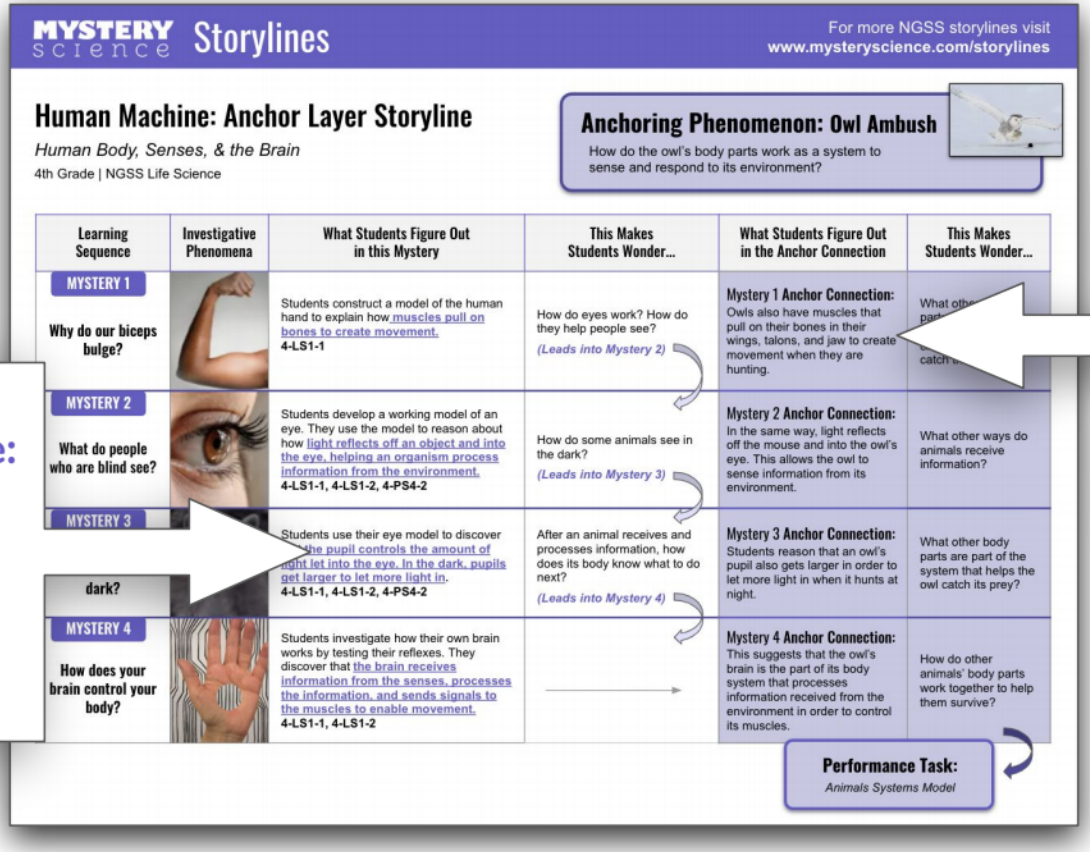
Mystery Science Storylines

The unit storylines show how each investigation leads to a new question which leads to a new investigation which leads to a new question, etc.

Investigative Storyline: Each investigative Mystery leads to a question that leads to the next Mystery.



MYSTERY science Storylines

For more NGSS storylines visit
www.mysteryscience.com/storylines

Human Machine: Anchor Layer Storyline

Human Body, Senses, & the Brain

4th Grade | NGSS Life Science

Anchoring Phenomenon: Owl Ambush

How do the owl's body parts work as a system to sense and respond to its environment?

Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 Why do our biceps bulge?		Students construct a model of the human hand to explain how muscles pull on bones to create movement. 4-LS1-1	How do eyes work? How do they help people see? *(Leads into Mystery 2)*	**Mystery 1 Anchor Connection:** Owls also have muscles that pull on their bones in their wings, talons, and jaw to create movement when they are hunting.	What other parts... catch its prey?
MYSTERY 2 What do people who are blind see?		Students develop a working model of an eye. They use the model to reason about how light reflects off an object and into the eye, helping an organism process information from the environment. 4-LS1-1, 4-LS1-2, 4-PS4-2	How do some animals see in the dark? *(Leads into Mystery 3)*	**Mystery 2 Anchor Connection:** In the same way, light reflects off the mouse and into the owl's eye. This allows the owl to sense information from its environment.	What other ways do animals receive information?
MYSTERY 3 dark?		Students use their eye model to discover how the pupil controls the amount of light let into the eye. In the dark, pupils get larger to let more light in. 4-LS1-1, 4-LS1-2, 4-PS4-2	After an animal receives and processes information, how does its body know what to do next? *(Leads into Mystery 4)*	**Mystery 3 Anchor Connection:** Students reason that an owl's pupil also gets larger in order to let more light in when it hunts at night.	What other body parts are part of the system that helps the owl catch its prey?
MYSTERY 4 How does your brain control your body?		Students investigate how their own brain works by testing their reflexes. They discover that the brain receives information from the senses, processes the information, and sends signals to the muscles to enable movement. 4-LS1-1, 4-LS1-2		**Mystery 4 Anchor Connection:** This suggests that the owl's brain is the part of its body system that processes information received from the environment in order to control its muscles.	How do other animals' body parts work together to help them survive?

Performance Task:
Animals Systems Model

Anchor Storyline: Students revisit the anchoring phenomena after each Mystery and revise their ideas.

Human Machine: Anchor Layer Storyline

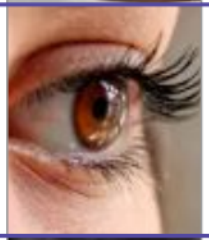
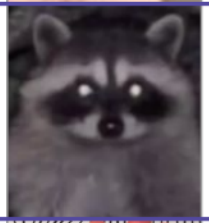
Human Body, Senses, & the Brain

4th Grade | NGSS Life Science

Anchoring Phenomenon: Owl Ambush



How do the owl's body parts work as a system to sense and respond to its environment?

Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **Why do our biceps bulge?**		Students construct a model of the human hand to explain how muscles pull on bones to create movement. **4-LS1-1**	How do eyes work? How do they help people see? *(Leads into Mystery 2)*	**Mystery 1 Anchor Connection:** Owls also have muscles that pull on their bones in their wings, talons, and jaw to create movement when they are hunting.	What other body parts help an owl fly toward prey and close its claws to catch the prey?
MYSTERY 2 **What do people who are blind see?**		Students develop a working model of an eye. They use the model to reason about how light reflects off an object and into the eye, helping an organism process information from the environment. **4-LS1-1, 4-LS1-2, 4-PS4-2**	How do some animals see in the dark? *(Leads into Mystery 3)*	**Mystery 2 Anchor Connection:** In the same way, light reflects off the mouse and into the owl's eye. This allows the owl to sense information from its environment.	What other ways do animals receive information?
MYSTERY 3 **How can some animals see in the dark?**		Students use their eye model to discover that the pupil controls the amount of light let into the eye. In the dark, pupils get larger to let more light in. **4-LS1-1, 4-LS1-2, 4-PS4-2**	After an animal receives and processes information, how does its body know what to do next? *(Leads into Mystery 4)*	**Mystery 3 Anchor Connection:** Students reason that an owl's pupil also gets larger in order to let more light in when it hunts at night.	What other body parts are part of the system that helps the owl catch its prey?
MYSTERY 4 **How does your brain control your body?**		Students investigate how their own brain works by testing their reflexes. They discover that the brain receives information from the senses, processes the information, and sends signals to the muscles to enable movement. **4-LS1-1, 4-LS1-2**	→	**Mystery 4 Anchor Connection:** This suggests that the owl's brain is the part of its body system that processes information received from the environment in order to control its muscles.	How do other animals' body parts work together to help them survive?

Performance Task:

Animals Systems Model

Birth of Rocks: Anchor Layer Storyline

Rock Cycle & Earth's Processes

4th Grade | NGSS Earth Science

Anchoring Phenomenon:
Ashfall Fossil Beds

How did the animals die at the Ashfall Fossil Beds?
Why did it take people so long to discover them?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **Could a volcano pop up where you live?**		Students use coordinates to develop a map of volcanoes to discover a pattern of where volcanoes exist on Earth. Students identify the pattern of volcanoes in the "Ring of Fire." **4-ESS1-1, 4-ESS2-2**	Do all volcanoes behave the same way? *(Leads into Mystery 2)*	**Mystery 1 Anchor Connection:** There were prehistoric volcanoes located in North America, but they are not near the Ashfall Fossil Beds site.	How could the volcanoes have killed the rhinos even if they are far away?
MYSTERY 2 **Why do some volcanoes explode?**		Students investigate the properties of thin and thick lava by attempting to create air bubbles. Students realize that thick lava will cause a volcano to explode, while thin lava will not. **4-ESS1-1**	How do mountains and volcanoes change shape? *(Leads into Mystery 3)*	**Mystery 2 Anchor Connection:** The volcanoes located closest to the Ashfall Fossil Beds site contained thick lava. Volcanoes containing thick lava create huge explosions and the ash could have made it all the way to Nebraska.	If ash fell on top of the rhinos, how did the bones end up so far underground, underneath other rocks?
MYSTERY 3 **Will a mountain last forever?**		Students make observations of the effects of weathering to discover that rocks will become rounded and break into small pieces when they tumble down a mountain. **4-ESS1-1, 4-ESS2-1**	Does land change quickly or slowly? *(Leads into Mystery 4)*	**Mystery 3 Anchor Connection:** Pieces of rock fall down nearby mountains and are smoothed as they tumble. Over time these rocks, along with sediments, were carried by a nearby river to the Ashfall Fossil Beds site, piling on top of the rhino fossils.	How did the rhino fossils become exposed after being buried for so long?
MYSTERY 4 **How could you survive a landslide?**		Students generate multiple possible solutions to protect homes from a landslide. Students realize that there are many causes for the erosion that causes rocks to fall in landslides. **4-ESS2-1, 4-ESS3-2**		**Mystery 4 Anchor Connection:** Years of heavy rain could have eroded the earth on the hillside of the farm, eventually exposing the rhino jaw fossil.	How can we figure out where a rock comes from based on where we found it?

Performance Task:
Story of a Rock

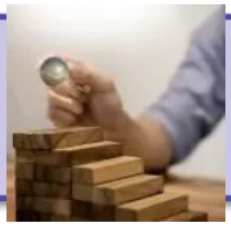
Energizing Everything: Anchor Layer Storyline

Energy, Motion, & Electricity — ***Page 1 of 2***

4th Grade | NGSS Earth Science

Anchoring Phenomenon: Rube Goldberg Machine

What makes a chain reaction keep going?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **How is your body similar to a car?**		Students learn about stored energy and about the relationship between motion and energy. Students build models of an amusement park ride and discover how energy can be stored in materials. Stored energy can be converted to speed. **4-PS3-1, 4-PS3-4**	How else can energy be stored? ***(Leads into Mystery 2)***	**Mystery 1 Anchor Connection:** Throughout this Anchor Layer, students revisit a video of a complex chain reaction machine. In the first unit connection, student realize that the chain reaction machine needs stored energy to keep going.	Where is energy stored in the chain reaction machine?
MYSTERY 2 **What makes roller coasters go so fast?**		Students build a model of a roller coaster and carry out an investigation using marbles. Students learn that lifting an object up stores energy in the object. When the object falls, that stored energy is released. They realize that energy is transferred when object collide. **4-PS3-1, 4-PS3-3**	How does the height of an object relate to the energy that's stored by that object? ***(Leads into Mystery 3)***	**Mystery 2 Anchor Connection:** A chain reaction machine can use height to store energy. When an object rolls or falls or swings from a high place to a low place, its energy of motion comes from its height.	How is energy transferred from one step of the chain reaction machine to the next?
MYSTERY 3 **Why is the first hill of a roller coaster always the highest?**		Using a model roller coaster, students conduct an investigation to determine that a hill's height determines the amount of energy stored in a marble at the top of the hill. Students figure out that the greater the height of an object, the more energy it stores and the faster it will move when released or dropped. **4-PS3-3**	How else can energy be transferred from one object to another? ***(Leads into Mystery 4)***	**Mystery 3 Anchor Connection:** Students gain a deeper understanding of how energy is transferred in collisions. They observe how the speed of a moving object affects the speed of the object it hits.	How can the chain reaction machine store enough energy to get through all the steps?
MYSTERY 4 **Could you knock down a building using only dominoes?**		Students experiment with ways to store and release energy, creating the beginning of a chain reaction machine with a lever and a ramp. Students figure out that a domino standing on end is storing energy, only requiring a small amount of energy (a tiny push) to release the stored energy. **4-PS3-4, 3-5-ETS1-1**	How can I use energy transfer to make a longer chain reaction machine? ***(Leads into Mystery 5)***	**Mystery 4 Anchor Connection:** Students realize that each step of a chain reaction machine involves triggering the release of stored energy in the next step.	How many different ways can a chain reaction machine store and transfer energy?

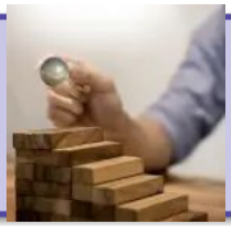
Energizing Everything: Anchor Layer Storyline

*Energy, Motion, & Electricity — **Part 2 of 2***

4th Grade | NGSS Earth Science

Anchoring Phenomenon: Rube Goldberg Machine

What makes a Rube Goldberg machine go?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 5 **Can you build a chain reaction machine?**		Students continue to build a chain reaction machine — **identifying a goal, brainstorming and testing multiple ideas, and determining an optimal solution.** The chain reaction machine uses multiple components to transfer energy from one part to the next. **4-PS3-4, 3-5-ETS1-2, 3-5-ETS1-2, 3-5-ETS1-3**	Is electricity a form of energy? ***(Leads into Mystery 6)***	**Mystery 5 Anchor Connection:** Students consider how to add steps to an existing chain reaction machine, reasoning about how energy is stored and how that stored energy can be released.	Are there other forms of energy the chain reaction machine in the video could use?
MYSTERY 6 **What if there were no electricity?**		Students design a flashlight with an on/off switch, using batteries, flights and tin foil. Students figure out that electricity can be converted to other forms of energy, such as movement, light, and heat. **4-PS3-2, 4-PS3-4**	What other forms of energy do we use in our everyday lives? ***(Leads into Mystery 7)***	**Mystery 6 Anchor Connection:** Students consider all the ways that the Rube Goldberg/chain reaction machine converts energy from one form to another, including electricity as a form of energy.	Can I build a Rube Goldberg/chain reaction machine that uses electricity?
MYSTERY 7 **How long did it take to travel across the country before cars and planes?**		Students build a paper spinner and conduct an investigation to explain how heat makes things move. Students realize that heat energy can be turned into motion energy using a turbine. **4-PS3-2, 4-PS3-4**	Where can we get the energy we need without creating pollution? ***(Leads into Mystery 8)***	**Performance Task:** *Build a chain reaction machine that turns on a flashlight.* *Bonus Mystery not included in Anchor Layer*	
MYSTERY 8 **Where does energy come from?**		Students evaluate the advantages and disadvantages of wind, water, and solar energy to power a town. Students obtain and evaluate information about the needs of each source of energy and analyze and interpret data about the town's resources. **4-ESS3-1**		*Bonus Mystery not included in Anchor Layer*	

Waves of Sound: Anchor Layer Storyline

Sound, Waves, & Communication

4th Grade | NGSS Physical Science

Anchoring Phenomenon:
Cymatics Music Video

How did the patterns on the devices change to make sound waves visible?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **How far can a whisper travel?**		Students investigate sound using paper cup telephones. Students figure out that sound is a vibration that can travel through a medium. **4-PS4-1, 4-PS4-3**	How do sound vibrations travel if we can't see the medium it's traveling through? ***(Leads into Mystery 2)***	**Mystery 1 Anchor Connection:** The sound vibrates the metal plate and changes the pattern as the sound changes. The plate is vibrating the most where there is less powder and vibrating the least in places where the powder is collecting.	Do sound vibrations also travel through liquids?
MYSTERY 2 **What would happen if you screamed in outer space?**		Students construct a model of sound vibrations to explain how air is a medium that sound vibrations travel through. **4-PS4-1**	Do high and low sounds vibrate the same way? ***(Leads into Mystery 3)***	**Mystery 2 Anchor Connection:** The sound vibrations travel through water from the edge of the dish towards the center; in the same way the vibrations travel through air.	Why do some mediums show sound vibrations better than others?
MYSTERY 3 **Why are some sounds high and some sounds low?**		Students make observations of vibrations and sound waves to discover that high pitch sounds vibrate faster and have short wavelengths and low pitch sounds vibrate slower and have long wavelengths. **4-PS4-1**		**Mystery 3 Anchor Connection:** The pattern of flames on the Ruben's Tube changes when the pitch of the sound changes. The pattern of flames shows the wavelength of the sounds made.	Is it easier to 'see' high pitch or low pitch sounds?

Performance Task:
Sound Wave Watcher

Watery Planet: Anchor Layer Storyline

Water Cycle & Earth's Systems

5th Grade | NGSS Earth Science

Anchoring Phenomenon: Dust Bowl

How did interactions between land, air, water, and living things cause the Dust Bowl?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **How much water is in the world?**		Students analyze and interpret data from world maps to determine the relative amounts of fresh, salt, and frozen water. Students figure out that while the Earth has a lot of water, most of Earth's water is not fresh and accessible. **5-ESS2-2**	If there aren't bodies of freshwater nearby, where does the water come from to support life & human activity (farming, bathing, etc.)? ***(Leads into Mystery 2)***	**Mystery 1 Anchor Connection:** The region where the Dust Bowl happened did not have large bodies of freshwater nor did it have significant rainfall.	How did a lack of fresh water and rain contribute to the Dust Bowl?
MYSTERY 2 **When you turn on the faucet, where does the water come from?**		Students learn that most people get their fresh water from underground sources. Students determine the best place to settle a new town by considering features of the landscape and the characteristics of the plants that thrive there. **5-ESS2-2, 5-ESS3-1**	Where does the water come from to fill/refill aquifers? ***(Leads into Mystery 3)***	**Mystery 2 Anchor Connection:** Plants with deep roots can access underground water sources. In the Dust Bowl region, the native grasses had deep roots.	Why are some plants better suited for certain environments than others?
MYSTERY 3 **Can we make it rain?**		Students create a model of the ocean and sky to investigate how temperature influences evaporation and condensation. Students figure out that higher ocean temperatures lead to more evaporation, thus leading to more rain. **5-ESS2-1**	How do ocean temperatures affect the amount of rainfall in an area? ***(Leads into Mystery 4)***	**Mystery 3 Anchor Connection:** Students reason that a severe drought led to dry soil and dying plants. Without the plants' roots, there was nothing to hold the soil in place.	How does the amount of rainfall in an area impact the soil of that area?
MYSTERY 4 **How can you save a town from a hurricane?**		Students define the problem that a town needs protection from flooding. They design solutions within a budget using different types of flood protection. Students realize that flooding is caused by severe rainfall generated by hurricanes. Hurricanes are created where ocean temperatures are warm. **5-ESS2-1, 3-5-ETS1, 3-5-ETS2, 3-5-ETS3**		**Mystery 4 Anchor Connection:** This investigation suggests that changes in ocean temperatures impact rainfall patterns. When the ocean temperatures cool, rainfall can decrease, causing droughts.	What interaction between air, water, land, and living things do you think had the biggest contribution to causing the Dust Bowl?

Performance Task:

Drought Protection Kits

Chemical Magic Anchor Layer Storyline

Chemical Reactions & Properties of Matter

5th Grade | NGSS Physical Science

Anchoring Phenomenon: Gargoyles

What causes stone gargoyles to disappear over time?





Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **Are magic potions real?**		Students observe that a salt and vinegar solution will turn a dull penny shiny again indicating that substances can change other substances. **5-PS1-1, 5-PS1-2**	What happens to substances when they seem to change and disappear? *(Leads into Mystery 2)*	**Mystery 1 Anchor Connection:** Another substance may have caused the gargoyles to disappear over time.	What type of substance could cause the pieces of the gargoyles to disappear over time?
MYSTERY 2 **Could you transform something worthless into gold?**		Students coat a steel nail in copper by placing it into the solution that dissolved bits of the penny. Students realize that substances can change to become particles too small to be seen, but they still exist. **5-PS1-1, 5-PS1-2**	Why was the vinegar so good at changing substances? *(Leads into Mystery 3)*	**Mystery 2 Anchor Connection:** The stone from the gargoyles could have been dissolved by another substance.	If another substance changed the gargoyles, what happened to the pieces that "disappeared"?
MYSTERY 3 **What would happen if you drank a glass of acid?**		Students figure out that acids are very reactive substances. Students investigate reactions between different substances to determine how known acids react with other materials. **5-PS1-1**	Besides acids, will all substances react with each other to create new substances? *(Leads into Mystery 4)*	**Mystery 3 Anchor Connection:** Findings from this investigation suggest that an acid (acid rain) could have reacted with the gargoyle stone.	What effects could acid rain have on a stone gargoyle when they come in contact with one another?
MYSTERY 4 **What do fireworks, rubber, and silly putty have in common?**		Students combine different substances together to discover that chemical reactions can create new substances. **5-PS1-4**	How can we tell if the new substance created by a chemical reaction is a gas? *(Leads into Mystery 5)*	**Mystery 4 Anchor Connection:** Evidence suggests that the acid rain and stone (calcium carbonate) can react to create new substances.	What evidence can we see to know if a chemical reaction takes place between acid rain and a stone gargoyle?
MYSTERY 5 **Why do some things explode?**		Students investigate and model the reaction between baking soda and vinegar. They figure out that gases are made of particles too small to be seen. **5-PS1-1**	→	**Mystery 5 Anchor Connection:** This experiment suggests that one of the substances created in the reaction between acid rain and stone (calcium carbonate) was a gas that expanded into the atmosphere.	If parts of the gargoyle didn't "disappear," where did any new substances created from a chemical reaction between acid rain and the stone go?

Performance Task:
Final Alchemist Argument

Spaceship Earth: Anchor Layer Storyline

Sun, Moon, Stars, & Planets — ***Page 1 of 2***

5th Grade | NGSS Earth Science

Anchoring Phenomenon: Star Trails

How can you use patterns in the movement of the Sun, Moon, and stars to tell time?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **Why does the Sun rise and set?**		Students model the rotation of the Earth and investigate why the Sun looks like it's moving across the sky. Using evidence they gathered in the investigation, students create an argument to explain how the Earth's rotation causes the sun to rise and set. **5-ESS1-2**	Can the Sun's position in the sky help us tell the time of day? *(Leads into Mystery 2)*	**Mystery 1 Anchor Connection:** Star trails show that some stars rise and set like the Sun.	Why do the stars seem to move in the same pattern as the Sun?
MYSTERY 2 **Who set the first clock?**		Students make a shadow clock (sundial) and investigate how the direction and length of shadows change with the position of the light shining on the sundial. Students realize that the Sun's position in the sky can be used to tell the time of day. **5-ESS1-2**	Is the Sun always overhead at noon? *(Leads into Mystery 3)*	**Mystery 2 Anchor Connection:** Like the Sun, stars rise in the east and set in the west. This pattern is caused by the Earth's rotation.	Can I use the stars to tell the time of night?
MYSTERY 3 **How can the Sun tell you the season?**		Students examine photos taken at different times of year and figure out the time of year that each photo was taken. Students discover that the Sun's path changes with the seasons, as does the time of sunrise and sunset. The Sun is always highest in the sky at noon, but that height changes with the season. **5-ESS1-2**	Does anything else in the sky change with the seasons? *(Leads into Mystery 4)*	**Mystery 3 Anchor Connection:** In the Northern Hemisphere, all the stars look like they are spinning around one star that doesn't seem to move.	What's special about the star that doesn't look like it moves at all?
MYSTERY 4 **Why do the stars change with the season?**		Students build a model of the universe and use it to explain why different stars are visible at different times of year. Using evidence from this model, students make an argument that supports the claim that the Earth orbits the Sun. **5-ESS1-2**	The Moon looks different on different nights. Is there a pattern to the Moon's changes? *(Leads into Mystery 5)*	**Mystery 4 Anchor Connection:** The star at the center of all the Star Trails is the North Star. The Earth's North Pole points to the North Star, which is why it doesn't seem to move.	Is there anything else in the sky that we use to tell time? What about the Moon?

Spaceship Earth: Anchor Layer Storyline

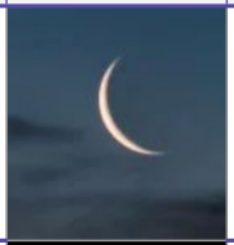
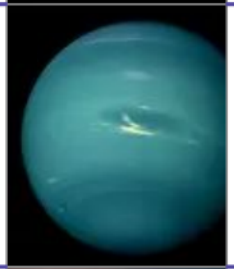
*Sun, Moon, Stars, & Planets — **Page 2 of 2***

5th Grade | NGSS Earth Science

Anchoring Phenomenon: Star Trails

How can you use patterns in the movement of the Sun, Moon, and stars to tell time?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 5 **How does the Moon change shape?**		Students use a physical model of the Sun and Moon to investigate how the Moon's phase relates to its position relative to the Sun. Students notice that the Moon's phases repeat in a predictable pattern. **5-ESS1-2**	What other patterns can I see in the night sky? *(Leads into Mystery 6)*	**Mystery 5 Anchor Connection:** The full Moon rises at sunset and sets at sunrise. Just as the Sun is always highest in the sky in the middle of the day, the Moon is always highest in the sky in the middle of the night.	We've talked about the Sun, the Moon, and the stars. What else can I see in the sky?
MYSTERY 6 **What are the wandering stars?**		Students learn that planets look like stars, but don't move like them. The apparent movement of planets is caused by both the Earth's spin and the planets' movement around the Sun. Students use a model of the solar system to learn the order of the planets and their relative distance from the sun, and each other. **5-ESS1-2**	How are the other planets different from Earth? *(Leads into Mystery 7)*	**Mystery 6 Anchor Connection:** Some planets orbit the Sun in less time than it takes the Earth; some take more time. The length of a year is different on different planets.	What else is different about keeping track of time on other planets?
MYSTERY 7 **Why is gravity different on other planets?**		Using mathematics and computational thinking, students calculate how high they could jump on planets and moons that have stronger or weaker gravity than Earth. Students analyze and interpret this data to construct an explanation for why the amount of gravity is different on other planets. **5-PS2-1**	Could people live on a different planet? What would that planet have to be like to support a human civilization? *(Leads into Mystery 8)*	**Mystery 7 Anchor Connection:** Students realize how different it is on other planets, laying the foundation for understanding that basic units of time are determined by where we are —on a spinning planet orbiting a star we call the Sun.	How could we use patterns in the sky to keep track of the time of day or night on another planet?
MYSTERY 8 **Could there be life on other planets?**		Students discover that the Earth is in the "Goldilocks Zone" — a distance from the Sun with the right amount of light and heat for life to exist. Students evaluate other solar systems, comparing their stars to our Sun. Based on their analysis, students plan a space mission to a planet with conditions similar to those on Earth. **5-ESS1-1**		**Mystery 8 Anchor Connection:** Students realize that our units of time are based on astronomy — the patterns we observe in the sky. The length of a day and a year depend on the planet where you live.	Using what I know about patterns in the sky, how can I make a clock that will tell the time with what I can see in the night sky?

Performance Task:
Invent a Night-Sky Clock

Web of Life: Anchor Layer Storyline

Ecosystems and the Food Web — ***Page 1 of 2***

5th Grade | NGSS Life Science

Anchoring Phenomenon:
Biosphere 2

What combination of organisms can sustain an ecosystem on Mars?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 1 **Why would a hawk move to New York City?**		Students construct models of food chains by linking cards discovering different interrelationships exist between organisms. **5-LS2-1**	What do the plants need to eat? ***(Leads into Mystery 2)***	**Mystery 1 Anchor Connection:** All living things need a food source in order to grow, and are all part of a food chain.	Does every living thing in my ecosystem have something to eat?
MYSTERY 2 **What do plants eat?**		Students conduct an investigation and interpret data and figure out that water and air account for a plant's weight. **5-LS1-1**	What happens to plants when they die? ***(Leads into Mystery 3)***	**Mystery 2 Anchor Connection:** All living things in a food chain can trace their energy source backwards to plants.	What would happen to my ecosystem if the plants don't have what they need?
MYSTERY 3 **Where do fallen leaves go?**		Students conduct an investigation to test how mold grows under different conditions to decompose food. Students realize that decomposers, like mold, break down and consume dead plant material. **5-LS2-1**	Is mold the only decomposer? What other kinds of decomposers are there? ***(Leads into Mystery 4)***	**Mystery 3 Anchor Connection:** Decomposers play an important role in the ecosystem and can always be found in a healthy ecosystem.	How could we get rid of dead plants and animals inside the Biosphere?

Web of Life: Anchor Layer Storyline

Ecosystems and the Food Web — ***Page 2 of 2***

5th Grade | NGSS Life Science

Anchoring Phenomenon:
Biosphere 2

What combination of organisms can sustain an ecosystem on Mars?



Learning Sequence	Investigative Phenomena	What Students Figure Out in this Mystery	This Makes Students Wonder...	What Students Figure Out in the Anchor Connection	This Makes Students Wonder...
MYSTERY 4 **Do worms really eat dirt?**		Students make observations of worms to realize that worms act as decomposers to eat dead matter in an ecosystem and cycle nutrients into the soil. **5-LS2-1**	Is it possible to have too many nutrients in an ecosystem? ***(Leads into Mystery 5)***	**Mystery 4 Anchor Connection:** Worms help an ecosystem by recycling nutrients back into the soil.	How would adding worms to the Biosphere affect the ecosystem?
MYSTERY 5 **Why do you have to clean a fish tank but not a pond?**		Students develop a model of a pond ecosystem and realize that interrelationships exist between decomposers, plants, and animals. Students discover that each organism must be in balance for the pond ecosystem to function. **5-LS2-1**	What would happen if we removed one piece of an ecosystem? ***(Leads into Mystery 6)***	**Mystery 5 Anchor Connection:** Ecosystems can become toxic if there is too much carbon dioxide and not enough plants or decomposers to recycle it.	Which is more similar to a Biosphere: a pond or a fish tank? Why?
MYSTERY 6 **Why did the dinosaurs go extinct?**		Students develop a model of a dinosaur food web. Students realize that blocking the sun's energy would have disastrous effects on the organisms that rely on this energy in the food web and cause the extinction of some entire species. **5-PS3-1**		**Mystery 6 Anchor Connection:** Energy from the sun is the original energy source for entire ecosystems.	What could cause the Biosphere ecosystem to collapse?

Performance Task:
Ecosystem Model & Argument

Additional storylines in development.

Turn on “Anchor Layer” in your account settings to access Anchor Storylines for 4th and 5th grade units.