Mystery Science Alignment with the Minnesota Academic Standards in Science (2019)

Mystery Science - Minnesota Alignment
Mystery Science aligns to the new Minnesota Academic Standards in Science (2019). The core Mystery (exploration & activity) is designed to take one hour per week. To view each Mystery'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 Mystery 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

Mystery Science aligns to the new *Minnesota Academic Standards in Science (2019)*. The core Mystery (exploration & activity) is designed to take one hour per week. Extensions can expand upon each lesson. To view each Mystery'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	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Life Science	**0L.1.2.1.2** Make observations of plants and animals to compare the diversity of life in different habitats.	Plant & Animal Secrets	**Mystery 1:** Why do woodpeckers peck wood? **Mystery 2, Read-Along:** Where do animals live? **Mystery 3:** How can you find animals in the woods? **Mystery 4, Read-Along:** How do animals make their homes in the forest? **Mystery 5:** How do plants and trees grow? **Mystery 6, Read-Along:** Why would you want an old log in your backyard?
	0L.2.1.1.3 Record and use observations to describe patterns of what plants and animals (including humans) need to survive.		
	0L.3.1.1.1 Develop a simple model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.	Mini-lessons	**Mini-lesson:** Why are butterflies so colorful?** **Mini-lesson:** Why do snakes shed their skin?
Earth & Space Science	**0E.1.1.1.1** Ask questions to obtain information from weather forecasts to prepare for and respond to severe weather.	Weather Watching	**Mystery 1:** Have you ever watched a storm? **Mystery 2, Read-Along:** How can you get ready for a big storm? **Mystery 3:** What will the weather be like on your birthday? **Mystery 4, Read-Along:** How do you know what to wear for the weather?
	0E.2.1.1.2 Make daily and seasonal observations of local weather conditions to describe patterns over time.	Mini-lessons	**Mini-lesson:** Where is the coldest place on Earth? **Mini-lesson:** Why are tornadoes so hard to predict?
	0E.1.1.1.2 Ask questions about how a person may reduce the amount of natural resources the individual uses.		*Minnesota specific standard*

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

Kindergarten, continued

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Physical Science	**0P.3.2.2.1** Design and build a structure to reduce the warming effect of sunlight on Earth's surface.	Weather Watching	**Mystery 5:** How could you warm up a frozen playground? **Mystery 6, Read-Along:** How could you walk barefoot across hot pavement without burning your feet?
	0P.4.2.2.1 Communicate design ideas for a structure that reduces the warming effect of sunlight on Earth's surface.		
	0P.1.2.1.1 Collect and organize observational data to determine the effect of sunlight on Earth's surface.		
	0P.2.1.1.1 Sort objects in terms of natural/human-made, color, size, shape, and texture, then communicate the reasoning for the sorting system.		*Minnesota specific standard*
	0P.2.2.1.1 Identify and describe patterns that emerge from the effects of different strengths or different directions of pushes.	Force Olympics	**Mystery 1:** What's the biggest excavator? **Mystery 2, Read-Along:** Why do builders need so many big machines? **Mystery 3:** How can you knock down a wall made of concrete? **Mystery 4, Read-Along:** How can you knock down the most bowling pins? **Mystery 5:** How can we protect a mountain town from falling rocks? **Mystery 6, Read-Along:** How could you invent a trap?
	0P.4.1.1.1 Construct an argument supported by evidence for whether a design solution works as intended to change the speed or direction of an object with a push or a pull.		

Grade 1

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Life Science	**1L.1.1.1.1** Ask questions based on observations about the similarities and differences between young plants and animals and their parents.	Plant & Animal Superpowers	**Mystery 4, Read-Along:** Why do family members look alike?
	1L.3.1.1.1 Develop a simple model based on evidence to represent how plants or animals use their external parts to help them survive, grow, and meet their needs.	Plant & Animal Superpowers Mini-lessons	**Mystery 1:** Why do birds have beaks? **Mystery 3:** Why are polar bears white? **Mystery 6, Read-Along:** What do sunflowers do when you're not looking? **Mini-lesson:** Why do cats purr? **Mini-lesson:** Can animals get a sunburn?
	1L.3.2.2.2 Plan and design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Plant & Animal Superpowers	**Mystery 5:** Why do trees blow down in the wind?
	1L.4.2.1.2 Obtain information using various features of texts and other media to determine patterns in the behavior of parents and offspring that help offspring survive.	Plant & Animal Superpowers	**Mystery 2, Read-Along:** Why do baby ducks follow their mother?
Earth & Space Science	**1E.4.1.1.1** Construct an argument based on evidence for how plants and animals (including humans) can change the non-living aspects of the environment to meet their needs.		*Minnesota specific standard*
	1E.2.2.1.1 Use quantitative data to identify and describe patterns in the amount of time it takes for Earth processes to occur and determine whether they occur quickly or slowly.	Work of Water	**Mystery 1:** If you floated down a river, where would you end up? **Mystery 2:** Why is there sand at the beach? **Mystery 3:** What's strong enough to make a canyon? **Mystery 4:** How can you stop a landslide? **Mini-lesson:** How do earthquakes happen?
	1E.4.1.2.1 Construct an argument with evidence to evaluate multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	Mini-lessons	
	1E.4.2.1.1 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	Work of Water	**Mystery 4:** How can you stop a landslide?

Grade 1, continued

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Physical Science	**1P.1.2.1.1** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sounds can make materials vibrate.	Lights & Sounds	**Mystery 1:** How do they make silly sounds in cartoons? **Mystery 2, Read-Along:** Where do sounds come from? **Mystery 3:** What if there were no windows? **Mystery 4, Read-Along:** Can you see in the dark? **Mystery 5:** How could you send a secret message to someone far away? **Mystery 6, Read-Along:** How do boats find their way in the fog?
	1P.2.1.1.1 Identify and describe patterns obtained from testing different materials and determine which materials have the properties that are best suited for producing and/or transmitting sound.		
	1P.3.2.2.1 Design and build a device that uses light or sound to solve the problem of communicating over a distance.		
	1P.4.2.2.1 Communicate solutions that use materials to provide shelter, food, or warmth needs for communities including Minnesota American Indian tribes and communities.		*Minnesota specific standard*

Grade 2

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Life Science	**2L.3.2.2.1** Engineer a device the mimics the structures and functions of plants or animals in seed dispersal.	Plant Adventures	**Mystery 1:** How did a tree travel halfway around the world?
	2L.4.1.1.1 Construct an argument with evidence that evaluates how in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Animal Adventures Mini-lessons	**Mystery 1:** How many different kinds of animals are there? **Mystery 2:** Why do frogs say "ribbit"? **Mystery 3:** How could you get more birds to visit a feeder? **Mini-lesson:** Why do animals come back after going to warm places in winter? **Mini-lesson:** Why can't fish breathe on land?
Earth & Space Science	**2E.2.1.1.1** Represent data to describe typical weather conditions expected during a particular season.	Stormy Skies	**Mystery 1:** Where do clouds come from? **Mystery 2:** How can we predict when it's going to storm? **Mystery 3:** Why are some places always hot?
	2E.2.1.1.2 Analyze data from tests of objects designed to reduce the impacts of weather-related hazards and compare the strengths and weaknesses of how each performs.	Stormy Skies Mini-lessons	**Mystery 4:** How can you keep a house from blowing away in a windstorm? **Mini-lesson:** What makes hurricanes so dangerous? **Mini-lesson:** Why are tornadoes so hard to predict? **Mini-lesson:** What's worse: a hurricane or a tornado?
	2E.4.2.1.2 Obtain and use information from multiple sources, including electronic sources, to describe climates in different regions of the world.	Stormy Skies	**Mystery 3:** Why are some places always hot?
	2E.4.2.1.1 Obtain and use information from multiple sources to identify where water is found on Earth.	Stormy Skies	**Mystery 1:** Where do clouds come from?

Grade 2, continued

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Physical Science	**2P.1.1.1.1** Ask questions about an object's motion based on observation, that can be answered by an investigation.	Invisible Forces	**Mystery 1:** How could you win a tug-of-war against a bunch of adults? **Mystery 2:** What makes bridges so strong? **Mystery 3:** How can you go faster down a slide?
	2P.2.2.1.1 Identify and predict quantitative patterns of the effects of balanced and unbalanced forces on the motion or an object.		
	2P.1.2.1.1 Plan and conduct an investigation to describe how heating and cooling affects different kinds of materials based upon their observable properties.	Material Magic	**Mystery 1:** Why do we wear clothes? * **Mystery 2:** Can you really fry an egg on a hot sidewalk? **Mystery 3:** Why are so many toys made out of plastic? **Mystery 4:** What materials might be invented in the future? * **Mystery 5:** Could you build a house out of paper? *
	2P.3.1.1.1 Develop a simple diagram or physical model to illustrate how some changes caused by heating or cooling can be reversed and some cannot.	Mini-lessons	**Mini-lesson:** How is plastic made?
	2P.4.2.2.1 Obtain information and communicate how Minnesota American Indian Tribes and communities and other cultures apply knowledge of the natural world in determining which materials have the properties that are best suited for an intended purpose.		*Minnesota Specific Standard*

* The Material Magic unit includes three lessons that focus on material properties unrelated to heating and cooling. The lessons are included here for completeness of the unit, but the lessons focused on heating and cooling can be taught on their own.

Grade 3

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Life Science	**3L.1.2.1.2** Plan and conduct an investigation to determine how amounts of sunlight and water impact the growth of a plant.	Plant Adventures*	**Mystery 2:** Could a plant survive without light? **Mystery 3:** Why do trees grow so tall? **Mystery 4:** Should you water a cactus? **Mystery 5:** Where do plants grow best?
	3L.3.1.1.2 Develop multiple models to describe how organisms have unique and diverse life cycles but all have birth, growth, reproduction, and death in common.	Power of Flowers* Mini-lessons	**Mystery 1:** Why do plants grow flowers? **Mystery 2:** Why do plants give us fruit? **Mini-lesson:** Why do leaves change color in the fall?** **Mini-lesson:** How do flowers bloom in the spring?**
	3L.3.2.1.1 Construct an explanation using evidence from various sources for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	Power of Flowers*	**Mystery 3:** Why are some apples red and some green? **Mystery 4:** How could you make the biggest fruit in the world?
	3L.4.1.1.1 Construct an argument about strategies animals use to survive.	Mini-lessons	**Mini-lesson:** Why do bears hibernate?** **Mini-lesson:** Where do bugs go in winter?
	3L.4.2.1.1 Obtain information from various types of media to support an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Human Machine Mini-lessons	**Mystery 1:** Why do your biceps bulge? **Mystery 2:** What do people who are blind see? **Mystery 3:** How can some animals see in the dark? **Mystery 4:** How does your brain control your body? **Mini-lesson:** What would happen if you didn't have a skull?** **Mini-lesson:** Why do our skeletons have so many bones?** **Mini-lesson:** How does your heart pump blood?** **Mini-lesson:** Why do we need blood?

*Power of Flowers picks up where Plant Adventures left off. If your students haven't learned about what plants need for survival, we suggest that you teach Plant Adventures first.

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MYSTERY science

Grade 3, continued

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Earth & Space Science	**3E.2.1.1.1** Record observations of the sun, moon, and stars and use them to describe patterns that can be predicted.	Spinning Sky*	**Mystery 1:** Could a statue's shadow move? **Mystery 2, Read-Along:** What does your shadow do when you're not looking? **Mystery 3:** How can the sun help you if you're lost? **Mystery 4, Read-Along:** Why do you have to go to bed early in the summer? **Mystery 5:** Why do the stars come out at night? **Mystery 6, Read-Along:** How can stars help you if you get lost?
	3E.2.2.1.1 Organize and electronically present collected data to identify and describe patterns in the amount of daylight in the different times of the year.	Spinning Sky* Mini-lessons	**Mystery 3:** How can the sun help you if you're lost? **Mystery 4, Read-Along:** Why do you have to go to bed early in the summer? **Mini-lesson:** What causes the Northern Lights?
	3E.4.2.2.1 Gather information and communicate how Minnesota American Indian Tribes and communities and other cultures use patterns in stars to make predictions and plans.	Mini-lessons	**Mini-lesson:** Who created the constellations?
Physical Science	**3P.1.1.1.1** Ask questions based on observations about why objects in darkness can be seen only when illuminated.		*Minnesota specific standard*
	3P.1.2.1.1 Plan and conduct a controlled investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	Mini-lessons	**Mini-lesson:** Why is snow white? **Mini-lesson:** Why is the sky blue?
	3P.3.1.1.1 Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	Human Machine	**Mystery 2:** What do people who are blind see? **Mystery 3:** How can some animals see in the dark?

*Spinning Sky was designed for NGSS grade 1, but can be modified for use in grade 3. Expect elements of these Mysteries to be simplified for a younger intended audience.

Grade 4

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Life Science	**4L.4.1.1.1** Construct or support an argument that traits can be influenced by different environments.	Animals Through Time	**Mystery 1:** Where can you find whales in a desert? **Mystery 7:** What's the best way to get rid of mosquitoes? **Mystery 8:** How long can people (and animals) survive in outer space?
	4L.4.2.1.2 Obtain information from various media sources to determine that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	Animals Through Time Mini-lessons	**Mystery 2:** How do we know what dinosaurs looked like? **Mystery 3:** Can you outrun a dinosaur? **Mystery 4:** What kinds of animals might there be in the future? **Mystery 5:** Can selection happen without people? **Mystery 6:** Why do dogs wag their tails? **Mini-lesson:** What's the biggest tree in the world? **Mini-lesson:** What's the biggest apple in the world? **Mini-lesson:** Can a shark and a dolphin have babies? **Mini-lesson:** How can you tell if a mushroom is poisonous?
Earth & Space Science	**4E.1.1.1.2** Ask questions about how water moves through the Earth system and identify the type of question.	Watery Planet Mini-lessons	**Mystery 1:** How much water is in the world? **Mystery 2:** When you turn on the faucet, where does the water come from? **Mystery 3:** Can we make it rain? **Mini-lesson:** Why is the ocean salty? **Mini-lesson:** How deep does the ocean go?
	4E.3.1.1.1 Develop a model based in part on student observations or data to describe ways the geosphere, biosphere, hydrosphere, and atmosphere interact.		
	4E.2.2.1.1 Interpret charts, maps, and/or graphs of the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.		
	4E.1.2.1.1 Make observations and measurements to provide evidence of the effects of weathering or the rate of erosion by the forces of water, ice, wind, or vegetation.	The Birth of Rocks	**Mystery 3:** Will a mountain last forever? **Mystery 4:** How could you survive a landslide?
	4E.1.2.1.2 Plan and carry out fair tests in which variables are controlled and failure points are considered to improve a model or prototype to prevent erosion.		

Grade 4, continued

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Earth & Space Science ***(Cont.)***	**4E.3.2.1.1** Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in landscape over time.	The Birth of Rocks	**Mystery 1:** Could a volcano pop up where you live? **Mystery 2:** Why do some volcanoes explode? **Mystery 3:** Will a mountain last forever? **Mystery 4:** How could you survive a landslide?
	4E.3.2.2.1 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	Watery Planet	**Mystery 4:** How can you save a town from a hurricane?
	4E.4.2.1.1 Read and comprehend grade appropriate complex texts and/or other reliable media to describe that energy and fuels are derived from natural resources and their uses affect the environment.	Energizing Everything	**Mystery 8:** Where does energy come from?
	4E.4.2.2.1 Obtain and combine multiple sources of information about ways individual communities, including Minnesota American Indian Tribes and communities and other cultures use evidence and scientific principles to make decisions about the uses of Earth's resources.		*Minnesota specific standard*
Physical Science	**4P.1.1.1.1** Ask questions to determine cause and effect relationships of electric and magnetic interactions between two objects not in contact with each other.	Invisible Forces	**Mystery 4:** What can magnets do? **Mystery 5:** How can you unlock a door using a magnet?
	4P.1.1.2.1 Define a simple design problem that can be solved by applying scientific ideas about magnets.		

Grade 5

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Life Science	**5L.1.2.1.4** Plan and conduct an investigation to obtain evidence that plants get the materials they need for growth chiefly from air and water.	Web of Life	**Mystery 1:** Why would a hawk move to New York City? **Mystery 2:** What do plants eat? **Mystery 3:** Where do fallen leaves go? **Mystery 4:** Do worms really eat dirt? **Mystery 5:** Why do you have to clean a fish tank but not a pond? **Mystery 6:** Why did the dinosaurs go extinct?
	5L.3.1.1.3 Create an electronic visualization of the movement of matter among plants, animals, decomposers, and the environment.		
	5L.4.1.2.1 Evaluate the merit of a solution to a problem caused by changes in plant and animal populations as a result of environmental changes.		
Earth & Space Science	**5E.2.2.1.2** Use data to describe patterns in the daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Spaceship Earth	**Mystery 1:** How fast does the Earth spin? **Mystery 2:** Who set the first clock? **Mystery 3:** How can the sun tell you the season? **Mystery 4:** Why do the stars change with the seasons? **Mystery 5:** Why does the moon change shape? **Mystery 6:** What are the wandering stars? **Mystery 7:** Why is gravity different on other planets? **Mystery 8:** Could there be life on other planets?
	5E.4.1.1.1 Use evidence to support an argument that the apparent brightness of the sun and stars is due to their relative distances from Earth.		

Grade 5, continued

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Strand	Academic Standards in Science	Mystery Science Unit	Mystery Science Lessons
Physical Science	**5P.1.1.1.1** Ask investigatable questions and predict reasonable outcomes about the changes in energy, related to speed, that occur when objects interact.	Energizing Everything	**Mystery 1:** How is your body similar to a car? **Mystery 2:** What makes roller coasters go so fast? **Mystery 3:** Why is the first hill of a roller coaster always the highest? **Mystery 4:** Could you knock down a building using only dominoes? **Mystery 5:** Can you build a chain reaction machine? **Mystery 6:** What if there were no electricity? **Mystery 7:** How long did it take to travel across the country before cars and planes?
	5P.2.1.1.1 Analyze and interpret data to show that energy can be transferred from place to place by sound, light, heat, and electric currents.		
	5P.3.2.1.1 Construct an explanation based on evidence relating the speed of an object to the energy of that object.		
	5P.3.2.2.1 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	Waves of Sound	**Mystery 1:** How far can a whisper travel? **Mystery 2:** What would happen if you screamed in outer space? **Mystery 3:** Why are some sounds high and some sounds low?
	5P.1.2.1.2 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	Chemical Magic	**Mystery 1:** Are magic potions real? **Mystery 2:** Could you transform something worthless into gold? **Mystery 3:** What would happen if you drank a glass of acid? **Mystery 4:** What do fireworks, rubber, and silly putty have in common? **Mystery 5:** Why do some things explode?
	5P.1.2.1.3 Evaluate appropriate methods and tools to identify materials based on their properties prior to investigation.		
	5P.2.2.1.1 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.		
	5P.3.1.1.1 Develop and refine a model to describe the matter is made of particles too small to be seen.		
	5P.3.1.1.2 Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.	Web of Life	**Mystery 6:** Why did the dinosaurs go extinct?