next page

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






## Ecosystems & The Food Web Unit (Web of Life)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 5</b></p>	<p><b>Ecosystems &amp; Matter Cycle</b></p> <p>Why do you have to clean a fish tank but not a pond?</p>	<p>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.</p>	<p><b>4.L.17.2</b> Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.</p>
 <p><b>Lesson 6</b></p>	<p><b>Protecting Environments</b></p> <p>How can we protect Earth's environments?</p>	<p>In this lesson, students learn about what happens in unbalanced ecosystems and how that can lead to an overabundance of algae and harmful algal blooms. In the activity, Bloom Busters, students play a game in which they obtain and combine science ideas in order to help a community respond to and prevent harmful algal blooms.</p>	<p><b>4.L.17.4</b> Recognize ways plants and animals, including humans, can impact the environment.</p>
 <p><b>Lesson 7</b></p>	<p><b>Food Webs &amp; Flow of Energy</b></p> <p>Why did the dinosaurs go extinct?</p>	<p>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.</p>	<p><b>4.L.17.3</b> Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.</p>

*Florida Specific Standard: 4.L.17.1 Compare the seasonal changes in Florida plants and animals to those in other regions of the country.*






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

✓ **Earth & Space Patterns Unit** (Spaceship Earth)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Day, Night, &amp; Earth's Rotation</b></p> <p>How fast does the Earth spin?</p>	<p>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.</p>	<p><b>4.E.5.3</b> Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.</p> <p><b>4.E.5.4</b> Relate that the rotation of Earth (day and night) and apparent movements of the Sun, moon, and stars are connected.</p>
 <p><b>Lesson 2</b></p>	<p><b>Earth's Rotation &amp; Daily Shadow Patterns</b></p> <p>Who set the first clock?</p>	<p>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.</p>	<p><b>4.E.5.3</b> Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.</p>
 <p><b>Lesson 3</b></p>	<p><b>Seasonal Changes &amp; Shadow Length</b></p> <p>How can the Sun tell you the season?</p>	<p>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.</p>	<p><b>4.E.5.4</b> Relate that the rotation of Earth (day and night) and apparent movements of the Sun, moon, and stars are connected.</p>
 <p><b>Lesson 4</b></p>	<p><b>Seasonal Patterns &amp; Earth's Orbit</b></p> <p>Why do the stars change with the seasons?</p>	<p>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.</p>	<p><b>4.E.5.3</b> Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.</p> <p><b>4.E.5.1</b> Observe the patterns of stars in the sky stay the same although they appear to shift across the sky nightly, and different stars can be seen in different seasons.</p>
 <p><b>Lesson 5</b></p>	<p><b>Moon Phases, Lunar Cycle</b></p> <p>Why does the Moon change shape?</p>	<p>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.</p>	<p><b>4.E.5.2</b> Describe the changes in the observable shape of the moon over the course of about a month.</p> <p><b>4.E.5.4</b> Relate that the rotation of Earth (day and night) and apparent movements of the Sun, moon, and stars are connected.</p>

*Florida Specific Standard: 4.E.5.5 Investigate and report the effects of space research and exploration on the economy and culture of Florida.*

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



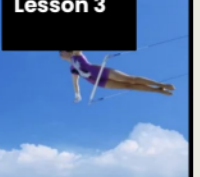


Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p>  <p><b>Volcanoes &amp; Patterns of Earth’s Features</b></p> <p>Could a volcano pop up where you live?</p>	<p>Students use coordinates to develop a map of volcanoes to discover a pattern of where volcanoes exist on Earth. Students identify the pattern of volcanoes in the “Ring of Fire.”</p>	<p><b>4.E.6.1</b> Identify three categories of rocks: igneous, (formed from molten); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure).</p>
<p><b>Lesson 2</b></p>  <p><b>Volcanoes &amp; Rock Cycle</b></p> <p>Why do some volcanoes explode?</p>	<p>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.</p>	<p><b>4.E.6.1</b> Identify three categories of rocks: igneous, (formed from molten); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure).</p>
<p><b>Lesson 3</b></p>  <p><b>Weathering &amp; Erosion</b></p> <p>Will a mountain last forever?</p>	<p>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.</p>	<p><b>4.E.6.4</b> Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).</p>
<p><b>Lesson 4</b></p>  <p><b>Sedimentary Rock &amp; Fossils</b></p> <p>What did your town look like 100 million years ago?</p>	<p>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.</p>	<p><b>4.E.6.1</b> Identify three categories of rocks: igneous, (formed from molten); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure).</p> <p><b>4.E.6.3</b> Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.</p>
<p><b>Lesson 5</b></p>  <p><b>Erosion, Natural Hazards, &amp; Engineering</b></p> <p>How could you survive a landslide?</p>	<p>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.</p>	<p><b>4.E.6.4</b> Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).</p>

*Florida Specific Standard:* **4.E.6.2** Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks.



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





## Forces, Motion, & Magnets Unit (Invisible Forces)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p>We <b>recommend teaching this in 2nd grade</b> if following Florida Standards.</p> <p>How could you win a tug-of-war against a bunch of adults?</p>	<p>the nature of forces and motion and use that model to explain the behavior of an elastic jumper.</p>	<p>2.P.13.4 Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.</p>
 <p><b>Lesson 2</b></p>	<p><b>Science &amp; Engineering</b></p> <p>What makes bridges so strong?</p>	<p>Students develop and design a bridge to be as strong as possible while working with limited materials.</p>	<p>2.P.13.3 Recognize that objects are pulled toward the ground unless something holds them up.</p>
 <p><b>Lesson 3</b></p>	<p><b>Pattern of Motion, Gravity, &amp; Friction</b></p> <p>How high can you swing on a flying trapeze?</p>	<p>measurements of a trapeze model. Then, using that information they predict the motion of a real trapeze.</p>	<p>2.P.13.4 Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.</p>
 <p><b>Lesson 4</b></p>	<p><b>Magnets &amp; Forces</b></p> <p>What can magnets do?</p>	<p>Students investigate the properties of magnets and the fact that they exert forces that act at a distance.</p>	<p>4.P.8.4 Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.</p> <p>4.P.8.1 Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, <b>attraction to magnets.</b></p>
 <p><b>Lesson 5</b></p>	<p><b>Magnets &amp; Engineering</b></p> <p>How can you unlock a door using a magnet?</p>	<p>Students investigate magnetic attraction and repulsion, and design a magnetic lock in the hands-on activity.</p>	<p>4.P.8.4 Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.</p>

*Florida Specific Standard: 4.P.8.2 Identify properties and common uses of water in each of its states.*




*Florida Specific Standard: 4.P.8.3 Explore the Law of Conservation of Mass by demonstrating that the mass of a whole object is always the same as the sum of the masses of its parts.*

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

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Pattern Transfer &amp; Technology</b></p> <p>How do you send a secret code?</p>	<p>Students explore how digital devices encode complex information. Students generate their own codes in order to transfer information across the classroom. Then, they compare their codes and evaluate which worked best given the criteria and constraints.</p>	<p><b>4.E.6.5</b> Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.</p>
 <p><b>Lesson 2</b></p>	<p><b>Sound, Vibration, &amp; Engineering</b></p> <p>How far can a whisper travel?</p>	<p>Students investigate sound energy using paper cup telephones. Students figure out that sound is a vibration that can travel through a medium.</p>	<p><b>4.P.10.1</b> Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion.</p>
 <p><b>Lesson 3</b></p>	<p><b>Sound &amp; Vibrations</b></p> <p>What would happen if you screamed in outer space?</p>	<p>Students construct a model of sound vibrations to explain how air is a medium that sound vibrations travel through.</p>	<p><b>4.P.10.4</b> Describe how moving water and air are sources of energy and can be used to move things.</p> <p><b>4.P.10.3</b> Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates.</p>
 <p><b>Lesson 4</b></p>	<p><b>Sound Waves &amp; Wavelength</b></p> <p>Why are some sounds high and some sounds low?</p>	<p>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>	<p><b>4.P.10.3</b> Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates.</p> <p><b>4.E.6.5</b> Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.</p>

*Florida Specific Standard: 4.P.10.2* Investigate and describe that energy has the ability to cause motion or create change.

✓★ **Electricity, Light, & Heat Unit** (Electricity, Light, & Heat)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<b>Lesson 1</b> 	<p>✨ New! ✨</p> <p><b>Renewable Energy &amp; Natural Resources</b></p> <p>What's the best way to light up a city?</p>	<p>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.</p>	<p><b>4.E.6.3</b> Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.</p> <p><b>4.P.10.4</b> Describe how moving water and air are sources of energy and can be used to move things.</p> <p><b>4.E.6.6</b> Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).</p>
<b>Lesson 2</b> 	<p><b>We recommend teaching this in 5th grade</b> if following Florida Standards.</p> <p><b>Electrical Energy</b></p> <p>What if there were no electricity?</p>	<p><i>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.</i></p>	<p><b>5.P.11.2</b> Identify and classify materials that conduct electricity and materials that do not.</p> <p><b>5.P.10.4</b> Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.</p>
<b>Lesson 3</b> 	<p><b>We recommend teaching this in 5th grade</b> if following Florida Standards.</p> <p><b>Heat Energy &amp; Energy Transfer</b></p> <p>How long did it take to travel across the country before cars and planes?</p>	<p><i>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.</i></p>	<p><i>mechanical.</i></p> <p><b>5.P.10.2</b> Investigate and explain that energy has the ability to cause motion or create change.</p>

**These concepts are covered in 2nd Grade**





- Florida Specific Standard: **4.P.11.1** Recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature.
- Florida Specific Standard: **4.P.11.2** Identify common materials that conduct heat well or poorly.

**These concepts are covered in 3rd Grade**




- Florida Specific Standard: **4.P.12.1** Recognize that an object in motion always changes its position and may change its direction.
- Florida Specific Standard: **4.P.12.2** Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds.

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

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






Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p>  <p><b>Muscles &amp; Skeleton</b></p> <p>Why do your biceps bulge?</p>	<p>Students construct a model of the human hand to explain how muscles pull on bones to create movement.</p>	<p><b>5.L.14.1</b> Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.</p> <p><b>5.L.14.2</b> Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support—some with internal skeletons others with exoskeletons—while some plants have stems for support.</p>
<p><b>Lesson 2</b></p>  <p>What do people who are blind see?</p>	<p><b>We recommend teaching this in 3rd grade</b> if following Florida Standards.</p> <p><i>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.</i></p>	<p><i>object or travels from one medium to another.</i></p> <p><b>Foundational for 3.P.10.4</b> Demonstrate that light can be reflected, refracted, and absorbed.</p>
<p><b>Lesson 3</b></p>  <p>How can some animals see in the dark?</p>	<p><b>We recommend teaching this in 3rd grade</b> if following Florida Standards.</p> <p><i>the pupil controls the amount of light that enters the eye. In the dark, pupils get larger to let in more light.</i></p>	<p><i>object or travels from one medium to another.</i></p>
<p><b>Lesson 4</b></p>  <p><b>Brain, Nerves, &amp; Information Processing</b></p> <p>How does your brain control your body?</p>	<p>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.</p>	<p><b>5.L.14.1</b> Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.</p>

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

<p><b>Mini-lesson</b></p> 	<p><b>5.L.1.4.1</b></p> <p>Why does our skeleton have so many bones?</p>	<p><b>Mini-lesson</b></p> 	<p><b>5.L.1.4.1</b></p> <p>What would happen if you didn't have a skull?</p>	<p><b>Mini-lesson</b></p> 	<p><b>5.L.1.4.1</b></p> <p>Why does the heart pump blood?</p>
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*This unit is found under 3rd grade on our site, but we recommend teaching some lessons in 5th grade if you are following Florida Standards.*

★ **Heredity, Survival, & Selection Unit (Fates of Traits)**

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p> 	<p>✦New!✦</p> <p><b>Traits &amp; Inheritance</b></p> <p>How do you identify a mysterious fruit?</p>	<p>Students examine plant traits and use that information as evidence to help them identify an unknown fruit. They look for similarities and differences in the leaves, flowers, and fruits of plants to sort them into groups and identify patterns of inheritance.</p>	<p><b>Foundational for 5.L.15.1</b> Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.</p>
<p><b>Lesson 2</b></p> 	<p>✦New!✦</p> <p><b>Trait Variation, Inheritance, &amp; Artificial Selection</b></p> <p>What do dogs and pigeons have in common?</p>	<p>Students analyze trait similarities and differences among parent, offspring, and sibling pigeons. They interpret this data to discover that the variation and inheritance of traits creates a pattern that explains why we see such extreme traits in artificially selected animal breeds.</p>	<p><b>Foundational for 5.L.15.1</b> Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.</p>
<p><b>Lesson 3</b></p> 	<p>✦New!✦</p> <p><b>Trait Variation, Survival, &amp; Natural Selection</b></p> <p>How could a lizard's toes help it survive?</p>	<p>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.</p>	<p><b>5.L.15.1</b> Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.</p> <p><b>5.L.17.1</b> Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.</p>
<p><b>Lesson 4</b></p> 	<p><b>We recommend teaching this in 4th grade if following Florida Standards.</b></p> <p>Why do dogs wag their tails? <i>information about animal social behavior. Students use evidence to show how animals form groups to help them survive.</i></p>		
<p><b>Lesson 5</b></p> 	<p><b>We recommend teaching this in 4th grade if following Florida Standards.</b></p> <p>How long can people (and animals) survive in outer space? <i>height) and analyze the information to construct an explanation for how the environment can influence traits.</i></p> <p><i>animals are inherited, some characteristics can be affected by the environment.</i></p>		






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

★ **Animal & Plant Adaptations Unit** (Animal & Plant Adaptations)






	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<p><b>Lesson 1</b></p> 	<p>✨ New! ✨</p> <p><b>Animal Adaptations</b></p> <p>Why do some sea creatures look so strange?</p>	<p>Students make observations of underwater animals in order to collect evidence that external structures serve specific functions. They use their observations to construct an argument that an animal's structures work together as part of a system to support their growth and survival.</p>	<p><b>5.L.17.1</b> Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.</p>
<p><b>Lesson 2</b></p> 	<p>✨ New! ✨</p> <p><b>Learned Behavior &amp; Instinct</b></p> <p>Why would a sea turtle eat a plastic bag?</p>	<p>Students use models to understand how an animal's senses, brain, and memories all work together as a system to influence their behavior and support their survival.</p>	<p><b>5.L.17.1</b> Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.</p>
<p><b>Lesson 3</b></p> 	<p>✨ New! ✨</p> <p><b>Plant Adaptations</b></p> <p>Why don't the same trees grow everywhere?</p>	<p>Students use models of roots and branches to explore their functions and then construct an argument about how these structures must work together in order to support the survival of trees in the unique environment of the frozen taiga.</p>	<p><b>5.L.17.1</b> Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.</p>

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

## Weather & Climate Unit (Stormy Skies)

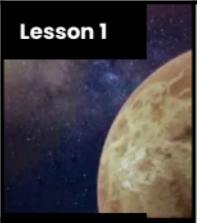


	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b> <b>Water Cycle &amp; Phases of Matter</b> Where do clouds come from?</p>	<p>We <b>recommend teaching this in 2nd grade</b> if following Florida Standards.</p>	<p>information that water can change from liquid to gas, but that it is always made of tiny drops. Clouds are made of water that has evaporated.</p>	<p>gaseous states.</p> <p><b>2.E.7.3</b> Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate).</p>
 <p><b>Lesson 2</b> <b>Local Weather Patterns &amp; Weather Prediction</b> How can we predict when it's going to storm?</p>		<p>Students make observations of clouds and develop a tool to make predictions about what kind of weather might happen next.</p>	<p><b>5.E.7.3</b> Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.</p>
 <p><b>Lesson 3</b> <b>Seasonal Weather Patterns</b> Where's the best place to build a snow fort?</p>		<p>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.</p>	<p><b>5.E.7.4</b> Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.</p> <p><b>5.E.7.5</b> Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.</p>
 <p><b>Lesson 4</b> <b>Climate &amp; Global Weather Patterns</b> Why are some places always hot?</p>		<p>Students obtain and combine information to describe the different climate regions of the world.</p>	<p><b>5.E.7.5</b> Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.</p> <p><b>5.E.7.6</b> Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.</p>
 <p><b>Lesson 5</b> <b>Natural Hazards &amp; Engineering</b> How can you keep a house from blowing away in a windstorm?</p>		<p>Students design and build solutions that reduce the hazards associated with strong winds that could damage buildings.</p>	<p><b>5.E.7.7</b> Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.***</p> <p>***This lesson focuses on natural disasters, but does not create a family preparedness plan.</p>

**Water Cycle & Earth’s Systems Unit (Watery Planet)**

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b></p>	<p><b>Hydrosphere &amp; Water Distribution</b></p> <p>How much water is in the world?</p>	<p>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.</p>	<p><b>5.E.7.2</b> Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth’s water reservoirs via evaporation and precipitation processes.</p>
 <p><b>Lesson 2</b></p>	<p><b>Mixtures &amp; Solutions</b></p> <p>How much salt is in the ocean?</p>	<p>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>	<p><b>5.P.8.2</b> Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.</p>
 <p><b>Lesson 3</b></p>	<p><b>Groundwater as a Natural Resource</b></p> <p>When you turn on the faucet, where does the water come from?</p>	<p>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 &amp; the characteristics of the plants that thrive there.</p>	<p><b>5.E.7.2</b> Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth’s water reservoirs via evaporation and precipitation processes.</p>
 <p><b>Lesson 4</b></p>	<p><b>Water Cycle</b></p> <p>Can we make it rain?</p>	<p>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.</p>	<p><b>5.E.7.1</b> Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to the other.</p>
 <p><b>Lesson 5</b></p>	<p><b>Natural Disasters &amp; Engineering</b></p> <p>How can you save a town from a hurricane?</p>	<p>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.</p>	<p><b>5.E.7.7</b> Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.***</p> <p>***This lesson focuses on natural disasters and designing solutions to protect a town from negative effects, but does not create a family preparedness plan.</p>








✓ **Stars & Planets Unit** (Stars & Planets)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b> <b>Solar System &amp; Sun Brightness</b> How can the Sun help us explore other planets?</p>	<p>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.</p>	<p><b>5.E.5.3</b> Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.</p> <p><b>5.E.5.2</b> Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.</p>	
 <p><b>Lesson 2</b> <b>Gravity</b> Why is gravity different on other planets?</p>	<p>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>	<p><b>5.P.13.1</b> Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.</p> <p><b>5.P.13.2</b> Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.</p> <p><b>5.P.13.3</b> Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.</p>	
 <p><b>Lesson 3</b> <b>Star Brightness &amp; Habitable Planets</b> Could there be life on other planets?</p>	<p>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.</p>	<p><b>Foundational for 5.E.5.1</b> Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way.</p>	

*Florida Specific Standard: 5.P.13.4* Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.

## Chemical Reactions & Properties of Matter Unit (Chemical Magic)




	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
 <p><b>Lesson 1</b> <b>Conservation of Matter</b> Are magic potions real?</p>	<p>Students observe that a salt and vinegar solution will turn a dull penny shiny again indicating that substances can change other substances.</p>	<p><b>Foundational for 5.P.8.4</b> Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.</p>	
 <p><b>Lesson 2</b> <b>Dissolving &amp; Particulate Nature of Matter</b> Could you transform something worthless into gold?</p>	<p>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.</p>	<p><b>Foundational for 5.P.8.2</b> Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.</p>	
 <p><b>Lesson 3</b> <b>Properties of Matter: Acids</b> What would happen if you drank a glass of acid?</p>	<p>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>	<p><b>5.P.8.1</b> Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.</p>	
 <p><b>Lesson 4</b> <b>Chemical Reactions</b> What do fireworks, rubber, and Silly Putty have in common?</p>	<p>Students combine different substances together to discover that chemical reactions can create new substances.</p>	<p><b>5.P.8.2</b> Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.</p>	
 <p><b>Lesson 5</b> <b>Gases &amp; Particle Models</b> Why do some things explode?</p>	<p>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>	<p><b>5.P.8.4</b> Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.</p>	

Florida Specific Standard: **5.P.9.1** Investigate and describe that many physical and chemical changes are affected by temperature.

Florida Specific Standard: **5.P.8.3** Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.

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

✓★ **Electricity, Light, & Heat Unit** (Electricity, Light, & Heat)

	Topic & Guiding Question	Student Objectives	Florida Next Generation Sunshine State Standards
<b>Lesson 1</b> 	<p><b>Renewable Energy &amp; Natural Resources</b></p> <p><i>What's the best way to light up a city?</i></p>	<p><i>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.</i></p>	<p><b>4.P.10.4</b> Describe how moving water and air are sources of energy and can be used to move things.</p> <p><b>4.E.6.6</b> Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).</p>
<b>Lesson 2</b> 	<p><b>Electrical Energy</b></p> <p>What if there were no electricity?</p>	<p>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>	<p><b>5.P.11.1</b> Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop).</p> <p><b>5.P.11.2</b> Identify and classify materials that conduct electricity and materials that do not.</p> <p><b>5.P.10.4</b> Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.</p>
<b>Lesson 3</b> 	<p><b>Heat Energy &amp; Energy Transfer</b></p> <p>How long did it take to travel across the country before cars and planes?</p>	<p>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>	<p><b>5.P.10.1</b> Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.</p> <p><b>5.P.10.2</b> Investigate and explain that energy has the ability to cause motion or create change.</p>

*Florida Specific Standard: 5.P.10.3 Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects.*