Mystery Science Alignment with North Carolina Essential Standards for Science

Mystery Science - North Carolina Alignment
Mystery Science aligns to the North Carolina Essential Standards for Science. 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

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*Structures & Functions of Living Organisms*	**K.L.1.1** Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.	Plant & Animal Superpowers Mini-Lessons	**Mystery 1:** Why do birds have beaks? **Mystery 2, Read Along:** Why do baby ducks follow their mother? **Mystery 3:** Why are polar bears white? **Mini-Lesson:** Why are butterflies so colorful?** **Mini-Lesson:** What is the biggest spider in the world?**
		K.L.1.2 Compare characteristics of living and nonliving things in terms of their structure, growth, changes, movement, and basic needs.	Plant & Animal Superpowers	**Mystery 5:** Why don't trees blow down in the wind? **Mystery 6, Read Along:** What do sunflowers do when you're not looking?
Earth & Space Science	*Earth Systems, Structures & Processes*	**K.E.1.1** Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.		*North Carolina specific standard*
		K.E.1.2 Summarize daily weather conditions noting changes that occur from day to day and throughout the year.	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? **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?
		K.E.1.3 Compare weather patterns that occur from season to season.		

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Kindergarten, continued

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Physical Science	*Forces & Motion*	**K.P.1.1** Compare the relative position of various objects observed in the classroom and outside using position words such as: in front of, behind, between, on top of, under, below, and beside.		*North Carolina specific standard*
		K.P.1.2 Give examples of different ways objects and organisms move (to include falling to the ground when dropped): straight, zigzag, round and round, back and forth, fast and slow		*North Carolina specific standard*
	Properties & Change	**K.P.2.1** Classify objects by observable physical properties (including size, color, shape, texture, weight, and flexibility)		*North Carolina specific standard*
		K.P.2.2 Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc.) from which objects are made and how they are used.	Mini-Lessons	**Mini-Lesson:** How do they turn wood into paper?

Grade 1

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*Molecular Biology*	**1.L.2.1** Summarize the basic needs of a variety of plants (including air, water, nutrients, and light) for energy and growth.	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?
		1.L.2.2 Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.		
	Ecosystems	**1.L.1.1** Recognize that plants and animals need air, water, light (plants only), space, food, and shelter and that these may be found in their environment,		
		1.L.1.2 Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.		
		1.L.1.3 Summarize ways that humans protect their environment and/or improve conditions for the growth of plants and animals that live there (e.g. reuse or recycle products to avoid littering).	Mini-Lessons	**Mini-Lesson:** How is plastic made?

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Earth & Space Science	*Earth in the Universe*	**1.E.1.1** Recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth.	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 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?
		1.E.1.2 Recognize patterns of observable changes in the Moon's appearance from day to day.	Mini-Lessons	**Mini-Lesson:** What would it be like to live on the moon? **Mini-Lesson:** What is the moon made of? **Mini-Lesson:** Why does the moon turn blood red during a lunar eclipse? **Mini-Lesson:** How often do eclipses happen?
	Earth Systems, Structures & Processes	**1.E.2.1** Summarize the physical properties of Earth materials, including rocks, minerals, soils, and water that make them useful in different ways.	Mini-Lessons	**Mini-Lesson:** Why does this rock look like a sponge? **Mini-Lesson:** Why is the ocean salty?
		1.E.2.2 Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.		*North Carolina specific standard*
Physical Science	*Forces & Motion*	**1.P.1.1** Explain the importance of a push or pull to changing the motion of an object.	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 from falling rocks? **Mystery 6, Read Along:** How could you invent a trap?
		.1.P.1.3 Predict the effect of a given force on the motion of an object, including balanced forces.		
		1.P.1.2 Explain how some forces (pushes and pulls) can be used to make things move without touching them, such as magnets		*North Carolina specific standard*

Grade 2

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*Structures & Functions of Living Organisms*	**2.L.1.1** Summarize the life cycle of animals: birth, developing into an adult, reproducing, aging and death.		*North Carolina specific standard*
		2.L.1.2 Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies, or frogs.	Animal Adventures	**Mystery 1:** How many different kind of animals are there? **Mystery 2:** Why do frogs say "ribbit?" **Mystery 3:** How could you get more birds to visit a bird feeder?
	Evolution & Genetics	**2.L.2.1** Identify ways in which many plants and animals closely resemble their parents in observed appearance and ways they are different,	Plant & Animal Superpowers	**Mystery 4, Read Along:** Why do family members look alike?
		2.L.2.2 Recognize that there is variation among individuals that are related.		
Earth & Space Science	*Earth Systems, Structures, & Processes*	**2.E.1.1** Summarize how energy from the sun serves as a source of light that warms the land, air, and water.	Mini-Lessons	**Mini-Lesson:** How close could an astronaut get to the sun? **Mini-Lesson:** Why does it get cold in winter?
		2.E.1.2 Summarize weather conditions using qualitative and quantitative measures to describe temperature, wind direction, wind speed, precipitation	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? **Mystery 4:** How can you keep a house from blowing away in a windstorm?
		2.E.1.3 Compare weather patterns that occur over time and relate observable patterns to time or day and time of year.		
		2.E.1.4 Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons.		

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Physical Science	*Forces & Motion*	**2.P.1.1** Illustrate how sound is produced by vibrating objects and columns of air.	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?
		2.P.1.2 Summarize the relationship between sound and objects of the body that vibrate - eardrum and vocal cords.		
	Matter: Properties & Change	**2.P.2.1** Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling.	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?
		2.P.2.2 Compare the amount (volume and weight) of water in a container before and after freezing		*North Carolina specific standard*
		2.P.2.3 Compare what happens to water left in an open container over time as to water left in a closed container.		*North Carolina specific standard*

Grade 3

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*Structures & Functions of Living Organisms*	**3.L.1.1** Compare the different functions of the skeletal and muscular system.	Mini-Lessons	**Mini-Lesson:** Why do our skeletons have so many bones?** **Mini-Lesson:** How do broken bones heal? **Mini-Lesson:** How does the heart pump blood?**
		3.L.1.2 Explain why skin is necessary for protection and for the body to remain healthy.	Mini-Lessons	**Mini-Lesson:** Why do we get goosebumps? **Mini-Lesson:** Can animals get a sunburn?
	Ecosystems	**3.L.2.1** Remember the function of the following structures as it relates to the survival of plants in their environments: roots -- absorb nutrients, stems -- provide support, leaves -- synthesize food, flowers -- attract pollinators and produce seeds for reproduction.	Plant Adventures* Power of Flowers* Mini-Lessons	**Mystery 1:** How did a tree travel halfway around the world? **Mystery 2:** Do plants eat dirt? **Mystery 3:** Why do trees grow so tall? **Mystery 4:** Should you water a cactus? **Mystery 5:** Where do plants grow best? **Mystery 1:** Why do plants grow flowers? **Mystery 2:** Why do plants give us fruit? **Mystery 3:** Why are some apples red and some green? **Mystery 4:** How could you make the biggest fruit in the world? **Mini-Lesson:** Why do leaves change color in the fall?** **Mini-Lesson:** How do flowers bloom in the spring?**
		3.L.2.2 Explain how environmental conditions determine how well plants survive and grow,		
		3.L.2.3 Summarize the distinct stages of the life cycle of seed plants.		
		3.L.2.4 Explain how the basic properties (texture and capacity to hold water) and components (sand, clay, and humus) of soil determine the ability of soil to support the growth and survival of many plants.		*North Carolina specific standard*

* Power of Flowers picks up where Plant Adventures leaves off. We suggest you teach Plant Adventures first.

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Earth & Space Science	*Earth in the Universe*	**3.E.1.1** Recognize that the Earth is part of a system called the solar system that includes the sun (a star), planets, and many moons, and the Earth is the third planet from the sun in our solar system.	Spaceship Earth*	**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 6:** What are the wandering stars? **Mystery 8:** Could there be life on other planets?
		3.E.1.2 Recognize that changes in the length and direction of an object's shadow indicate the apparent changing position of the Sun during the day although the patterns of the stars in the sky, to include the Sun, stay the same.	Mini-Lessons	**Mini-Lesson:** Why is Mars red?
	Earth Systems, Structures, & Purposes	**3.E.2.1** Compare Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers).	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?
		3.E.2.2 Compare Earth's land features (including volcanoes, mountains, valleys, canyons, caverns, and islands) by using models, pictures, diagrams, and maps.	Mini-Lessons	**Mini-Lesson:** Why is the ocean salty?

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

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Physical Science	*Energy: Conservation & Transfer*	**3.P.3.1** Recognize that energy can be transferred from one object to another by rubbing them against each other.		*North Carolina specific standard*
		3.P.3.2 Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer.		*North Carolina specific standard*
	Forces & Motion	**3.P.1.1** Infer changes in speed or direction resulting from forces acting on an object.	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 could you go faster down a slide?
		3.P.1.2 Compare the relative speeds (faster or slower) of objects that travel the same distance in different amounts of time.		
		3.P.1.3 Explain the effects of Earth's gravity on the motion of any object on or near the Earth.	Mini-Lessons	**Mini-Lesson:** Why can't airplanes fly to space?**
	Matter: Properties & Change	**3.P.2.1** Recognize that air is a substance that surrounds us, takes up space, and has mass.		*North Carolina specific standard*
		3.P.2.2 Compare solids, liquids, and gases based on their basic properties.	Material Magic	**Mystery 4:** What materials might be invented in the future? **Mystery 5:** Could you build a house out of paper?
		3.P.2.3 Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.		*North Carolina specific standard*

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Life Science	*Ecosystems*	**4.L.1.1** Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.	Animals Through Time	**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? **Mystery 7:** What's the best way to get rid of mosquitoes? **Mystery 8:** How long can people (and animals) survive in outer space?
		4.L.1.2 Explain how animals meet their needs by using behaviors in response to information received from the environment.		
		4.L.1.4 Explain how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing habitats.	Mini-Lessons	**Mini-Lesson:** Where do bugs go in winter? **Mini-Lesson:** Why do animals come back after going to warm places in winter?
		4.L.1.3 Explain how humans can adapt their behavior to live in changing habitats (e.g. recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion).		*North Carolina specific standard*
	Molecular Biology	**4.L.2.1** Classify substances as food or non-food items based on their ability to provide energy and materials for survival, growth, and repair of the body.		*North Carolina specific standard*
		4.L.2.2 Explain the role of vitamins, minerals and exercise in maintaining a healthy body.		*North Carolina specific standard*

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Earth & Space Science	*Earth in the Universe*	**4.E.1.1** Explain the cause of day and night based on the rotation of Earth on its axis.	Spaceship Earth	**Mystery 1:** How fast does the Earth spin?
		4.E.1.2 Explain the monthly changes in the appearance of the moon, based on the moon's orbit around the Earth.	Spaceship Earth	**Mystery 5:** Why does the moon change shape?
	Earth's History	**4.E.2.1** Compare fossils (including molds, casts, and preserved parts of plants and animals) to one another and to living organisms.	Animals Through Time Mini-Lessons	**Mystery 1:** Where can you find whales in a desert? **Mystery 2:** How do we know what dinosaurs looked like? **Mystery 3:** Can you outrun a dinosaur? **Mini-Lesson:** How old is the Earth? **Mini-Lesson:** Were dragons ever real?
		4.E.2.2 Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago.		
		4.E.2.3 Give examples of how the surface of Earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.	The Birth of Rocks Mini-Lessons	**Mystery 1:** Could a volcano pop up where you live? **Mystery 2:** Why do some volcanoes explode? **Mystery3:** Will a mountain last forever? **Mystery 4:** How could you survive a landslide? **Mini-Lesson:** How do earthquakes happen?

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Strand	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Physical Science	*Forces & Motion*	**4.P.1.2** Explain how electrically charged objects push or pull on other electrically charged objects and produce motion		*North Carolina specific standard*
		4.P.1.1 Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them.	Invisible Forces	**Mystery 4:** What can magnets do? **Mystery 5:** How can you unlock a door using a magnet?
	Matter: Properties & Change	**4.P.2.1** Compare the physical properties of samples of matter (strength, hardness, flexibility, ability to conduct heat, ability to conduct electricity, ability to be attracted by magnets, reactions to water and fire).		
		4.P.2.2 Explain how minerals are identified using tests for the physical properties of hardness, color, luster, cleavage, and streak.		*North Carolina specific standard*
		4.P.2.3 Classify rocks as metamorphic, sedimentary, or igneous based on their composition, how they are formed, and the processes that create them.	Mini-Lessons	**Mini-Lesson:** Can you make lava? **Mini-Lesson:** Why does this rock look like a sponge?
	Energy: Conservation & Transfer	**4.P.3.1** Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.	Waves of Sound Energizing Everything Mini-Lessons	**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? **Mystery 6:** What if there were no electricity? **Mystery 7:** How long did it take to travel across the country before cars and planes? **Mystery 8:** Where does energy come from? **Mini-Lesson:** How do batteries work?
		4.P.3.2 Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.	Mini-Lessons	**Mini-Lessons:** How is a rainbow made?** **Mini-Lessons:** Why is snow white?**

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Grade 5

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Life Science	*Structures & Functions of Living Organisms*	**5.L.1.1** Explain why some organisms are capable of surviving as a single cell while others require many cells that are specialized to survive.		*North Carolina specific standard*
		5.L.1.2 Compare major systems of the human body (digestive, respiratory, circulatory, muscular, skeletal, and cardiovascular) in terms of their functions necessary for life.	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:** Why do we get hiccups?
	Ecosystems	**5.L.2.1** Compare the characteristics of several common ecosystems, including estuaries and salt marshes, oceans, lakes and ponds, forests, and grasslands		*North Carolina specific standard*
		5.L.2.2 Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors).	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?
		5.L.2.3 Infer the effects that may result from the interconnected relationship of plants and animals in their ecosystem.		
	Evolution & Genetics	**5.L.3.1** Explain why organisms differ or are similar to their parents based on the characteristics of the organism.	Mini-Lessons	**Mini-Lesson:** Why are pumpkins orange? **Mini-Lesson:** Why do baby animals look so cute?
		5.L.3.2 Give examples of likenesses that are inherited and some that are not.		

Grade 5, continued

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Earth & Space Science	*Earth Systems, Structures, & Purposes*	**5.E.1.1** Compare daily and seasonal changes in weather conditions (including wind speed and direction, precipitation, and temperature) and patterns.	Watery Planet	**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? **Mystery 4:** How can you save a town from a hurricane? **Mini-Lesson:** Why are tornadoes so hard to predict?
		5.E.1.2 Predict upcoming weather events from weather data collected through observation and measurements.	Mini-Lessons	
		5.E.1.3 Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.		*North Carolina specific standard*
Physical Science	*Forces & Motion*	**5.P.1.1** Explain how factors such as gravity, friction, and change in mass affect the motion of objects.	Spaceship Earth	**Mystery 7:** Why is gravity different on other planets?
		5.P.1.2 Infer the motion of objects in terms of how far they travel in a certain amount of time and the direction in which they travel.	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?
		5.P.1.3 Illustrate the motion of an object using a graph to show a change in position over a period of time.		
		5.P.1.4 Predict the effect of a given force or a change in mass on the motion of an object.		

Grade 5, continued

Mystery Science aligns to the North Carolina Essential Standards for Science. 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	Topic	North Carolina State Standard	Mystery Science Unit	Mystery Science Lessons
Physical Science *(Cont.)*	*Matter: Properties & Change*	**5.P.2.1** Explain how the sun's energy impacts the processes of the water cycle (including evaporation, transpiration, condensation, precipitation, and runoff).	Watery Planet	**Mystery 3:** Can we make it rain?
		5.P.2.2 Compare the weight of an object to the sum of the weight of its parts before and after an interaction.		*North Carolina specific standard*
		5.P.2.3 Summarize properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.	Chemical Magic Mini-Lessons	**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? **Mini-Lesson:** How is plastic made? **Mini-Lesson:** How do things glow in the dark?
	Energy: Conservation & Transfer	**5.P.3.1** Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection, or radiation)		*North Carolina specific standard*
		5.P.3.2 Explain how heating and cooling affect some materials and how this relates to their purpose and practical applications.	Mini-Lessons	**Mini-Lesson:** How is glass made?