



# Mystery Science Alignment with the Virginia Science Standards of Learning (2018)

## Mystery Science - Virginia Alignment

Mystery Science aligns to the new Virginia Science Standards of Learning (2018). 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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<https://mysteryscience.com/docs/virginia>



## Kindergarten, continued

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| Strand                | Topic                 | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                                        | Mystery Science Unit             | Mystery Science Lessons                                                                                                                                                                                                                                      |
|-----------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Earth & Space Science | Earth & Space Systems | <b>K.8</b> Light influences temperature on Earth's surfaces and can cause shadows. Key ideas include: (a) the sun provides light and warms Earth's surfaces; (b) shadows can be produced when sunlight or artificial light is blocked by an object; and (c) objects in shadows and objects in sunlight have different temperatures. | <a href="#">Weather Watching</a> | <b>Lesson 5:</b> How could you warm up a frozen playground?<br><b>Lesson 6, Read Along:</b> How could you walk barefoot across hot pavement without burning your feet?                                                                                       |
|                       |                       | <b>K.9</b> There are patterns in nature. Key patterns include: (a) daily weather; (b) seasonal changes; and (c) day and night.                                                                                                                                                                                                      | <a href="#">Weather Watching</a> | <b>Lesson 1:</b> Have you ever watched a storm?<br><b>Lesson 2, Read Along:</b> How can you get ready for a big storm?<br><b>Lesson 3:</b> What will the weather be like on your birthday?<br><b>Lesson 4:</b> How do you know what to wear for the weather? |
|                       |                       | <b>K.10</b> Change occurs over time. Key ideas include: (a) natural and human-made things change over time; (b) living and non-living things change over time; (c) changes can be observed and measured; and (d) changes may be fast or slow.                                                                                       |                                  |                                                                                                                                                                                                                                                              |
|                       | Earth's Resources     | <b>K.11</b> Humans use resources. Key ideas include: (a) some materials and objects can be used over and over again; (b) materials can be recycled; and (c) choices we make impact the air, water, land, and living things.                                                                                                         |                                  |                                                                                                                                                                                                                                                              |



## Kindergarten, continued

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| Strand              | Topic                         | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                      | Mystery<br>Science Unit            | Mystery Science Lessons                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical<br>Science | Force,<br>Motion, &<br>Energy | <b>K.2</b> Pushes and pulls affect the motion of objects. Key ideas include: (a) pushes and pulls cause an object to move; (b) pushes and pulls can change the direction of an object; and (c) changes in motion are related to the strength of the push or pull. | <a href="#">Force<br/>Olympics</a> | <b>Lesson 1:</b> What's the biggest excavator?<br><b>Lesson 2, Read Along:</b> Why do builders need so many big machines?<br><b>Lesson 3:</b> How can you knock down a wall made of concrete?<br><b>Lesson 4, Read Along:</b> How can you knock down the most bowling pins?<br><b>Lesson 5:</b> How can we protect a mountain town from falling rocks?<br><b>Lesson 6, Read Along:</b> How could you invent a trap? |
|                     | Matter                        | <b>K.3</b> Physical properties of an object can be described. Properties include (a) colors; (b) shapes and forms; (c) textures and feels; and (d) relative sizes and weights of objects.                                                                         |                                    | <i>Virginia specific standard</i>                                                                                                                                                                                                                                                                                                                                                                                   |
|                     |                               | <b>K.4</b> Water is important in our daily lives and has properties. Key ideas include: (a) water has many uses; (b) water can be found in many places; (c) water occurs in different phases; and (d) water flows downhill.                                       |                                    | <i>Virginia specific standard</i>                                                                                                                                                                                                                                                                                                                                                                                   |



# Grade 1

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| Strand                | Topic                      | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                                       | Mystery Science Unit                                                                    | Mystery Science Lessons                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Life Science          | Living Systems & Processes | 1.4 Plants have basic life needs and functional parts that allow them to survive. Key ideas include: (a) plants need nutrients, air, water, light, and a place to grow; (b) structures of plants perform basic functions; and (c) plants can be classified based on a variety of characteristics.                                  | <a href="#">Plant &amp; Animal Superpowers</a><br><br><a href="#">Plant Adventures</a>  | <b>Lesson 5:</b> Why don't trees blow down in the wind?<br><b>Lesson 6, Read Along:</b> What do sunflowers do when you're not looking?<br><br><b>Lesson 1:</b> How did a tree travel halfway around the world?<br><b>Lesson 2:</b> Could a plant survive without light?<br><b>Lesson 3:</b> Why do trees grow so tall?<br><b>Lesson 4:</b> Should you water a cactus?<br><b>Lesson 5:</b> Where do plants grow best? |
|                       |                            | 1.5 Animals, including humans, have basic life needs that allow them to survive. Key ideas include: (a) animals need air, food, water, shelter, and space (habitat); (b) animals have different physical characteristics that perform specific functions; and (c) animals can be classified based on a variety of characteristics. | <a href="#">Plant &amp; Animal Superpowers</a><br><br><a href="#">Animal Adventures</a> | <b>Lesson 1:</b> Why do birds have beaks?<br><b>Lesson 2, Read Along:</b> Why do baby ducks follow their mother?<br><b>Lesson 3:</b> Why are polar bears white?<br><br><b>Lesson 1:</b> How many different kinds of animals are there?                                                                                                                                                                               |
| Earth & Space Science | Earth & Space Systems      | 1.6 There is a relationship between the Sun and Earth. Key ideas include: (a) the Sun is the source of energy and light that warms the Earth's land, air, and water; and (b) the sun's relative position changes in the Earth's sky throughout the day.                                                                            | <a href="#">Spinning Sky</a>                                                            | <b>Lesson 1:</b> Could a statue's shadow move?<br><b>Lesson 2, Read Along:</b> What does your shadow do when you're not looking?<br><b>Lesson 3:</b> How can the sun help you if you're lost?                                                                                                                                                                                                                        |



## Grade 1, continued

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| Strand                               | Topic                   | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                                                                                                                                | Mystery Science Unit                | Mystery Science Lessons                                                                                                                                                                                                                                       |
|--------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Earth & Space Science<br><br>(Cont.) | Earth & Space Systems   | <b>1.7</b> There are weather and seasonal changes. Key ideas include: (a) changes in temperature, light, and precipitation occur over time; (b) there are relationships between daily weather and the season; and (c) changes in temperature, light, and precipitation affect plants and animals, including humans.                                                                                                         | <a href="#">Spinning Sky</a>        | <b>Lesson 4, Read Along:</b> Why do you have to go to bed early in the summer?<br><b>Lesson 5:</b> Why do the stars come out at night?<br><b>Lesson 6, Read Along:</b> How can the stars help you if you get lost?                                            |
|                                      | Earth's Resources       | <b>1.8</b> Natural resources can be used responsibly. Key ideas include: (a) most natural resources are limited; (b) human actions can affect the availability of natural resources; and (c) reducing, reusing, and recycling are ways to conserve natural resources.                                                                                                                                                       | <a href="#">Mini-lessons</a>        | <b>Mini-lessons:</b> How is plastic made?                                                                                                                                                                                                                     |
| Physical Science                     | Force, Motion, & Energy | <b>1.2</b> Objects can move in different ways. Key ideas include: (a) objects may have straight, circular, spinning, and back-and-forth motions; and (b) objects may vibrate and produce sound.                                                                                                                                                                                                                             | <a href="#">Lights &amp; Sounds</a> | <b>Lesson 1:</b> How do they make silly sounds in cartoons?<br><b>Lesson 2, Read Along:</b> Where do sounds come from?                                                                                                                                        |
|                                      | Matter                  | <b>1.3</b> Objects are made from materials that can be described by their physical properties. Key ideas include: (a) objects are made of one or more materials with different physical properties and can be used for a variety of purposes; (b) when a material is changed in size most physical properties remain the same; and (c) the type and amount of material determine how much light can pass through an object. | <a href="#">Lights &amp; Sounds</a> | <b>Lesson 3:</b> What if there were no windows?<br><b>Lesson 4, Read Along:</b> Can you see in the dark?<br><b>Lesson 5:</b> How could you send a secret message to someone far away?<br><b>Lesson 6, Read Along:</b> How do boats find their way in the fog? |



## Grade 2

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| Strand                | Topic                      | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                         | Mystery Science Unit                                                  | Mystery Science Lessons                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Life Science          | Living Systems & Processes | 2.5 Living things are a part of a system. Key ideas include (a) plants and animals are interdependent with their living and nonliving surroundings; (b) an animal's habitat provides all of its basic needs; and (c) habitat change over time due to many influences.                                                | <a href="#">Animal Adventures</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 2:</b> Why do frogs say "ribbit"?<br><b>Lesson 3:</b> How could you get more birds to visit a bird feeder?<br><br><b>Mini-lesson:</b> Why do animals come back after going to warm places in the winter?<br><b>Mini-lesson:</b> Why can't fish breathe on land?<br><b>Mini-lesson:</b> Where do bugs go in winter?                                                                                                   |
|                       |                            | 2.4 Plants and animals undergo a series of orderly changes as they grow and develop. Key ideas include: (a) animals have life cycles; and (b) plants have life cycles.                                                                                                                                               | <a href="#">Power of Flowers*</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 1:</b> Why do plants grow flowers?<br><b>Lesson 2:</b> Why do plants give us fruit?<br><b>Lesson 3:</b> Why are some apples red and some green?<br><b>Lesson 4:</b> How could you make the biggest fruit in the world?<br><br><b>Mini-lesson:</b> How do flowers bloom in the spring?**<br><b>Mini-lesson:</b> Why do leaves change color in the fall?**<br><b>Mini-lesson:</b> Why do birds lay eggs in the spring? |
| Earth & Space Science | Earth & Space Systems      | 2.6 There are different types of weather on Earth. Key ideas include: (a) different types of weather have specific characteristics; (b) measuring, recording, and interpreting weather data allows for identification of weather patterns; and (c) tracking weather allows us to prepare for the weather and storms. | <a href="#">Stormy Skies</a>                                          | <b>Lesson 1:</b> Where do clouds come from?<br><b>Lesson 2:</b> How can we predict when it's going to storm?<br><b>Lesson 4:</b> How can you keep a house from blowing away in a windstorm?                                                                                                                                                                                                                                    |
|                       |                            | 2.7 Weather patterns and seasonal changes affect plants, animals, and their surroundings. Key ideas include: (a) weather and seasonal changes affect the growth and behavior of living things; (b) wind and weather can change the land; and (c) changes can happen quickly or slowly over time.                     | <a href="#">Work of Water</a>                                         | <b>Lesson 1:</b> If you floated down a river, where would you end up?<br><b>Lesson 2:</b> Why is there sand at the beach?<br><b>Lesson 3:</b> What's strong enough to make a canyon?<br><b>Lesson 4:</b> How can you stop a landslide?                                                                                                                                                                                         |

\* Power of Flowers picks up where Plant Adventures (Virginia 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.

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



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|----------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Earth & Space Science<br>(Cont.) | Earth Resources         | 2.8 Plants are important natural resources. Key ideas include: (a) the availability of plant products affects the development of a geographical area; (b) plants provide oxygen, homes, and food for many animals; and (c) plants can help reduce the impact of wind and water. |                                                                                                        | Virginia specific standard                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Physical Science                 | Force, Motion, & Energy | 2.2 Different types of forces may cause an object's motion to change. Key ideas include: (a) forces from direct contact can cause an object to move; (b) some forces, including gravity can cause an object to move; and (c) forces have applications in our lives.             | <a href="#">Mini-lessons</a>                                                                           | Mini-lesson: Why can't airplanes fly to space?**                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                  | Matter                  | 2.3 Matter can exist in different phases. Key ideas include: (a) matter has mass and takes up space; (b) solids, liquids, and gases have different characteristics; and (c) heating and cooling can change the phases of matter.                                                | <a href="#">Material Magic</a><br><br><a href="#">Stormy Skies</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 1:</b> Why do we wear clothes?<br><b>Lesson 2:</b> Can you really fry an egg on a hot sidewalk?<br><b>Lesson 3:</b> Why are so many toys made out of plastic?<br><b>Lesson 4:</b> What materials might be invented in the future?<br><b>Lesson 5:</b> Could you build a house out of paper?<br><br><b>Lesson 1:</b> Where do clouds come from?<br><br><b>Mini-lesson:</b> How is glass made?<br><b>Mini-lesson:</b> How are diamonds made? |

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| Strand                | Topic                      | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                                | Mystery Science Unit                                                     | Mystery Science Lessons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Life Science          | Living Systems & Processes | 3.4 Adaptations allow organisms to satisfy life needs and respond to the environment. Key ideas include: (a) populations may adapt over time; (b) adaptations may be behavioral or physical; and (c) fossils provide evidence about the types of organisms that lived long ago as well as the nature of their environments. | <a href="#">Animals Through Time</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 1:</b> Where can you find whales in a desert?<br><b>Lesson 2:</b> How do we know what dinosaurs looked like?<br><b>Lesson 3:</b> Can you outrun a dinosaur?<br><b>Lesson 4:</b> What kinds of animals might there be in the future?<br><b>Lesson 5:</b> Can selection happen without people?<br><b>Lesson 6:</b> Why do dogs wag their tails?<br><b>Lesson 7:</b> What's the best way to get rid of mosquitoes?<br><b>Lesson 8:</b> How long can people (and animals) live in outer space?<br><br><b>Mini-lesson:</b> What is the biggest spider in the world?**<br><b>Mini-lesson:</b> Why are butterflies so colorful?**<br><b>Mini-lesson:</b> Why do baby animals look so cute?<br><b>Mini-lesson:</b> Why do zebras have stripes?<br><b>Mini-lesson:</b> Where do bugs go in winter?<br><b>Mini-lesson:</b> Why do we have eyebrows? |
|                       |                            | 3.5 Aquatic and terrestrial ecosystems support a diversity of organisms. Key ideas include: (a) ecosystems are made up of living and nonliving components of the environment; and (b) relationships exist among organisms in an ecosystem.                                                                                  |                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Earth & Space Science | Earth & Space Systems      | 3.6 Soil is important in ecosystems. Key ideas include: (a) soil, with its different components, is important to organisms; and (b) soil provides support and nutrients necessary for plant growth.                                                                                                                         |                                                                          | Virginia specific standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                       |                            | 3.7 There is a water cycle and water is important to life on Earth. Key ideas include: (a) there are many reservoirs of water on Earth; (b) the energy from the sun drives the water cycle; and (c) the water cycle involves specific processes.                                                                            | <a href="#">Watery Planet</a> *                                          | <b>Lesson 1:</b> How much water is in the world?<br><b>Lesson 2:</b> When you turn on the faucet, where does the water come from?<br><b>Lesson 3:</b> Can we make it rain?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

\* [Watery Planet](#) was designed for Grade 5 NGSS, but can be taught in Grade 3 with modifications. Expect aspects of this unit to be challenging for Grade 3.

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## Grade 3, continued

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|----------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Earth & Space Science<br>(Cont.) | Earth Resources         | 3.8 Natural events and humans influence ecosystems. Key ideas include: (a) human activity affects the quality of air, water, and habitats; (b) water is limited and needs to be conserved; (c) fire, flood, disease, and erosion affect ecosystems; and (d) soil is a natural resource and should be conserved.                 | <a href="#">Watery Planet*</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 4:</b> How can you save a town from a hurricane?<br><br><b>Mini-lesson:</b> Why is it so hard for firefighters to put out wildfires?                                                                                                                                              |
| Physical Science                 | Force, Motion, & Energy | 3.2 The direction and size of force affects the motion of an object. Key ideas include: (a) multiple forces many act on an object; (b) the net force of an object determines how an object moves; (c) simple machines increase or change the direction of a force; and (d) simple and compound machines have many applications. | <a href="#">Invisible Forces</a>                                   | <b>Lesson 1:</b> How could you win a tug-of-war against a bunch of adults?<br><b>Lesson 2:</b> What makes bridges so strong?<br><b>Lesson 3:</b> How can you go faster down a slide?<br><b>Lesson 4:</b> What can magnets do?<br><b>Lesson 5:</b> How can you unlock a door using a magnet? |
|                                  | Matter                  | 3.3 Materials interact with water. Key ideas include: (a) solids and liquids mix with water in different ways; and (b) many solids dissolve more easily in hot water than in cold water.                                                                                                                                        |                                                                    | <i>Virginia specific standard</i>                                                                                                                                                                                                                                                           |

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## Grade 4

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| Strand       | Topic                      | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                                                                                                                                          | Mystery Science Unit                                              | Mystery Science Lessons                                                                                                                                                                                                                                                                                                                              |
|--------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Life Science | Living Systems & Processes | <b>4.2</b> Plants and animals have structures that distinguish them from one another and play vital roles in their ability to survive. Key ideas include: (a) the survival of plants and animals depends on photosynthesis; (b) plants and animals have different structures and processes for obtaining energy; and (c) plants and animals have different structures and processes for creating offspring.                           | <a href="#">Human Machine</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 1:</b> Why do your biceps bulge?<br><b>Lesson 2:</b> What do people who are blind see?<br><b>Lesson 3:</b> How can some animals see in the dark?<br><b>Lesson 4:</b> How does your brain control your body?<br><br><b>Mini-lesson:</b> How does your heart pump blood?**<br><b>Mini-lesson:</b> Why do our skeletons have so many bones**? |
|              |                            | <b>4.3</b> Organisms, including humans, interact with one another and with the nonliving components in the ecosystem. Key ideas include: (a) interrelationships exist in populations, communities, and ecosystems; (b) food webs show the flow of energy within an ecosystem; (c) changes in an organism's niche and habitat may occur at various stages in its life cycle; and (d) classification can be used to identify organisms. | <a href="#">Web of Life</a>                                       | <b>Lesson 1:</b> Why would a hawk move to New York City?<br><b>Lesson 2:</b> What do plants eat?<br><b>Lesson 3:</b> Where do fallen leaves go?<br><b>Lesson 4:</b> Do worms really eat dirt?<br><b>Lesson 5:</b> Why do you have to clean a fish tank but not a pond?<br><b>Lesson 6:</b> Why did the dinosaurs go extinct?                         |

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## Grade 4, continued

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| Earth & Space Science | Earth & Space Systems | 4.4 Weather conditions and phenomena affect ecosystems and can be predicted. Key ideas include: (a) weather measurements create a record that can be used to make weather predictions; (b) common and extreme weather events affect ecosystems; and (c) long term seasonal weather trends determine the climate of the region.                                      | <a href="#">Stormy Skies</a><br><br><a href="#">Mini-lessons</a>    | <b>Lesson 3:</b> Why are some places always hot?<br><br><b>Mini-lesson:</b> What's worse: a hurricane or a tornado?<br><b>Mini-lesson:</b> What makes hurricanes so dangerous?<br><b>Mini-lesson:</b> Why are tornadoes so hard to predict?                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                       |                       | 4.5 The planets have characteristics and a specific place in the solar system. Key ideas include: (a) planets rotate on their axes and revolve around the sun; (b) planets have characteristics and a specific order in the solar system; and (c) the sizes of the sun and planets can be compared to one another.                                                  | <a href="#">Spaceship Earth</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 1:</b> How fast does the Earth spin?<br><b>Lesson 2:</b> Who set the first clock?<br><b>Lesson 3:</b> How can the Sun tell you the season?<br><b>Lesson 4:</b> Why do the stars change with the seasons?<br><b>Lesson 5:</b> Why does the Moon change shape?<br><b>Lesson 6:</b> What are the wandering stars?<br><b>Lesson 7:</b> Why is gravity different on other planets?<br><b>Lesson 8:</b> Could there be life on other planets?<br><br><b>Mini-lesson:</b> How often do eclipses happen?<br><b>Mini-lesson:</b> Why are people making such a big deal about the solar eclipse?<br><b>Mini-lesson:</b> Why does the moon turn blood red during a lunar eclipse? |
|                       |                       | 4.6 There are relationships among Earth, the moon, and the sun. Key relationships include: (a) the motions of Earth, the moon, and the sun; (b) the causes for Earth's seasons; (c) the causes for the four major phases of the moon and the relationship to the tide cycles; and (d) the relative size, position, age, and makeup of Earth, the moon, and the sun. | <a href="#">Mini-lessons</a>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                       |                       | 4.7 The ocean environment has characteristics. Key characteristics include: (a) geology of the ocean floor; (b) physical properties and movement of ocean water; and (c) interaction of organisms in the ocean.                                                                                                                                                     | <a href="#">Mini-lessons</a>                                        | <b>Mini-Lesson:</b> How deep does the ocean go?<br><b>Mini-lesson:</b> Why is the ocean salty?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                       | Earth Resources       | 4.8 Virginia has important natural resources. Key resources include: (a) watersheds and water; (b) plants and animals; (c) minerals, rocks, and ores; and (d) forests, soil, and land.                                                                                                                                                                              |                                                                     | Virginia specific standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



## Grade 5

Mystery Science aligns to the new Virginia Science Standards of Learning. 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                   | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                                                                                                                                                 | Mystery Science Unit                                                   | Mystery Science Lessons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Earth & Space Science | Earth & Space Systems   | <b>5.8</b> Earth constantly changes. Key ideas include: (a) Earth's internal energy causes movement of material within the Earth; (b) plate tectonics describe movement of the crust; (c) the rock cycle models the transformation of rocks; (d) processes such as weathering, erosion, and deposition change the surface of the Earth; and (e) fossils and geologic patterns provide evidence of Earth's change.                            | <a href="#">The Birth of Rocks</a><br><br><a href="#">Mini-lessons</a> | <b>Lesson 1:</b> Could a volcano pop up where you live?<br><b>Lesson 2:</b> Why do some volcanoes explode?<br><b>Lesson 3:</b> Will a mountain last forever?<br><b>Lesson 4:</b> How could you survive a landslide?<br><br><b>Mini-lesson:</b> How do earthquakes happen?<br><b>Mini-lesson:</b> Can you make lava?                                                                                                                                                                                                                         |
|                       | Earth Resources         | <b>5.9</b> The conversion of energy resources is important. Key ideas include: (a) some sources of energy are considered renewable and others are not; (b) individuals and communities have means of conserving both energy and matter; and (c) advances in technology improve the ability to transfer and transform energy.                                                                                                                 | <a href="#">Energizing Everything</a>                                  | <b>Lesson 8:</b> Where does energy come from?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Physical Science      | Force, Motion, & Energy | <b>5.2</b> Energy can take many forms. Key ideas include: (a) energy is the ability to do work or to cause change; (b) there are many different forms of energy; (c) energy can be transformed; and (d) energy is conserved.                                                                                                                                                                                                                 | <a href="#">Energizing Everything</a>                                  | <b>Lesson 1:</b> How is your body similar to a car?<br><b>Lesson 2:</b> What makes roller coasters go so fast?<br><b>Lesson 3:</b> Why is the first hill of a roller coaster always the highest?<br><b>Lesson 4:</b> Could you knock down a building using only dominoes?<br><b>Lesson 5:</b> Can you build a chain reaction machine?<br><b>Lesson 6:</b> What if there were no electricity?<br><b>Lesson 7:</b> How long did it take to travel across the country before cars and planes?<br><b>Lesson 8:</b> Where does energy come from? |
|                       |                         | <b>5.3</b> There is a relationship between force and energy of moving objects. Key ideas include: (a) moving objects have kinetic energy; (b) motion is described by an object's direction and speed; (c) changes in motion are related to net force and mass; (d) when objects collide, the contact forces transfer energy and can change; and (e) friction is a force that opposes motion.                                                 |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                       |                         | <b>5.4</b> Electricity is transmitted and used in daily life. Key ideas include: (a) electricity flows easily through conductors but not insulators; (b) electricity flows through closed circuits; (c) static electricity can be generated by rubbing certain materials together; (d) electrical energy can be transformed into radiant, mechanical, and thermal energy; and (e) a current flowing through a wire creates a magnetic field. |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



## Grade 5, continued

Mystery Science aligns to the new Virginia Science Standards of Learning. 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                                                        | Virginia Standard<br><i>Students will investigate and understand that...</i>                                                                                                                                                                                                                                                                                                         | Mystery Science Unit           | Mystery Science Lessons                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Physical Science</b><br><br><b>(Cont.)</b> | <i>Force, Motion, &amp; Energy</i><br><br><i>(Continued)</i> | <b>5.5</b> Sound can be produced and transmitted. Key ideas include: (a) sound is produced when an object or substance vibrates; (b) sound is the transfer of energy; (c) different media transmit sound differently; (d) sound waves have many uses and applications.                                                                                                               | <a href="#">Waves of Sound</a> | <b>Lesson 1:</b> How far can a whisper travel?<br><b>Lesson 2:</b> What would happen if you screamed in outer space?<br><b>Lesson 3:</b> Why are some sounds high and some sounds low?                                                                                                                             |
|                                               |                                                              | <b>5.6</b> Visible light has certain characteristics and behaves in predictable ways. Key ideas include: (a) visible light is radiant energy that moves in transverse waves; (b) the visible spectrum includes light with different wavelengths; (c) matter influences the path of light; and (d) radiant energy can be transformed into thermal, mechanical, and electrical energy. | <a href="#">Mini-lessons</a>   | <b>Mini-lesson:</b> How is a rainbow made?<br><b>Mini-lesson:</b> Why is the sky blue?                                                                                                                                                                                                                             |
|                                               | <i>Matter</i>                                                | <b>5.7</b> Matter has properties and interactions. Key ideas include: (a) matter is composed of atoms; substances can be mixed together without changes to their physical properties; and (c) energy has an effect on the phases of matter.                                                                                                                                          | <a href="#">Chemical Magic</a> | <b>Lesson 1:</b> Are magic potions real?<br><b>Lesson 2:</b> Could you transform something worthless into gold?<br><b>Lesson 3:</b> What would happen if you drank a glass of acid?<br><b>Lesson 4:</b> What do fireworks, rubber, and silly putty have in common?<br><b>Lesson 5:</b> Why do some things explode? |

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