

Mystery Science Alignment with The Tennessee Academic Standards for Science

Mystery Science - Tennessee Alignment
Mystery Science aligns to the new Tennessee Academic Standards for Science. The core lesson (exploration & activity) is designed to take one hour per week. To view each lesson's alignment to 3 dimensional learning (disciplinary core ideas, science and engineering practices, and crosscutting concepts) view our NGSS Alignment document. Mini-lessons are 5-minute videos that answer K-5 student questions and can be used as a jumping off point to engage learners for a full lesson planned by the teacher.

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

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Kindergarten

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*Heredity*	**K.LS3.1** Make observations to describe that young plants and animals resemble their parents.	Plant & Animal Superpowers	**Lesson 4, Read Along:** Why do family members look alike?
	From Molecules to Organisms	**K.LS1.2** Recognize differences between living organisms and non-living materials and sort them into groups by observable physical attributes.		*Tennessee specific standard*
		K.LS1.2 Explain how humans use their five senses in making scientific findings.		*Tennessee specific standard*
		K.LS1.1 Use information from observations to identify differences between plants and animals (locomotion, obtainment of food, and take in air/gasses).	Plant & Animal Secrets Mini-lessons	**Lesson 1:** Why do woodpeckers peck wood? **Lesson 2, Read Along:** Where do animals live? **Lesson 3:** How can you find animals in the woods? **Lesson 4. Read Along:** How do animals make their homes in the forest? **Lesson 5:** How do plants and trees grow? **Lesson 6, Read Along:** Why would you want an old log in your backyard? **Mini-lesson:** Why are butterflies so colorful?** **Mini-lesson:** What is the biggest spider in the world?**
Earth & Space Science	*Earth & Human Activity*	**K.ESS3.1** Use a model to represent the relationship between the basic needs (shelter, food, water) of different plants and animals (including humans) and the places they live.		
		K.ESS3.3 Communicate solutions that will reduce the impact from humans on land, water, air, and other living things in the local environment.		*Tennessee specific standard*
		K.ESS3.2 Explain the purpose of weather forecasting to prepare for, and respond to, severe weather in Tennessee.		*Tennessee specific standard*

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MYSTERY science

Kindergarten, continued

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Earth & Space Science (cntd.)	*Earth's Systems*	**K.ESS2.1** Analyze and interpret weather data (precipitation, wind, temperature, cloud cover) to describe weather patterns that occur over time (hourly, daily) using simple graphs, pictorial weather symbols, and tools (thermometer, rain gauge).	Weather Watching Mini-lessons	**Lesson 1:** Have you ever watched a storm? **Lesson 2, Read Along:** How can you get ready for a big storm? **Lesson 3:** What will the weather be like on your birthday? **Lesson 4, Read Along:** How do you know what to wear for the weather? **Mini-lesson:** How do flowers bloom in the spring?** **Mini-lesson:** How do leaves change color in the fall?**
		K.ESS2.2 Develop and use models to predict weather and identify patterns in spring, summer, autumn, and winter.		
Physical Science	*Matter & Its Interactions*	**K.PS1.1** Plan and conduct an investigation to describe and classify different kinds of materials including wood, plastic, metal, cloth, and paper by their observable properties (color, texture, hardness, and flexibility) and whether they are natural or human-made.	Mini-lessons	**Mini-lessons:** How is plastic made? **Mini-lessons:** How is glass made? **Mini-lessons:** Where does metal come from?
		K.PS1.2 Conduct investigations to understand that matter can exist in different states (solid and liquid) and has properties that can be observed and tested.		
		K.PS1.3 Conduct an evidence-based account of how an object made of a small set of pieces (blocks, snap cubes) can be disassembled and made into a new object.		*Tennessee specific standard*

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Grade 1

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*From Molecules to Organisms*	**1.LS1.1** Recognize the structure of plants (roots, stems, leaves, flowers, fruits) and describe the function of the parts (taking in water and air, producing food, making new plants).	Plant & Animal Superpowers	**Lesson 5:** Why don't trees blow down in the wind? **Lesson 6, Read Along:** What do sunflowers do when you're not looking?
		1.LS1.2 Illustrate and summarize the life cycle of plants.		
		1.LS1.3 Analyze and interpret data from observations to describe how changes in the environment cause plants to respond in different ways.		
	Ecosystems	**1.LS2.1** Conduct an experiment to show how plants depend on air, water, minerals from soil, and light to grow and thrive.	Plant Adventures	**Lesson 1:** How did a tree travel halfway around the world? **Lesson 2:** Could a plant survive without light? **Lesson 3:** Why do trees grow so tall? **Lesson 4:** Should you water a cactus? **Lesson 5:** Where do plants grow best?
		1.LS2.2 Obtain and communicate information to classify plants by where they grow (water, land) and the plant's physical characteristics.		
		1.LS2.3 Recognize how plants depend on their surroundings and other living things to meet their needs in the places they live.		
Earth & Space Science	*Earth's Place in the Universe*	**1.ESS1.1** Use observations or models of the sun, moon, and stars to describe patterns that can be predicted.	Spinning Sky	**Lesson 1:** Could a statue's shadow move? **Lesson 2, Read Along:** What does your shadow do when you're not looking? **Lesson 3:** How can the sun help you if you're lost? **Lesson 4, Read Along:** Why do you have to go to bed early in the summer? **Lesson 5:** Why do the stars come out at night? **Lesson 6, Read Along:** How can stars help you if you get lost?
		1.ESS1.2 Observe natural objects in the sky that can be seen from Earth with the naked eye and recognize that a telescope, used as a tool, can provide greater detail of objects in the sky.		
		1.ESS1.3 Analyze data to predict patterns between sunrise and sunset, and the change of seasons.		

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Physical Science	*Energy*	**1.PS3.1** Make observations to determine how sunlight warms Earth's surfaces (sand, soil, rocks, and water).	Weather Watching Mini-lessons	**Lesson 5:** How could you warm up a frozen playground? **Lesson 6, Read Along:** How could you walk barefoot across hot pavement without burning your feet? **Mini-lesson:** Why does it get cold in winter?
	Waves & Applications	**1.PS4.1** Use a model to describe how light is required to make objects visible. Summarize how Illumination could be from an external light source or by an object giving off its own light.	Lights & Sounds Mini-lessons	**Lesson 3:** What if there were no windows? **Lesson 4, Read Along:** Can you see in the dark? **Lesson 5:** How could you send a secret message to someone far away? **Lesson 6, Read Along:** How do boats find their way in the fog? **Mini-lesson:** How is a rainbow made?**
		1.PS4.2 Determine the effect of placing objects made with different materials (transparent, translucent, opaque, and reflective) in the path of a beam of light.		

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Grade 2

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*Heredity*	**2.LS3.1** Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.	Plant & Animal Superpowers Mini-lessons	**Lesson 1:** Why do birds have beaks? **Lesson 2, Read Along:** Why do baby ducks follow their mother? **Lesson 3:** Why are polar bears white? **Mini-lesson:** Why can't fish breathe on land? **Mini-lesson:** Why do zebras have stripes? **Mini-lesson:** Why do cats purr? **Mini-lesson:** Can animals get a sunburn?
	From Molecules to Organisms	**2.LS1.1** Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.		
		2.LS1.3 Use simple graphical representations to show that species have unique and diverse life cycles.		*Tennessee specific standard*
		2.LS1.2 Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.	Animal Adventures Mini-lessons	**Lesson 1:** How many different kinds of animals are there? **Lesson 2:** Why do frogs say "ribbit"? **Lesson 3:** How could you get more birds to visit a bird feeder? **Mini-lesson:** Where do bugs go in winter? **Mini-lesson:** Why do animals come back after going to warm places in winter?
	Ecosystems	**2.LS2.1** Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.		
		2.LS2.2 Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation).		



MYSTERY science

Grade 2, continued

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Earth & Space Science	*Earth's Place in the Universe*	**2.ESS1.1** Recognize that some of Earth's natural processes are cyclical, while others have a beginning and an end. Some events happen quickly, while others occur slowly over time.	Work of Water Mini-lessons	**Lesson 1:** If you floated down a river, where would you end up? **Lesson 2:** Why is there sand at the beach? **Lesson 3:** What's strong enough to make a canyon? **Lesson 4:** How can you stop a landslide? **Mini-lesson:** Why is the ocean salty? **Mini-lesson:** How deep does the ocean go?
	Earth's Systems	**2.ESS2.1** Compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land.		
		2.EES2.2 Observe and analyze how blowing wind and flowing water can move Earth materials (soil, rocks) from one place to another, changing the shape of a landform and affecting the habitats of living things.		
		2.ESS2.3 Compare simple maps of different land areas to observe the shapes and kinds of land (rock, soil, sand) and water (river, stream, lake, pond).		
		2.ESS2.4 Use information obtained from reliable sources to explain that water is found in the ocean, rivers, streams, lakes, and ponds, and may be solid or liquid.		

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Physical Science	*Motion & Stability*	**2.PS2.1** Analyze the push or the pull that occurs when objects collide or are connected.	Force Olympics* Invisible Forces	**Lesson 1:** What's the biggest excavator? **Lesson 2, Read Along:** Why do builders need so many big machines? **Lesson 3:** How can you knock down a wall made of concrete? **Lesson 4, Read Along:** How can you knock down the most bowling pins? **Lesson 5:** How can we protect a mountain town from falling rocks? **Lesson 6, Read Along:** How could you invent a trap?
		2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.		
		2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.		
	Energy	**2.PS3.1** Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.		**Lesson 1:** Could you win a tug of war against a bunch of adults? **Lesson 2:** What makes bridges so strong? **Lesson 3:** How can you go faster down a slide?
		2.PS3.2 Make observations and conduct experiments to provide evidence that friction produces heat and reduces or increases the motion of an object.		
	Waves & Applications	**2.PS4.1** Plan and conduct investigations to demonstrate the cause and effect relationship between vibrating materials (tuning forks, water, bells) and sound.	Lights & Sounds	**Lesson 1:** How do they make silly sounds in cartoons? **Lesson 2, Read Along:** Where do sounds come from?
		2.PS4.2 Use tools and materials to design and build a device to understand that light and sound travel in waves and can send signals over a distance.		
		2.PS4.3 Observe and demonstrate that waves move in regular patterns of motion by disturbing the surface of shallow and deep water.		*Tennessee specific standard*

* Force Olympics is designed for Kindergarten NGSS, but can be taught in Grade 2 with modifications. Expect aspects of this unit to be intended for a younger audience.

Grade 3

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*From Molecules to Organisms*	**3.LS1.1** Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction	Human Machine Mini-lessons Power of Flowers* Animals Through Time	**Lesson 1:** Why do your biceps bulge? **Mini-lesson:** How does the heart pump blood?** **Mini-lesson:** Why do our skeletons have so many bones?** **Lesson 1:** Why do plants grow flowers? **Lesson 2:** Why do plants give us fruit? **Lesson 3:** Why are some apples red and some green? **Lesson 4:** How could you make the biggest fruit in the world? **Lesson 7:** What's the best way to get rid of mosquitoes? **Lesson 8:** How long can people (and animals) survive in outer space?
	Biological Change	**3.LS4.1** Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.		
		3.LS4.2 Infer that plant and animal adaptations help them survive in land and aquatic biomes		
		3.LS4.3 Explain how changes to an environment's biodiversity influence human resources.		
	Ecosystems	**3.LS2.1** Construct an argument to explain why some animals benefit from forming groups.	Animals Through Time	**Lesson 6:** Why do dogs wag their tails?

* Tip: Power of Flowers picks up where Plant Adventures (Tennessee Grade 1) leaves off. If your students haven't learned about what plants need for survival, or need a refresher, we suggest you teach Plant Adventures first.
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TN

MYSTERY science

Grade 3, continued

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Earth & Space Science	*Earth's Place in the Universe*	**3.ESS1.1** Use data to categorize the planets in the solar system as inner or outer planets according to their physical properties.	Mini-lessons	**Mini-lesson:** Is Pluto a planet?
	Earth's Systems	**3.ESS2.1** Explain the cycle of water on Earth.	Stormy Skies	**Lesson 1:** Where do clouds come from? **Lesson 2:** How can we predict when it's going to storm? **Lesson 3:** Why are some places always hot?
		3.ESS2.2 Associate major cloud types (cumulus, cumulonimbus, cirrus, stratus, nimbostratus) with weather conditions.		
		3.ESS2.3 Use tables, graphs, and tools to describe precipitation, temperature, and wind (direction and speed) to determine local weather and climate.	Watery Planet*	**Lesson 1:** How much water is in the world? **Lesson 2:** When you turn on the faucet, where does the water come from? **Lesson 3:** Can we make it rain?
		3.ESS2.4 Incorporate weather data to describe major climates (polar, temperate, tropical) in different regions of the world.		
	Earth & Human Activity	**3.ESS3.1** Explain how natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) impact humans and the environment.	Stormy Skies	**Lesson 4:** How can you keep a house from blowing away in a windstorm?
		3.ESS3.2 Design solutions to reduce the impact of natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) on the environment.	Watery Planet* Mini-lessons	**Lesson 4:** How can you save a town from a hurricane? **Mini-lesson:** What's worse: a hurricane or a tornado? **Mini-lesson:** Why are tornadoes so hard to predict? **Mini-lesson:** How do earthquakes happen? **Mini-lesson:** What makes hurricanes so dangerous? **Mini-lesson:** Why is it so difficult to put out wildfires?

* Watery Planet was designed for Grade 5 NGSS, but can be taught in Grade 3 with modifications. Expect aspects of this unit to be a challenge.



MYSTERY science

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Physical Science	*Matter & Its Interactions*	**3.PS1.1** Describe the properties of solids, liquids, and gases and identify that matter is made up of particles too small to be seen.	Material Magic	**Lesson 1:** Why do we wear clothes? **Lesson 2:** Can you really fry an egg on a hot sidewalk? **Lesson 3:** Why are so many toys made out of plastic? **Lesson 4:** What materials might be invented in the future? **Lesson 5:** Could you build a house out of paper?
		3.PS1.2 Differentiate between changes caused by heating or cooling that can be reversed and that cannot.		
		3.PS1.3 Describe and compare the physical properties of matter including color, texture, shape, length, mass, temperature, volume, state, hardness, and flexibility.		
	Motion & Stability	**3.PS2.1** Explain the cause and effect relationship of magnets.	Invisible Forces	**Lesson 4:** What can magnets do? **Lesson 5:** How can you unlock a door using a magnet?
		3.PS2.2 Solve a problem by applying the use of the interactions between two magnets.		
	Energy	**3.PS3.3** Evaluate how magnets cause changes in the motion and position of objects, even when the objects are not touching the magnet.		
		3.PS3.2 Apply scientific ideas to design, test, and refine a device that converts electrical energy to another form of energy, using open or closed simple circuits.	Energizing Everything	**Lesson 6:** What if there were no electricity?
		3.PS3.1 Recognize that energy is present when objects move; describe the effects of energy transfer from one object to another.	Mini-lessons	**Mini-lesson:** How do batteries work?

Grade 4

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Life Science	*Ecosystems*	**4.LS2.1** Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use carbon dioxide from the air, water, and energy from the sun to produce sugars, plant materials, and waste (oxygen); and that this process is called photosynthesis.	Web of Life	**Lesson 1:** Why would a hawk move to New York City? **Lesson 2:** What do plants eat? **Lesson 3:** Where do fallen leaves go? **Lesson 4:** Do worms really eat dirt? **Lesson 5:** Why do you have to clean a fish tank but not a pond? **Lesson 6:** Why did the dinosaurs go extinct?
		4.LS2.2 Develop models of terrestrial and aquatic food chains to describe the movement of energy among producers, herbivores, carnivores, omnivores, and decomposers		
		4.LS2.3 Using information about the roles of organisms (producers, consumers, decomposers), evaluate how those roles in food chains are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.		
		4.LS2.4 Develop and use models to determine the effects of introducing a species to, or removing a species from, an ecosystem and how either one can damage the balance of an ecosystem.		
		4.LS2.5 Analyze and interpret data about changes (land characteristics, water distribution, temperature, food, and other organisms) in the environment and describe what mechanisms organisms can use to affect their ability to survive and reproduce.		
	Biological Change	**4.LS4.1** Obtain information about what a fossil is and ways a fossil can provide information about the past.		*Tennessee specific standard*



MYSTERY science

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Earth & Space Science	*Earth's Place in the Universe*	**4.ESS1.2** Use a model to explain how the orbit of the Earth and sun cause observable patterns: a. day and night; b. changes in length and direction of shadows over a day.	Spaceship Earth Mini-lessons	**Mystery 1:** How fast does the Earth spin? **Mystery 2:** Who set the first clock? **Mini-lesson:** Why do places have different times?
		4.ESS1.1 Generate and support a claim with evidence that over long periods of time, erosion (weathering and transportation) and deposition have changed landscapes and created new landforms.	The Birth of Rocks	**Lesson 1:** Could a volcano pop up where you live? **Lesson 2:** Why do some volcanoes explode? **Lesson 3:** Will a mountain last forever? **Lesson 4:** How could you survive a landslide?
	Earth's Systems	**4.ESS2.1** Collect and analyze data from observations to provide evidence that rocks, soils, and sediments are broken into smaller pieces through mechanical weathering (frost wedging, abrasion, tree root wedging) and are transported by water, ice, wind, gravity, and vegetation.		
		4.ESS2.2 Interpret maps to determine that the location of mountain ranges, deep ocean trenches, volcanoes, and earthquakes occur in patterns.		
		4.ESS2.3 Provide examples to support the claim that organisms affect the physical characteristics of their regions.		*Tennessee specific standard*
		4.ESS2.4 Analyze and interpret data on the four layers of the Earth, including thickness, composition, and physical states of these layers.		*Tennessee specific standard*
	Earth & Human Activity	**4.ESS3.1** Obtain and combine information to describe that energy and fuels are derived from natural resources and that some energy and fuel sources are renewable (sunlight, wind, water) and some are not (fossil fuels, minerals).	Energizing Everything	**Lesson 8:** Where does energy come from?
		4.ESS3.2 Create an argument, using evidence from research, that human activity (farming, mining, building) can affect the land and ocean in positive and/or negative ways.		*Tennessee specific standard*



MYSTERY science

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Physical Science	*Energy*	**4.PS3.1** Use evidence to explain the cause and effect relationship between the speed of an object and the energy of an object.	Energizing Everything	**Lesson 1:** How is your body similar to a car? **Lesson 2:** What makes roller coasters go so fast? **Lesson 3:** Why is the first hill of a roller coaster always the highest? **Lesson 4:** Could you knock down a building using only dominoes? **Lesson 5:** Can you build a chain reaction machine?
		4.PS3.2 Observe and explain the relationship between potential energy and kinetic energy.		
		4.PS3.3 Describe how stored energy can be converted into another form for practical use.		
	Waves & Applications	**4.PS4.1** Use a model of a simple wave to explain regular patterns of amplitude, wavelength, and direction	Waves of Sound	**Lesson 1:** How far can a whisper travel? **Lesson 2:** What would happen if you screamed in outer space? **Lesson 3:** Why are some sounds high and some sounds low?
		4.PS4.2 Describe how the colors of available light sources and the bending of light waves determine what we see.	Human Machine	**Lesson 2:** What do people who are blind see? **Lesson 3:** How can some animals see in the dark?
		4.PS4.3 Investigate how lenses and digital devices like computers or cell phones use waves to enhance human senses.		*Tennessee specific standard*

Grade 5

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Life Science	*From Molecules to Organisms*	**5.LS1.1** Compare and contrast animal responses that are instinctual versus those that that are gathered through the senses, processed, and stored as memories to guide their actions.	Human Machine	**Lesson 4:** How does your brain control your body?
	Heredity	**5.LS3.1** Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment. Apply this concept by giving examples of characteristics of living organisms that are influenced by both inheritance and the environment.	Animals Through Time*	**Lesson 4:** What kinds of animals might there be in the future? **Lesson 5:** Can selection happen without people?
		5.LS3.2 Provide evidence and analyze data that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.		
	Biological Change	**5.LS$.2** Use evidence to construct an explanation for how variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction.		
		5.LS4.1 Analyze and interpret data from fossils to describe types of organisms and their environments that existed long ago. Compare similarities and differences of those to living organisms and their environments. Recognize that most kinds of animals (and plants) that once lived on Earth are now extinct.	Animals Through Time* Mini-lessons	**Lesson 1:** Where can you find whales in a desert? **Lesson 2:** How do we know what dinosaurs looked like? **Lesson 3:** Can you outrun a dinosaur? **Mini-lesson:** Were dragons ever real? **Mini-lesson:** Could a turtle live outside its shell?

* Animals Through Time was designed for Grade 3 NGSS, but can be taught in Grade 5 with modifications. Expect aspects of this unit to be intended for a younger audience.

TN

MYSTERY science

Grade 5, continued

Mystery Science aligns to the new Tennessee Academic Standards for Science. The core lesson (exploration & activity) is designed to take one hour per week. Extensions can expand upon each lesson. To view each lesson's alignment to 3 dimensional learning (disciplinary core ideas, science and engineering practices, and crosscutting concepts) view our NGSS Alignment document. Mini-lessons are 5-minute videos that answer K-5 student questions and can be used as a jumping off point to engage learners for a full lesson planned by the teacher.

Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Earth & Space Science	*Earth's Place in the Universe*	**5.ESS1.2** Research and explain the position of the Earth and the solar system within the Milky Way galaxy, and compare the size and shape of the Milky Way to other galaxies in the universe.		*Tennessee specific standard*
		5.ESS1.3 Use data to categorize different bodies in our solar system including moons, asteroids, comets, and meteoroids according to their physical properties and motion.	Spaceship Earth Mini-lessons	**Lesson 3:** How can the Sun tell you the season? **Lesson 4:** Why do the stars change with the seasons? **Lesson 5:** Why does the moon change shape? **Lesson 6:** What are the wandering stars? **Lesson 7:** Why is gravity different on other planets? **Lesson 8:** Could there be life on other planets? **Mini-lesson:** How often do eclipses happen? **Mini-lesson:** Why does the Moon turn blood red during a lunar eclipse? **Mini-lesson:** How close could an astronaut get to the Sun? **Mini-lesson:** What would it be like to live on the Moon?
		5.ESS1.1 Explain that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.		
		5.ESS1.4 Explain the cause and effect relationship between the positions of the sun, earth, and moon and resulting eclipses, position of constellations, and appearance of the moon.		
		5.ESS1.5 Relate the tilt of the Earth's axis, as it revolves around the sun, to the varying intensities of sunlight at different latitudes. Evaluate how this causes changes in day-lengths and seasons.		
		5.ESS1.6 Use tools to describe how stars and constellations appear to move from the Earth's perspective throughout the seasons.		
		5.ESS1.7 Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.		*Tennessee specific standard*



MYSTERY science

Grade 5, continued

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Strand	Topic	Tennessee Academic Standard	Mystery Science Unit	Mystery Science Lessons
Physical Science	*Matter & Its Interactions*	**5.PS1.1** Analyze and interpret data from observations and measurements of the physical properties of matter to explain phase changes between a solid, liquid, or gas.	Chemical Magic	**Lesson 1:** Are magic potions real? **Lesson 2:** Could you transform something worthless into gold? **Lesson 3:** What would happen if you drank a glass of acid? **Lesson 4:** What do fireworks, rubber, and silly putty have in common? **Lesson 5:** Why do some things explode?
		5.PS1.2 Analyze and interpret data to show that the amount of matter is conserved even when it changes form, including transitions where matter seems to vanish.		
		5.PS1.3 Design a process to measure how different variables (temperature, particle size, stirring) affect the rate of dissolving solids into liquids.		
		5.PS1.4 Evaluate the results of an experiment to determine whether the mixing of two or more substances result in a change of properties.		
	Motion & Stability	**5.PS2.1** Test the effects of balanced and unbalanced forces on the speed and direction of motion of objects.	Energizing Everything	**Lesson 7:** How long did it take to travel across the country before cars and planes?
		5.PS2.2 Make observations and measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.		
		5.PS2.5 Explain how forces can create patterns within a system (moving in one direction, shifting back and forth, or moving in cycles), and describe conditions that affect how fast or slowly these patterns occur.		
		5.PS2.3 Use evidence to support that the gravitational force exerted by Earth on objects is directed toward the Earth's center.	Spaceship Earth Mini-lessons	**Lesson 7:** Why is gravity different on other planets? **Mini-lesson:** Why can't airplanes fly to space?**
		5.PS2.4 Explain the cause and effect relationship of two factors (mass and distance) that affect gravity.		

**Indicates a mini-lesson with an included hands-on STEAM activity from Mystery Science.