Policy 708.8.23

Science Curriculum

Rationale based on Scripture

God is the Creator of all things, including science. Our school is committed to providing students with a quality education in science so they can function effectively as Christians in their church, community, and country. A quality education in science will help students succeed in high school, in the work place, and help them witness to friends, neighbors, and co-workers about our Savior.

Exit goals for graduation

Students will demonstrate proficiency, understanding, and/or commitment to the following set of exit goals upon graduation. The level of proficiency of these exit goals will be dependent upon the individual gifts and effort of the student and at what grade the student started attending Christ the King.

- Demonstrate a positive attitude toward Science
- Know and believe that God created the world in six, 24-hour days
- Familiar with the theory of evolution and how to use God's Word to combat it
- Carry out the scientific method in experiments
- Have the ability to follow step-by-step instructions from a text in order to complete a task
- Are familiar with basic use of algebraic formulas for solving math problems (i.e. v= d/t)
- Demonstrate skills of comparing and contrasting two different things
- Make, interpret, analyze, and draw conclusions from graphs
- Have basic knowledge of the following Scientific topics:
    - Matter
    - Atoms
    - Gravitation
    - Speed and motion
    - Newton's 3 laws of motion
    - Photosynthesis and cellular respiration
    - Parts of a cell
    - Cell reproduction
    - Plant processes
    - Principles of ecology
    - Human body systems
    - Genetics

Grade level measurable objectives

At the end of each school year, students will demonstrate proficiency, understanding, and/or commitment to the following set of grade specific measurable objectives in these classifications: knowledge, skills, and attitudes.

The level of proficiency of these measurable objectives will be dependent upon the individual gifts and effort of the student and at what time of year the student started attending Christ the King.

Mystery Science Kindergarten Pacing Guide

Unit 1: Animal Needs

- In this unit, students use observations to understand the basic needs of animals. Students explore how animals need things to eat and a safe place to live, and also how animals can change their environments to meet those needs.

Unit 2: Plant Needs
- In this unit, students use observations to understand the basic needs of plants, such as water and sunlight. They also observe young plants and the changes they undergo as they grow from seed to seedling.

Unit 3: Severe Weather
- In this unit, students explore storms and severe weather! They obtain information from weather forecasts to prepare for storms and stay safe. They also practice describing the various characteristics of weather (wind, clouds, temperature, and precipitation) in order to make their own predictions about storms.

Unit 4: Weather Patterns
- In this unit, students gather evidence in order to identify daily and seasonal weather patterns. They use those patterns to explain mysteries like why you might lose your jacket during the day or why birds lay their eggs at certain times of the year.

Unit 5: Sunlight & Warmth
- In this unit, students make observations to explore how sunlight warms the Earth's surface. The Sun's energy heats up the pavement, keeps us warm, and can even melt marshmallows. Using what they learn, students think about ways that shade and structures can reduce the warming effect of the Sun.

Unit 6: Pushes & Pulls
- In this unit, students are introduced to pushes and pulls and how those affect the motion of objects. Students observe and investigate the effects of what happens when the strength or direction of those pushes and pulls are changed.

Mystery Science First Grade Pacing Guide

Unit 1: Animal Traits & Survival
- In this unit, students explore how the external characteristics of animals are essential for their survival. Students also make observations of parents and their offspring, determining how they are similar and how their behaviors help offspring survive.

Unit 2: Plant Traits & Survival
- In this unit, students explore the different parts of plants and how those parts are essential for plant survival.

Unit 3: Day Patterns
- In this unit, students make observations of the Sun and shadows throughout the day and across the seasons. They use their observations to understand patterns that occur throughout the day.

Unit 4: Night Patterns
- In this unit, students explore the Moon and stars. They observe and record the appearance of the Moon to determine its cyclical pattern. They also determine why stars are only visible at night.

Unit 5: Light, Sound, & Communication
- In this unit, students investigate light and sound! They explore how materials vibrate and how vibrating materials can make sounds. They also investigate light and illumination and use those investigations to create simple devices that allow them to communicate across a distance.

Mystery Science Second Grade Pacing Guide

Unit 1: Animal Biodiversity

- In this unit, students begin to develop an understanding of the world's animal biodiversity. They explore animal classification and the traits that define each group. Students then turn their focus to habitats and how the surrounding environment affects what organisms live in a particular environment.

Unit 2: Plant Adaptations

- In this unit, students explore the needs of plants through hands-on investigations. They explore how and why plants disperse their seeds, what those seeds need in order to grow, and what the adult plants need in order to survive and thrive.

Unit 3: Erosion & Earth's Surface

- In this unit, students explore how water shapes the Earth's surface. Students construct and use models of mountains to demonstrate that water flows downhill, and in the process, transforms huge rocks into the tiny grains of sand we find at the beach. Students also construct and use model hills to determine the causes of erosion, and to design solutions to problems caused by erosion.

Unit 4: Material Properties

- In this unit, students explore how water shapes the Earth's surface. Students construct and use models of mountains to demonstrate that water flows downhill, and in the process, transforms huge rocks into the tiny grains of sand we find at the beach. Students also construct and use model hills to determine the causes of erosion, and to design solutions to problems caused by erosion.

Mystery Science Third Grade Pacing Guide

Unit 1: Fossils & Changing Environments

- In this unit, students develop an understanding of how animals and their environments have changed through time. Fossils provide a window into the animals and habitats of the past. Analyzing the traits of animals that are alive today and comparing them to fossils, provides evidence of how these ancient organisms and environments of the past may have appeared.

Unit 2: Life Cycles

- In this unit, students compare and contrast the life cycles of both animals and plants. Students create models to build an understanding that all organisms share certain stages in their life cycles: birth, growth, reproduction, and death. Students also explore how an understanding of life cycles can aid in solving problems that occur when there are too many or too few organisms in a particular environment.

Unit 3: Heredity, Survival, & Selection

- In this unit, students compare the structures and functions of traits that enable organisms to survive in a specific environment. Analyzing the traits of animals provides evidence for how those traits vary, how they are inherited, and how they have changed over time through selection. Students also examine how the environment can affect inherited traits and determine which animals will survive in a particular environment.

Unit 4: Weather & Climate

- In this unit, students investigate and make predictions about the weather through careful observation of the clouds and wind. Students also learn to differentiate between weather and climate and use models to reveal global climate patterns.

Unit 5: Forces, Motion, & Magnets

- In this unit, students explore the forces all around them. They investigate the effects of balanced and unbalanced forces, the pushes and pulls of bridge structures, and the effects of gravity and friction on the motion of objects. Students also explore the power of magnetic forces and design solutions to everyday problems using their knowledge of these forces.

Mystery Science Fourth Grade Pacing Guide

Unit 1: Human Body, Vision, & The Brain

- In this unit, students investigate structures and functions of the human body. Students explore how our bones and muscles are interconnected, how our eyes interact with light and impact our vision, and how our brain responds to stimuli in our environment.

Unit 2: Earth's Features & Processes

- In this unit, students investigate features and processes of the Earth's surface. Students explore the rapid process of volcanic eruptions! In contrast, students also explore the gradual Earth processes of weathering and erosion. Students apply their knowledge and design solutions to mitigate the impacts of these processes on humans.

Unit 3: Sound, Waves, & Communication

- In this unit, students investigate the science of sound. Students construct physical devices to feel the vibrations that allow us to communicate across distances. Students also use digital devices to visualize the characteristics of different sound waves that cause us to hear different things.

Unit 4: Energy, Energy Transfer, & Electricity

- In this unit, students explore energy! Students investigate how energy is stored, how it can make objects move, and how collisions transfer energy between objects. Students also construct devices that convert energy from one form into another, such as heat into motion and electricity into light.

Mystery Science Fifth Grade Pacing Guide (Fifth-Sixth Grade Even Years)

Unit 1: Ecosystems & The Food Web

- In this unit, students explore how organisms depend on one another and form an interconnected ecosystem. Students investigate food chains, food webs, and the importance of producers, consumers, and decomposers.

Unit 2: Water Cycle & Earth's Systems

- In this unit, students consider the profound importance of water as a natural resource. Students investigate the distribution of water, how it cycles through Earth's systems, and explore how it affects human societies.

Unit 3: Stars & The Solar System

- In this unit, students explore the Earth, Sun, Moon, and stars using observations of shadows and changing patterns in the sky. Students also explore the planets of our Solar System and begin to consider what might lie beyond.

Unit 4: Chemical Reactions & Properties of Matter

- In this unit, students investigate the properties of matter by dissolving everyday chemicals to make solutions and by exploring simple yet surprising chemical reactions. Through these investigations, students begin to build conceptual models for the particulate nature of matter.

Kesler Science (Fifth-Sixth Grade Even Years)

Space Station Lab

- Asteroids, Meteors, and Comets
    - Students will describe the physical properties, locations, and movements of meteors.
    - Students will describe the physical properties, locations, and movements of asteroids.
    - Students will describe the physical properties, locations, and movements of comets.
- Big Bang Theory
    - Students will construct an explanation of the Big Bang Theory based the following evidence:
        - Expansion of the universe

        - Cosmic microwave background radiation
        - Abundance of different elements in the universe
- Eclipses
    - Students will describe the different types of eclipses.
    - Students will model how the shadow cast in an eclipse causes partial and total eclipses.
    - Students will describe how positions of the Sun, Moon, and Earth determine the type of eclipse.
- Electromagnetic Spectrum
    - Students will explore how wavelengths are used to measure distant objects in the universe.
    - Students will interpret the electromagnetic spectrum
- Galaxies and Light Years
    - Students will describe the different types of galaxies.
    - Students will model how light years are used to measure distances.
    - Students will describe how light years are used to measure distances.
- H-R Diagram
    - Students will describe how the stars are classified on the H-R diagram.
    - Students will interpret the H-R diagram.
- Life Cycle of a Star
    - Students will demonstrate the life cycle of a star based on the size of a given star.
    - Students will predict the phases of a star's life cycle.
- Lunar Cycle
    - Students will show how the moon changes over time.
    - Students will predict future and past moon phases.
- Planets
    - Students will describe the physical properties of the planets and their location
    - Students will describe the movements of the Sun, the planets, and the Galilean moons.
- Seasons
    - Students will model what causes night and day.
    - Students will illustrate why the seasons change.
- Tides
    - Students will determine the tides based on the position of the Sun, Earth, and Moon.
    - Students will characterize spring and neap tides.

Ecosystem Station Lab

- Abiotic and Biotic Factors
    - Students will describe biotic and abiotic parts of an ecosystem in which organisms interact.
    - Students will investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors.
- Biodiversity
    - Students will describe how biodiversity contributes to the sustainability of an ecosystem.
- Biomes
    - Students will observe and describe how different environments, including microhabitats in schoolyards and biomes, support different varieties of organisms.
- Carbon Cycle
    - Students will define and diagram the biological and geological carbon cycle.
    - Students will interpret how carbon flows through the geological and biological carbon cycles.
- Classification
    - Students will recognize that the broadest taxonomic classification of living organisms is divided into currently recognized domains.
- Energy Pyramids
    - Students will diagram the flow of energy through living systems using an energy pyramid.

- Food Webs
    - Students will diagram the flow of energy through living systems, including food chains and food webs.
    - Students will describe food webs within marine, freshwater, and terrestrial ecosystems.
- Natural Selection
    - Students will identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch or domestic animals.
- Nitrogen Cycle
    - Students will diagram the nitrogen cycle, including all the processes involved in changing N2 into usable nitrogen.
    - Students will explain how humans alter/impact the nitrogen cycle.
- Organism Relationships
    - Students will describe producer/consumer, predator/prey, and parasite/host relationship as they occur in food webs.
    - Students will describe these relationships as they occur in the following environments: marine, freshwater, and terrestrial.
- Short- and Long-Term Environmental Impacts
    - Students will explore how short and-long-term environmental changes effect organisms and traits in subsequent populations.
- Succession
    - Students will observe, record, and describe the role of ecological succession in a habitat.
- Symbiosis
    - Students will identify the basic characteristics of a symbiotic relationship, including mutualism, commensalism and parasitism, and list examples.
- Turgor Pressure and Tropisms
    - Students will investigate how plants respond to external stimuli found in the environment including: phototropism, geotropism, hydrotropism, and thigmotropism.
    - Students will describe and relate responses, such as wilting in plants, that may result from internal stimuli.
- Watersheds
    - Students will compare fresh and salt water, including examples.
    - Students will identify the differences between surface and ground water, including examples.
    - Students will draw and label the parts of an aquifer.
    - Students will examine six different types of water pollution.
    - Students will generate ideas for reducing water pollution.

Force and Motion Station Lab

- Balanced and Unbalanced Forces
    - Students will identify balanced and unbalanced forces.
    - Students will identify and describe the changes in position, direction, and speed of an object.
- Motion Graphing
    - Students will measure and graph changes in motion.
    - Students will interpret an object's motion from a graph.
    - Students will describe the characteristics of a motion graph.
- Net Force
    - Students will demonstrate how unbalanced forces change the speed or direction of an object’s motion.
    - Students will calculate how unbalanced forces change the speed or direction of an object’s motion.
- Newton’s Laws

    - Students will investigate and describe applications of Newton's law of inertia (Newton's 1st Law of Motion).
    - Students will investigate and describe applications of the law of force and acceleration (Newton's 2nd Law of Motion).
    - Students will investigate and describe applications of the law of action-reaction (Newton's 3rd Law of Motion).
- Simple Machines
    - Students will describe how simple machines change the amount of force needed to move an object.
    - Students will demonstrate how simple machines make work easier.
- Speed, Velocity, Acceleration, and Average Speed
    - Students will calculate average speed using distance and time measurements.
    - Students will differentiate between speed, velocity, and acceleration.
- Work
    - Students will contrast situations where work is done with different amounts of force to situations where no work is done.
    - Students will explain examples such as moving a box with and without a ramp, or standing still.

Body Systems Lab

- Circulatory System
    - Students will identify the main functions of the circulatory system and how it is structured.
    - Students will identify the main organs associated with this system.
- Digestive System
    - Students will identify the main functions of the digestive system and how it is structured.
    - Students will identify the main organs associated with this system.
- Endocrine System
    - Students will identify the main function of the endocrine system and how its is structured.
    - Students will identify the main organs associated with this system.
- Excretory System
    - Students will identify the main functions of the excretory system and how it is structured.
    - Students will identify the main organs associated with this system.
- Muscular System
    - Students will identify the main function of the muscular system and how it is structured.
    - Students will identify the main organs associated with this system.
- Nervous System
    - Students will identify the main functions of the nervous system and how it is structured.
    - Students will identify the main organs associated with this system.
- Respiratory System
    - Students will identify the main functions of the respiratory system and how it is structured.
    - Students will identify the main organs associated with this system.
- Skeletal System
    - Students identify the main functions of the skeletal system and how it is structured.
    - Students identify the main organs associated with this system.

Structure of Life Station Lab

- Cell Theory
    - Students will recognize that according to cell theory all organisms are composed of cells and cells carry on similar functions such as extracting energy from food to sustain life.
- Characteristics of Organisms
    - Students will identify the basic characteristics of organisms that further classify them in the currently recognized kingdoms.

- Dichotomous Keys
  - Students will examine organisms or their structures such as insects or leaves and use dichotomous keys for identification.
- Genetics – Punnett Squares
  - Students will define genetics.
  - Using Punnett Squares, students will describe the cause and effect relationship of gene transmission from parents to offspring and the resulting genetic variations.
- Inherited Traits
  - Students will recognize that inherited traits of individuals are governed in the genetic material found in the genes within chromosomes in the nucleus.
- Mitosis and Meiosis
  - Students will define mitosis and meiosis and identify what occurs at each phase of cell division.
  - Students will compare and contrast mitosis and meiosis.
- Plant and Animal Cells
  - Students will differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole.
- Prokaryotic and Eukaryotic Cells
  - Students will identify the basic characteristics and mode of reproduction of prokaryotic or eukaryotic cells that classify them in the currently recognized Kingdoms.
- Sexual and Asexual Reproduction
  - Students will identify the basic characteristics and mode of reproduction of prokaryotic or eukaryotic cells that classify them in the currently recognized Kingdoms.

Kesler Science (Seventh-Eight Grade Odd Years)

STEM Challenge Vol. 1 - Integrated

- Project Rocket Launch
  - Students will understand the relationship between force and motion.
  - Students will research the design components of a bottle rocket.
  - Students will build and launch a bottle rocket, which flies straight and high.
- Project Birdman
  - Students will develop a set of bird beaks that will overcome the following feeding behaviors: tearing, cracking, sipping, drilling, picking, probing, striking,
  - straining, and scooping.
  - Students will be challenged to use their best adapted bird beak for a series of
  - unknown scenarios.
- Project Electric: Design a System to Harness Powerful Energy from Ocean Waves
  - Students will construct a model that shows how wave energy can be converted into electrical energy.
  - Students will explain how the energy transformation process works.
  - Students will compare and contrast the advantages and disadvantages of wave energy.
- Project Hurricane Defender: Design and Build a Hurricane Proof House
  - Students will design a house which can withstand hurricane force winds and still be appealing to buyers.
  - Students will stay within a construction budget.
- Project Mars Probe: Make a Device that Picks Up Rocks
  - Students will collaborate to build a prototype space probe, which can travel a distance of 50 meters, in order to pick up rock and soil samples on Mars.

- Project Inhabit Mars: Build a Landing Device for 2050 Mars Mission
    - Students will understand the impact of the force of gravity and air resistance.
    - Students will build a prototype landing device that will successfully protect an egg from breaking when dropped from the height of 3 meters.
    - Students will also drop the egg with precision and accuracy.
- Project Lunar Base: Build a Colony Base on the Moon
    - Students will research the essential needs of living on the Moon.
    - Students will construct a lunar base, which has a perimeter no greater than 32 meters and a height no greater that 3 meters.
    - Students will construct a lunar base, which contains an airlock as well as a plan for water, air and food.
- Project Move: Design a Pulley System to Move a Heavy Load with One Person
    - Students will build a pulley system which will allow them to lift box by using less than half of the force it would take to lift the box on its own.
    - Students will measure the force required to lift the mass before and after adding the pulley system to the load.
    - Students will be able to compare and contrast different types of pulleys.
    - Students will be able to describe Newtons as a measurement of force.
- Project Save the Oceans: Make a Device That Cleans Our Oceans
    - Students will construct a device that will help solve the pollution problems found in the oceans.
    - The solution must be sustainable and scalable.
- Project Skydive: Build a 21st Century Parachute for Your Freefall
    - Students will create a parachute that slows the parachute down the most but is also the most accurate.
    - Students will run trials to ensure the data supports making a final decision.
    - Students will have to maintain a budget.
- Project Thrills: Design Your Own Fast and Furious Rollercoaster
    - Students will construct a rollercoaster that will be judged on the level of thrills and whether it remained under budget.
    - Students will be able to compare and contrast potential and kinetic energy as it relates to a rollercoaster.
    - Students will be able to describe the law of conservation of energy.
- Project Wind and Sky: Create a 21st Century Turbine
    - Students will research how wind turbines negatively impact the environment.
    - Students will build a prototype of a wind turbine, which will help decrease bird fatalities.

Weather Station Lab

- Atmosphere
    - Students will recognize that a limited number of the many known elements comprise the largest portion of the atmosphere.
    - Students will identify the composition of the atmosphere.
    - Students will identify the layers of Earth's atmosphere.
    - Students will demonstrate how the Sun's energy impacts weather and atmospheric movement.
    - Students will identify the 4 main cloud types.
- Catastrophic Events

    - Students will predict and describe how different types of catastrophic events impact ecosystems such as floods, hurricanes, or tornadoes.
- Convection Currents
    - Students will recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds and ocean currents.
- Hurricane Formation
    - Students will identify the role of the oceans in the formation of weather systems such as hurricanes.
    - Students will identify how hurricanes are formed, measured, and tracked.
- Water Cycle
    - Students will describe how water continually cycles among land, ocean, and atmosphere.
    - Students will identify the forms water takes through the water cycle.
    - Students will describe how the sun and gravity affect the water cycle.
- Weather Maps and Air Masses/Pressure
    - Students will identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts.

Energy Station Lab

- Conduction, Convection, and Radiation
    - Students will investigate methods of thermal energy transfers, including conduction, convection, and radiation.
- Electric and Magnetic Forces
    - Students will identify and explain the forces of nature that create electromagnetism.
    - Using data, students will determine factors that affect the strength of electric and magnetic forces.
- Energy Transformations
    - Students will demonstrate the transformation of energy from one form of energy to another.
- Nonrenewable Resources
    - Students will research and debate the advantages and disadvantages of non-renewable energy resources.
- Photosynthesis
    - Students will construct a scientific explanation based on evidence that radiant energy from the Sun is converted into chemical energy through the process of photosynthesis.
    - Students will relate the Law of Conservation of Mass to the photosynthesis equation.
- Potential and Kinetic Energy
    - Students will compare and contrast potential and kinetic energy.
- Properties of Waves
    - Students will describe how matter and energy interact when waves are generated.
    - Students will distinguish between the two main types of mechanical waves.
    - Students will identify the properties of waves.
- Renewable Resources
    - Students will research and debate the advantages and disadvantage of renewable energy resources.
- Sound Waves
    - Students will define sound.
    - Students will explain how sound waves travel.
    - Students will describe the physical properties of a medium and explain its effect on the waves' speed.
    - Students will compare the properties of waves that affect what we hear.

    - Students will demonstrate the Doppler effect.
- Visible Light
    - Students will explain where visible light falls on the electromagnetic spectrum.
    - Students will compare and explain how an object's material and light's frequency affect the way light is reflected, absorbed, or transmitted.
    - Students will model how the frequency of light affects the color of an object.
    - Students will diagram how primary colors of light produce secondary and complementary colors.
    - Students will model how brightness of light is determined.

STEM Challenge Vol. 2 – Earth and Space

- Project Crystal Clear
    - Students will research mineral properties.
    - Students will be given three mystery minerals to identify using a series of tests.
    - Students will research mineral uses.
- Project Drift Away
    - Students will research and present Wegener's evident supporting Continental Drift Theory by creating a model or display that will be the centerpiece for a new lab opening in Germany.
- Project Environmental Remediator
    - Students will research the effects of surface water oil spills in the Gulf of Mexico as well as coastline effects.
    - Students will build a prototype of a device to minimize the effects of an oil spill.
    - The solution must be sustainable and scalable.
- Project I Lava You
    - Students will research the formation of the Hawaiian volcanoes.
    - Students will research past and present eruptions on the Big Island.
    - Students will create a map of a local area to be developed and write a report that supports their site as acceptable for the establishment of a new community.
- Project Paleo
    - Students will know and understand how fossils form.
    - Students will identify the importance of index fossils.
    - Students will design and build a museum exhibit on index fossils.
- Project Pop-up
    - Students will illustrate the correct positions of the Sun, Earth, and Moon during phases of the Lunar Cycle.
    - Students will develop a Lunar Cycle Pop-up book suitable for upper elementary Students.
- Project Seismic
    - Students will design and build an earthquake-proof building.
    - Students will research common earthquake fatalities.
    - Students will identify U.S. states in which earthquakes most commonly occur.
- Project Shake, Rattle, and Roll
    - Students research information about seismic waves and seismographs.
    - Students will build a model of a seismograph and demonstrate how it records seismic waves.
- Project Solar System Explorer
    - Students will research the distances the planets are from the Sun.
    - Students will make a model of the solar system using the correct relative distances of the planets from the Sun.

- Project Star Gazer
    - Students will be able to read and interpret the H-R Diagram.
    - Students will build a 3D exhibit for the Hayden Planetarium, which explains the H-R Diagram to the public.
- Project Top Expo
    - Students will understand that a topographic map represents a geographical region.
    - Students will design and construct a topographic map of a specific region.

Kesler Science (Seventh-Eighth Grade Even Years)

STEM Challenge Vol. 3 – Life Science

- Project A Touch of Nature
    - Students will research the components of a terrarium.
    - Students will apply the processes of the water cycle to their terrarium.
    - Students will identify how biotic and abiotic factors work together in a terrarium.
- Project All Abuzz
    - Students will research the local pollinators and the plants that attract them.
    - Students will design a 20'X10' garden which will attract different types of pollinators.
    - Students will make the solution sustainable and scalable.
- Project All Hands on Deck
    - Students will research how the muscular and skeletal systems work together.
    - Students will design and build a prototype of an artificial hand.
    - Students will use their artificial hand to pick up various objects.
- Project Big, Bigger, Biggest
    - Students will research giant redwood trees and how they interact with their environment.
    - Students will research the importance of giant redwood trees.
    - Students will make a model of a redwood tree and other landmarks in their area to give the general public an idea of the tree's size.
- Project Create a Home
    - Students will research the goldfinch and discover their survival needs.
    - Students will build a habitat suitable for goldfinch.
- Project Dry Bones
    - Students will identify the structure of the skeletal system.
    - Students will identify the function of the skeletal system.
    - Students will design and build a model of the skeletal system.
- Project How Does Your Garden Grow?
    - Students will determine the effects of both external and internal stimuli on strawberries.
    - Students will design a strawberry garden and write a blog post or report as a companion to their design.
- Project In the Mist
    - Students will research gorilla habitats and their daily habits.
    - Students will design and build a prototype of a gorilla habitat for a zoo.
    - Students will develop a way to educate visitors about the gorilla habitat.
- Project Keys to the Kingdom
    - Students will research and identify the function of a dichotomous key.
    - Students will be able to demonstrate how to use a dichotomous key.
    - Students will build their own dichotomous key using buttons.

- Project Last Dance
    - Students will research the behaviors and habitat of Attwater's prairie chicken.
    - Students will build an enclosure that biologists might use in observing Attwater's prairie chickens to determine ways of increasing their success.
- Project Too Good to Waste
    - Students will research composting techniques.
    - Students will design and build a small-size compost bin.
    - Students will make their compost bin sustainable and scalable.
- Project What Happens Next
    - Students will research the process of succession.
    - Students will predict what the environment will look like 100 years after a forest fire.
    - Students will design and create a flipbook to communicate their findings.

Chemistry Station Lab

- Acids and Bases
    - Students will differentiate between acids and bases.
    - Students will describe how ions relate to acids and bases.
    - Students will investigate and describe how to test for acids and bases using pH.
- Atoms
    - Students will describe the structure of atoms, including the masses, electrical charges, and locations of protons, neutrons, and electrons.
    - Students will identify that protons determine an element's identity.
- Balancing Chemical Equations
    - Students will recognize whether a chemical equation is balanced or not.
    - Students will relate balanced equations to the law of conservation of mass.
- Chemical Bonds
    - Students will describe how elements form bonds.
    - Students will investigate how valence electrons relate to chemical bonds.
    - Students will differentiate between ionic and covalent bonding.
- Chemical Changes
    - Students will investigate how evidence of chemical reactions indicate that new substances with different properties are formed.
- Elements, Compounds, and Mixtures
    - Students will recognize that chemical formulas are used to identify substances.
    - Students will recognize that chemical formulas determine the number of atoms of each element in chemical formulas containing subscripts.
- Metals, Nonmetals, and Metalloids
    - Students will compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability.
- Molecules
    - Students will describe the basic differences in elements, molecules, and compounds.
    - Students will determine the number of molecules in a chemical equation.
- Organic Compounds
    - Students will identify organic compounds.
    - Students will explain how organic compounds are produced.
    - Students will list elements found in organic compounds.

    - Students will recognize organic compounds in chemical formulas.
- Periodic Table
    - Students will identify that valence electrons determine an atom's chemical property, including reactivity.
    - Students will interpret the arrangement of the Periodic Table to explain how properties are used to classify elements (including groups and periods).
- Properties of Water
    - Students will identify the physical and chemical properties of water.
    - Students will describe how properties of water are important to the planet's dynamics.
- Solids, Liquids, and Gaes
    - Students will predict what changes will occur in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

Earth Science Station Lab

- Continental Drift
    - Students will describe the historical developments that support the plate tectonic theory.
- Density of a Regular-Shaped Object
    - Students will calculate the density of regularly shaped objects.
    - Students will identify an object using its density.
- Density of an Irregular-Shaped Object
    - Students will calculate the density of irregularly shaped objects.
    - Students will identify an object using its density.
- Earthquakes
    - Students will identify the role plate boundaries play in earthquakes.
    - Students will model different types of faults and their related stresses.
    - Students will compare seismic waves and interpret graphs relating to seismic waves.
    - Students will identify the process by which epicenters are determined.
    - Students will describe how tsunamis form and their effects.
    - Students will determine how humans can reduce the impact of very unpredictable earthquakes.
- Erosion and Deposition
    - Students will analyze the effects of weathering, erosion, and deposition on the environment in ecoregions.
- Fossils
    - Students will identify fossils as evidence of past living organisms.
    - Students will classify the different types of fossilization.
    - Students will differentiate between relative and absolute age.
    - Students will interpret the fossil record using the Geologic Time Scale.
    - Students will distinguish similarities between organisms living today with those of the past.
- Geologic Time Scale
    - Students will interpret the relative and absolute age of rock strata and the fossil record, which provide evidence of Earth's geologic history.
    - Students will discover how the Earth's geologic history is classified.
    - Students will give examples of major events in the Earth's geologic history.
- Layers of Earth
    - Students will describe the characteristics of the structural layers of Earth.
    - Students will illustrate the structural layers of the Earth.

- Oceans
    - Students will identify the elements that make up the ocean.
    - Students will associate salinity and temperature with density.
    - Students will recognize that the Sun provides the energy that drives convection within the oceans, producing surface and deep ocean currents.
    - Students will give examples of seafloor structures, including locations.
- Plate Boundaries
    - Students will relate plate tectonics to the formation of different features on Earth's crust
- Properties of Minerals
    - Students will define the properties of a mineral.
    - Students will describe how different minerals are identified.
    - Students will list common uses for minerals.
- Rock Cycle
    - Students will classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation.
- Topographic Maps
    - Students will interpret topographic maps and satellite views to identify land and erosional features.
    - Students will predict how these feature may be reshaped by weathering and erosion.
- Volcanoes
    - Students will identify the parts of a volcano.
    - Students will compare and contrast the four types of volcanoes.
    - Students will describe the processes by which volcanoes form.
    - Students will explain the predictable pattern of where volcanoes are located.

STEM Challenge Vol. 4 – Physical Science

- Project Clean It Up
    - Students will research the causes of water pollution.
    - Students will research tests used in determining water quality.
    - Students will build a model of a water purification device.
- Project Face the Music
    - Students will research sound and the vocabulary words that describe the sound.
    - Students will design and make a musical instrument.
    - Students will demonstrate their knowledge of sound by playing their instruments and describing the characteristics of sound.
- Project Far Out
    - Students will research the definition of density.
    - Students will research the relationship between convection currents and density.
    - Students will build a model of a lava lamp demonstrating convection.
- Project Marble Madness
    - Students will research incline planes and their uses.
    - Students will calculate the average speed for their marble's travels.
    - Students will build an obstacle course for a marble to travel upon while controlling its speed as it moves down an inclined plane.
- Project Mystery Powder
    - Students will perform specific lab tests to identify the three white powders.
    - Students will write a final report stating their analysis.

- Project Off to the Races
    - Students will know and understand Newton's Third Law of Motion.
    - Students will be able to relate Newton's Third Law of Motion to their car's motion.
    - Students will research the best surfaces for running their car.
    - Students will build and race their balloon car racer.
- Project Quality Construction
    - Students know and understand what a cantilever is.
    - Students will research how cantilevers are used today.
    - Students will research how the force and mass on a cantilever affect its ability to hold an object.
    - Students will build a cantilever according to specifications.
- Project Storm the Castle
    - Students will know and understand what a catapult is.
    - Students will research how force and mass affect the amount of destruction a catapult can do.
    - Students will research the history of catapults.
    - Students will build a catapult and compete in a contest.
- Project Sunnyside Up
    - Students will research how a solar oven works.
    - Students will make a solar oven.
    - Students will make their solar oven space-saving for easy transportation.
- Project Uncharted Waters
    - Students will research different types of water wheels.
    - Students will research and explain how moving water produces electricity.
    - Students will build a water wheel.

Evidence of continuity from grade to grade

The curriculum is constructed using skill-based measurable objectives so that the knowledge, attitudes, and skills learned in each grade form building blocks for what is taught in the succeeding grades.

Following is the alignment guides for Mystery Science and Kesler Science.

Mystery Science Alignment with the Next Generation Science Standards

Mystery Science is a hands-on curriculum that is fully aligned with the Next Generation Science Standards (NGSS).

Mystery Science's units of study contain:

- Hands-on, easy-prep activities with EVERY lesson
- Engaging, real-world investigative phenomena
- Thoughtful discussions to build background knowledge
- Lesson & unit assessments to evaluate comprehension
- Curated, cross-curricular extensions

Mystery Science also offers the Anchor Layer, which enriches the unit with an anchor phenomenon, incorporates anchor connections after each lesson, & concludes the unit with a performance task.

mystery science

Updated 06/01/2023

All Kindergarten Units • Units may be taught in any order

Page 4 • Web Link

NGSS Performance Expectations:

- K-LS1-1
- K-ESS2-2
- K-ESS3-1

Unit Breakdown:

- 4 Lessons & Activities
- 4 Anchor Connections
- 4 Extension Blocks

Anchor Layer Adds:
- 1 Anchor Phenomena
- 4 Anchor Connections
- 1 Performance Task

Page 5 • Web Link

NGSS Performance Expectations:

- K-LS1-1
- K-ESS3-3

Unit Breakdown:

- 3 Lessons & Activities
- 2 Lesson Assessments
- 3 Extension Blocks

Anchor Layer will be added to this unit in the 2023-2024 school year.

Page 6 • Web Link

NGSS Performance Expectations:

- K-ESS2-1
- K-ESS3-2

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer will be added to this unit in the 2023-2024 school year.

Page 7 • Web Link

NGSS Performance Expectations:

- K-ESS2-1
- K-ESS2-2

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:
- 1 Anchor Phenomena
- 3 Anchor Connections
- 1 Performance Task

Page 8 • Web Link

NGSS Performance Expectations:

- K-PS3-1
- K-PS3-2
- K-2-ETS1-1
- K-2-ETS1-3

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer will be added to this unit in the 2023-2024 school year.

Page 9 • Web Link

NGSS Performance Expectations:

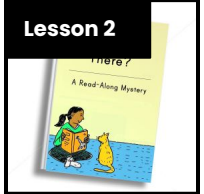
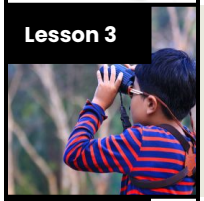
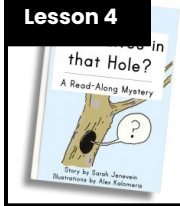
- K-PS2-1
- K-PS2-2
- K-2-ETS1-1
- K-2-ETS1-2
- K-2-ETS1-3

Unit Breakdown:

- 6 Lessons & Activities
- 6 Lesson Assessments
- 6 Extension Blocks

Anchor Layer will be added in the 2023-2024 school year.

Animal Needs Unit (Animal Secrets)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Animal Needs: Food** Why do woodpeckers peck wood?	**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.	Obtaining, Evaluating, and Communicating Information Engaging in Argument from Evidence	**LS1.C.** Organization for Matter and Energy Flow in Organisms	Patterns
Lesson 2 	📖 **Animal Needs: Shelter** Where do animals live?	**K-ESS3-1** Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.	Obtaining, Evaluating, and Communicating Information	**ESS3.A.** Natural Resources	Patterns Systems and System Models
Lesson 3 	**Animal Needs: Safety** How can you find animals in the woods?	**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.	Obtaining, Evaluating, and Communicating Information Engage in Argument from Evidence	**LS1.C.** Organization for Matter and Energy Flow in Organisms	Patterns
Lesson 4 	📖 **Animals & Changing the Environment** How do animals make their homes in the forest?	**K-ESS2-2.** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs	Obtaining, Evaluating, and Communicating Information	**ESS2.E.** Biogeology	Systems and System Models

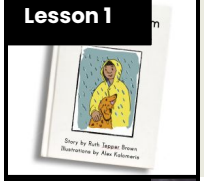
📖 Read-Along Lesson

Plant Needs Unit (Plant Secrets)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Living & Nonliving** Are plants alive?	**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.	Analyzing and Interpreting Data	**LS1.C:** Organization for Matter and Energy Flow in Organisms	Patterns
Lesson 2 	**Plant Needs: Water & Light** How do plants and trees grow?	**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**LS1.C:** Organization for Matter and Energy Flow in Organisms	Patterns Cause and Effect
Lesson 3 	📖 **Human Impacts on the Environment** Why would you want an old log in your backyard?	**K-ESS3-3.** Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	Obtaining, Evaluating, and Communicating Information	**ESS3.C:** Human Impacts on Earth Systems	Cause and Effect

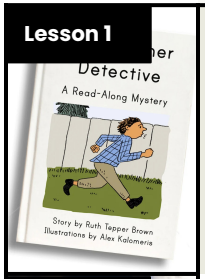
📖 Read-Along Lesson

Severe Weather Unit (Wild Weather)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	📖 **Severe Weather & Preparation** How can you get ready for a big storm?	**K-ESS3-2.** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	Obtaining, Evaluating, and Communicating Information	**ESS3.B:** Natural Hazards **ESS2.D:** Weather and Climate	Cause and Effect
Lesson 2 	**Wind & Storms** Have you ever watched a storm?	**K-ESS3-2.** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information	**ESS3.B:** Natural Hazards **ESS2.D:** Weather and Climate	Cause and Effect
Lesson 3 	**Weather Conditions** How many different kinds of weather are there?	**K-ESS2-1.** Use and share observations of local weather conditions to describe patterns over time.	Analyzing and Interpreting Data	**ESS2.D:** Weather and Climate	Patterns

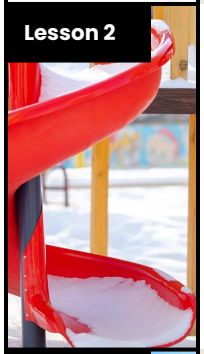
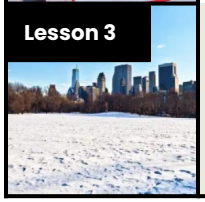
📖 Read-Along Lesson

Weather Patterns Unit (Circle of Seasons)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	📖 **Daily Weather Patterns** How do you know what to wear for the weather?	**Foundational for K-ESS2-1.** Use and share observations of local weather conditions to describe patterns over time.	Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information Asking Questions and Defining Problems	**ESS2.D:** Weather and Climate	Patterns
Lesson 2 	**Seasonal Weather Patterns** What will the weather be like on your birthday?	**K-ESS2-1.** Use and share observations of local weather conditions to describe patterns over time.	Obtaining, Evaluating, and Communicating Information Engaging in Argument from Evidence	**ESS2.D:** Weather and Climate	Patterns Systems and System Models
Lesson 3 	**Animals Changing their Environment** Why do birds lay eggs in the spring?	**K-ESS2-2.** Construct an argument supported by evidence for how plants & animals (including humans) can change the environment to meet their needs. **K-ESS2-1.** Use and share observations of local weather conditions to describe patterns over time.	Developing and Using Models	**ESS2.D:** Weather and Climate **ESS2.E:** Biogeology	Structure and Function

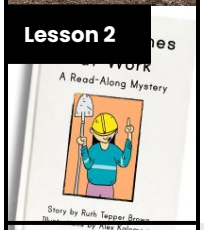
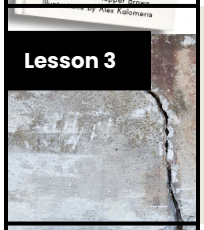
📖 Read-Along Lesson

Sunlight & Warmth Unit (Sunny Skies)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	📖 **Sunlight, Heat, & Earth's Surface** How could you walk barefoot across hot pavement without burning your feet?	**K-PS3-1.** Make observations to determine the effect of sunlight on Earth's surface. **K-PS3-2.** Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. **K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions	**PS3.B:** Conservation of Energy and Energy Transfer **ETS1.A:** Defining and Delimiting an Engineering Problem	Cause and Effect Structure and Function
Lesson 2 	**Sunlight, Warming, & Engineering** How could you warm up a frozen playground?	**K-PS3-2.** Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. **K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	Asking Questions and Defining Problems Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**PS3.B:** Conservation of Energy and Energy Transfer **ETS1.A:** Defining and Delimiting an Engineering Problem **ETS1.C:** Optimizing the Design Solution	Cause and Effect
Lesson 3 	**Sunlight & Warmth** Why does it get cold in winter?	**K-PS3-1.** Make observations to determine the effect of sunlight on Earth's surface.	Planning and Carrying Out Investigations	**PS3.B:** Conservation of Energy and Energy Transfer	Cause and Effect

📖 Read-Along Lesson

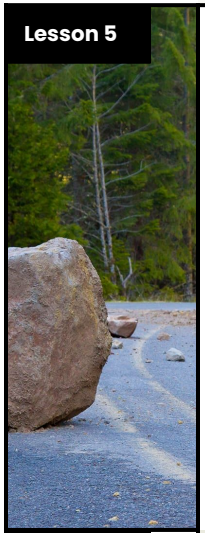
Pushes & Pulls Unit (Force Olympics) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
	**Pushes & Pulls** What's the biggest excavator?	**Foundational for K-PS2-1.** Plan & conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Constructing Explanations and Designing Solutions	**PS2.A:** Forces and Motion **PS2.B:** Types of Interactions **PS3.C:** Relationship Between Energy and Forces	Cause and Effect
	📖 **Pushes, Pulls, & "Work Words"** Why do builders need so many big machines?	**Foundational for K-PS2-1.** Plan & conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Obtaining, Evaluating, and Communicating Information	**PS2.A:** Forces and Motion **PS2.B:** Types of Interactions **PS3.C:** Relationship Between Energy and Forces	Cause and Effect
	**Motion, Speed, & Strength** How can you knock down a wall made of concrete?	**K-PS2-1.** Plan & conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Planning and Carrying Out Investigations Developing and Using Models	**PS2.A:** Forces and Motion **PS2.B:** Types of Interactions **PS3.C:** Relationship Between Energy and Forces	Cause and Effect
	📖 **Speed & Direction of Force** How can you knock down the most bowling pins?	**Foundational for K-PS2-2.** Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.	Planning and Carrying Out Investigations	**PS2.A:** Forces and Motion	Cause and Effect

Continued on next page

📖 Read-Along Lesson

Pushes & Pulls Unit (Force Olympics) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 5 	**Direction of Motion & Engineering** How can we protect a mountain town from falling rocks?	**K-PS2-2.** Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull. **K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	Developing and Using Models Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**PS2.A:** Forces and Motion **ETS1.A:** Defining Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Cause and Effect
Lesson 6 	📖 **Forces & Engineering** How could you invent a trap?	**Foundational for K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	Constructing Explanations and Designing Solutions	**ETS1.B:** Developing Possible Solutions	Structure and Function

📖 Read-Along Lesson

All 1st Grade Units • Units may be taught in any order

Page 12 • Web Link

NGSS Performance Expectations:

- 1-LS1-1
- 1-LS1-2
- 1-LS3-1

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks

Anchor Layer Adds:
- 1 Anchor Phenomena
- 5 Anchor Connections
- 1 Performance Task

Page 13 • Web Link

NGSS Performance Expectations:

- 1-LS1-1
- 1-LS3-1
- K-2-ETS1-1
- K-2-ETS1-2
- K-2-ETS1-3

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:
- 1 Anchor Phenomena
- 3 Anchor Connections
- 1 Performance Task

Page 14 • Web Link

NGSS Performance Expectations:

- 1-ESS1-1
- 1-ESS1-2

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks

Anchor Layer Adds:
- 1 Anchor Phenomena
- 4 Anchor Connections
- 1 Performance Task

Page 15 • Web Link

NGSS Performance Expectations:

- 1-ESS1-1

Unit Breakdown:

- 3 Lessons & Activities
- 3 Lesson Assessments
- 3 Extension Blocks

Anchor Layer Adds:
- 1 Anchor Phenomena
- 3 Anchor Connections
- 1 Performance Task

Page 16 • Web Link

NGSS Performance Expectations:

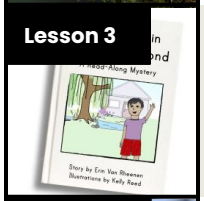
- 1-PS4-1
- 1-PS4-2
- 1-PS4-3
- 1-PS4-4
- K-2-ETS1-2

Unit Breakdown:

- 6 Lessons & Activities
- 6 Lesson Assessments
- 6 Extension Blocks

Anchor Layer Adds:
- 1 Anchor Phenomena
- 6 Anchor Connections
- 1 Performance Task

Animal Traits & Survival Unit (Animal Superpowers)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Parent & Offspring Traits** How can you help a lost baby animal find its parents?	**1-LS3-1.** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Constructing Explanations and Designing Solutions	**LS3.A:** Inheritance of Traits **LS3.B:** Variation of Traits	Patterns
Lesson 2 	**Animal Structures & Survival** Why do birds have beaks?	**1-LS1-1.** Use materials to 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.	Developing and Using Models Planning and Carrying Out Investigations Analyzing and Interpreting Data	**LS1.A:** Structure and Function	Patterns Structure and function
Lesson 3 	📖 **Animal Behavior & Offspring Survival** Why do baby ducks follow their mother?	**1-LS1-2.** Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	Obtaining, Evaluating, and Communicating Information	**LS1.B:** Growth and Development of Organisms	Patterns
Lesson 4 	**Camouflage & Animal Survival** Why are polar bears white?	**1-LS1-1.** Use materials to 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.	Developing and Using Models Planning and Carrying Out Investigations Engaging in Argument from Evidence	**LS1.B:** Growth and Development of Organisms	Patterns Structure and function
Lesson 5 	📖 **Inheritance & Variation of Traits** Why do family members look alike?	**Foundational for 1-LS3-1.** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Constructing Explanations and Designing Solutions	**LS3.A:** Inheritance of Traits **LS3.B:** Variation of Traits	Patterns

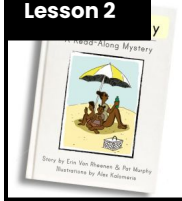
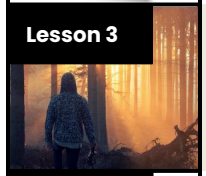
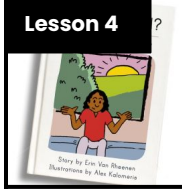
📖 Read-Along Lesson

Plant Traits & Survival Unit (Plant Superpowers)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Plant Traits & Offspring** What will a baby plant look like when it grows up?	**1-LS3-1.** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Constructing Explanations and Designing Solutions	**LS3.A:** Inheritance of Traits **LS3.B:** Variation of Traits	Patterns
Lesson 2 	**Plant Survival & Engineering** Why don't trees blow down in the wind?	**1-LS1-1.** Use materials to 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. **K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	Developing and Using Models Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**LS1.A:** Structure and Function **ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Structure and function
Lesson 3 	📖 **Plant Movement & Survival** What do sunflowers do when you're not looking?	**Foundational for 1-LS1-1.** Use materials to 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.	Constructing Explanations and Designing Solutions	**LS1.A:** Structure and Function **LS1.D:** Information Processing	Structure and function

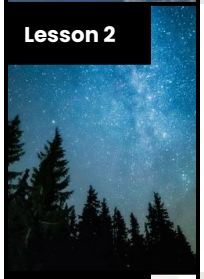
📖 Read-Along Lesson

Day Patterns Unit (Sun & Shadows)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Sun, Shadows, & Daily Patterns** Could a statue's shadow move?	**1-ESS1-1.** Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**ESS1.A:** The Universe and its Stars	Patterns
Lesson 2 	📖 **Sun, Shadows, & Daily Patterns** What does your shadow do when you're not looking?	**Foundational for 1-ESS1-1.** Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Analyzing and Interpreting Data	**ESS1.A:** The Universe and its Stars	Patterns
Lesson 3 	**Sun & Daily Patterns** How can the Sun help you if you're lost?	**1-ESS1-1.** Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Developing and Using Models Engaging in Argument from Evidence	**ESS1.A:** The Universe and its Stars	Patterns
Lesson 4 	📖 **Daylight & Seasonal Patterns** Why do you have to go to bed early in the summer?	**1-ESS1-2.** Make observations at different times of year to relate the amount of daylight to the time of year.	Obtaining, Evaluating, and Communicating Information	**ESS1.B:** Earth and the Solar System	Patterns

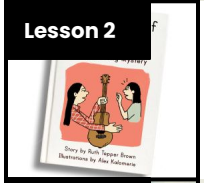
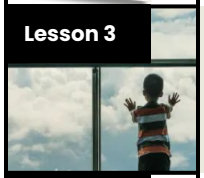
📖 Read-Along Lesson

Night Patterns Unit (Moon & Stars)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Moon Phases & Patterns** When can you see the full moon?	**1-ESS1-1.** Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Analyzing and Interpreting Data	**ESS1.A:** The Universe and its Stars	Patterns
Lesson 2 	**Stars & Daily Patterns** Why do stars come out at night?	**1-ESS1-1.** Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Developing and Using Models Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**ESS1.A:** The Universe and its Stars	Patterns Cause and Effect
Lesson 3 	📖 **Stars & Seasonal Patterns** How can stars help you if you get lost?	**1-ESS1-1.** Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Obtaining, Evaluating, and Communicating Information	**ESS1.A:** The Universe and its Stars	Patterns

📖 Read-Along Lesson

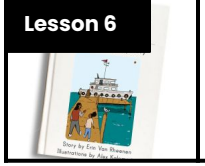
Light, Sound, & Communication Unit (Lights & Sounds) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Sounds & Vibrations** How do they make silly sounds in cartoons?	**1-PS4-1.** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Constructing Explanations and Designing Solutions	**PS4.A:** Wave Properties	Cause and Effect
Lesson 2 	📖 **Sounds & Vibrations** Where do sounds come from?	**Foundational for 1-PS4-1.** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Constructing Explanations and Designing Solutions	**PS4.A:** Wave Properties	Cause and Effect
Lesson 3 	**Light, Materials, Transparent & Opaque** What if there were no windows?	**1-PS4-3.** Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light	Planning and Carrying Out Investigations Engaging in Argument from Evidence	**PS4.B:** Electromagnetic Radiation	Cause and Effect
Lesson 4 	📖 **Light & Illumination** Can you see in the dark?	**1-PS4-2.** Make observations to construct an evidence-based account that objects can be seen only when illuminated.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**PS4.B:** Electromagnetic Radiation	Cause and Effect

Continued on next page

📖 Read-Along Lesson

Light, Sound, & Communication Unit (Lights & Sounds) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 5 	**Light, Communication, & Engineering** How could you send a secret message to someone far away?	**1-PS4-4.** Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. **K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	Constructing Explanations and Designing Solutions	**PS4.C:** Information Technologies and Instrumentation **ETS1.B:** Developing Possible Solutions	Patterns
Lesson 6 	📖 **Lights, Sounds, & Communication** How do boats find their way in the fog?	**Foundational for 1-PS4-4.** Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	Obtaining, Evaluating, and Communicating Information	**PS4.C:** Information Technologies and Instrumentation	Patterns

📖 Read-Along Lesson

All 2nd Grade Units • Units may be taught in any order

Page 19 • Web Link

NGSS Performance Expectations:

- 2-LS4-1
- K-2-ETS1-1
- K-2-ETS1-2
- K-2-ETS1-3

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 4 Anchor Connections
- 1 Performance Task

⏳ ⭐

Page 20 • Web Link

NGSS Performance Expectations:

- 2-LS2-1
- 2-LS2-2
- 2-LS4-1
- K-2-ETS1-2
- K-2-ETS1-3

Unit Breakdown:

- 5 Lessons & Activities
- 4 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 4 Anchor Connections
- 1 Performance Task

Page 21 • Web Link

NGSS Performance Expectations:

- 2-ESS1-1
- 2-ESS2-1
- 2-ESS2-2
- 2-ESS2-3
- K-2-ETS1-1
- K-2-ETS1-2
- K-2-ETS1-3

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 4 Anchor Connections
- 1 Performance Task

Page 23 • Web Link

NGSS Performance Expectations:

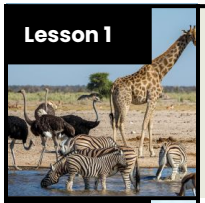
- 2-PS1-1
- 2-PS1-2
- 2-PS1-3
- 2-PS1-4
- K-2-ETS1-1
- K-2-ETS1-2
- K-2-ETS1-3

Unit Breakdown:

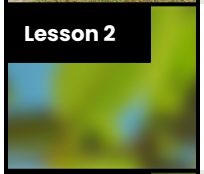
- 6 Lessons & Activities
- 6 Lesson Assessments
- 6 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 6 Anchor Connections
- 1 Performance Task

Animal Biodiversity (Animal Adventures)

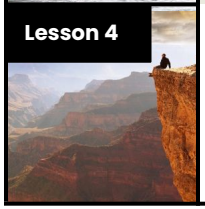
	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 1	**Biodiversity & Classification** How many different kinds of animals are there?	**Foundational for 2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats.	Obtaining, Evaluating, and Communicating Information	**LS4.D:** Biodiversity and Humans	Patterns
 Lesson 2	**Habitat Diversity** Why would a wild animal visit a playground?	**2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats.	Analyzing and Interpreting Data Planning and Carrying Out Investigations	**LS4.D:** Biodiversity and Humans	Patterns
 Lesson 3	**Biodiversity, Habitats, & Species** Why do frogs say “ribbit”?	**2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats.	Analyzing and Interpreting Data Engaging in Argument from Evidence	**LS4.D:** Biodiversity and Humans	Patterns
 Lesson 4	**Biodiversity & Engineering** How could you get more birds to visit a bird feeder?	**K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models	**LS4.D:** Biodiversity and Humans	Cause and Effect

Plant Adaptations (Plant Adventures)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 **Lesson 1**	⭐ **Seed Dispersal** How did a tree travel halfway around the world?	**Foundational for 2-LS2-2.** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. **K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	Developing and Using Models Planning and Carrying Out Investigations	**LS2.A:** Interdependent Relationships in Ecosystems	Structure and Function
 **Lesson 2**	⌛ **Animal Seed Dispersal** *New lesson coming soon!*	**2-LS2-2.** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	Developing and Using Models	**LS2.A:** Interdependent Relationships in Ecosystems	Structure and Function
 **Lesson 3**	**Water, Sunlight, & Plant Growth** Could a plant survive without light?	**2-LS2-1.** Plan and conduct an investigation to determine if plants need sunlight and water to grow.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**LS2.A:** Interdependent Relationships in Ecosystems	Cause and Effect
 **Lesson 4**	⌛ **Plant Needs & Habitats** *New lesson coming soon!*	**2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats. **2-LS2-1.** Plan and conduct an investigation to determine if plants need sunlight and water to grow.			

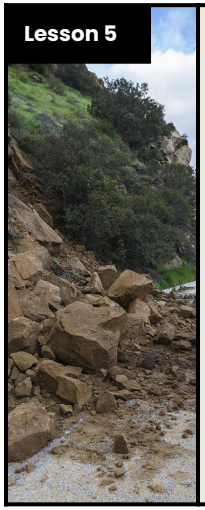
⭐ New Lesson
⌛ New Lesson Planned
See all Content Updates

Erosion & Earth's Surface (Work of Water) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Mapping & Earth's Surface Features** If you floated down a river, where would you end up?	**2-ESS2-2.** Develop a model to represent the shapes and kinds of land and bodies of water in an area. **2-ESS2-3.** Obtain information to identify where water is found on Earth and that it can be solid or liquid.	Developing and Using Models Planning and Carrying Out Investigations	**ESS2.B:** Plate Tectonics and Large-Scale System Interactions **ESS2.C:** The Roles of Water in Erosion & Earth's Surface	Patterns
Lesson 2 	**Rocks, Sand, & Erosion** Why is there sand at the beach?	**2-ESS2-2.** Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Planning and Carrying Out Investigations Developing and Using Models	**ESS2.B:** Plate Tectonics and Large-Scale System Interactions	Cause and Effect Stability and Change
Lesson 3 	**Mapping & Severe Weather** Where do flash floods happen?	**2-ESS1-1.** Use information from several sources to provide evidence that Earth events can occur quickly or slowly. **2-ESS2-2.** Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Developing and Using Models	**ESS2.B:** Plate Tectonics and Large-Scale System Interactions	Patterns
Lesson 4 	**Erosion, Earth's Surface, & Landforms** What's strong enough to make a canyon?	**2-ESS1-1.** Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**ESS1.C:** The History of Planet Earth **ESS2.A:** Earth Materials and Systems	Cause and Effect Stability and Change

Continued on next page

Erosion & Earth's Surface (Work of Water) • Page 2 of 2

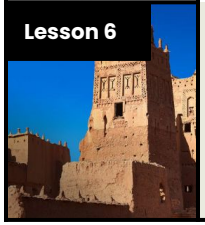
	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 5 	**Erosion & Engineering** How can you stop a landslide?	**2-ESS2-1.** Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. **K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions	**ESS1.C:** The History of Planet Earth **ESS2.A:** Earth Materials and Systems **ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Stability and Change Structure and Function

Material Properties (Material Magic) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Material Properties & Engineering** Why do we wear clothes?	**2-PS1-2.** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. **K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	Asking Questions and Defining Problems Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**PS1.A:** Structure and Properties of Matter **ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions	Patterns Cause and Effect
Lesson 2 	**Classify Materials: Insulators** Can you really fry an egg on a hot sidewalk?	**2-PS1-1.** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. **2-PS1-2.** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**PS1.A:** Structure and Properties of Matter	Patterns Cause and Effect
Lesson 3 	**Heating, Cooling, & Phases of Matter** Why are so many toys made out of plastic?	**2-PS1-2.** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. **2-PS1-4.** Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**PS1.A:** Structure and Properties of Matter **PS1.B:** Chemical Reactions	Cause and Effect Energy and Matter
Lesson 4 	**Inventions & Engineering** What materials might be invented in the future?	**K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	Constructing Explanations and Designing Solutions	**ETS1.B:** Developing Possible Solutions	Structure and Function

Continued on next page

Material Properties (Material Magic) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 5 	**Materials, Properties, & Engineering** Could you build a house out of paper?	**2-PS1-3.** Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. **K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	Constructing Explanations and Designing Solutions Developing and Using Models	**PS1.A:** Structure and Properties of Matter **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Energy and Matter Cause and Effect
Lesson 6 	**Soil Properties** How do you build a city out of mud?	**2-PS1-1.** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. **2-PS1-2.** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**PS1.A:** Structure and Properties of Matter	Patterns

All 3rd Grade Units • Units may be taught in any order. *Note: 3rd Grade underwent a restructuring Summer 2023.*

✔ ⭐

Page 26 • Web Link

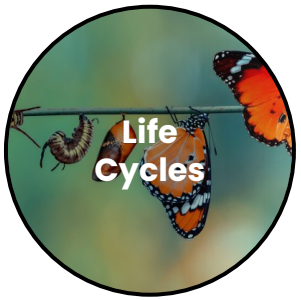
NGSS Performance Expectations:

• 3-LS4-1

Unit Breakdown:

• 3 Lessons & Activities
• 3 Lesson Assessments
• 3 Extension Blocks

Anchor Layer Adds:
• 1 Anchor Phenomena
• 3 Anchor Connections
• 1 Performance Task



✔

Page 27 • Web Link

NGSS Performance Expectations:

• 3-LS1-1
• 3-LS4-4
• 3-5-ETS1-2

Unit Breakdown:

• 5 Lessons & Activities
• 5 Lesson Assessments
• 5 Extension Blocks

Anchor Layer Adds:
• 1 Anchor Phenomena
• 5 Anchor Connections
• 1 Performance Task

✔ ⭐

Page 28 • Web Link

NGSS Performance Expectations:

• 3-LS2-1
• 3-LS3-1
• 3-LS3-2
• 3-LS4-2
• 3-LS4-3

Unit Breakdown:

• 5 Lessons & Activities
• 5 Lesson Assessments
• 5 Extension Blocks

Anchor Layer Adds:
• 1 Anchor Phenomena
• 5 Anchor Connections
• 1 Performance Task

Page 30 • Web Link

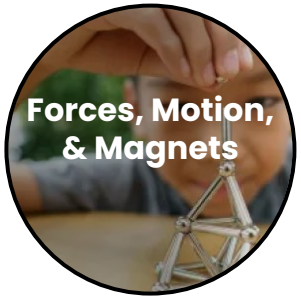
NGSS Performance Expectations:

• 3-ESS2-1
• 3-ESS2-2
• 3-ESS3-1
• 3-5-ETS1-1
• 3-5-ETS1-2
• 3-5-ETS1-3

Unit Breakdown:

• 5 Lessons & Activities
• 5 Lesson Assessments
• 5 Extension Blocks

Anchor Layer Adds:
• 1 Anchor Phenomena
• 5 Anchor Connections
• 1 Performance Task



⭐

Page 32 • Web Link

NGSS Performance Expectations:

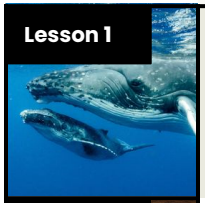
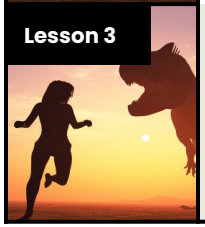
• 3-PS2-1
• 3-PS2-2
• 3-PS2-3
• 3-PS2-4
• 3-5-ETS1-1
• 3-5-ETS1-2
• 3-5-ETS1-3

Unit Breakdown:

• 6 Lessons & Activities
• 6 Lesson Assessments
• 6 Extension Blocks

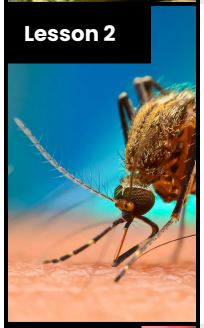
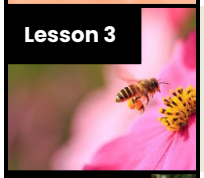
Anchor Layer Adds:
• 1 Anchor Phenomena
• 6 Anchor Connections
• 1 Performance Task

✔ Fossils & Changing Environments Unit (Animals Through Time)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
	**Habitats, Fossils, & Environments Over Time** Where can you find whales in a desert?	**3-LS4-1.** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Analyzing and Interpreting Data	**LS4.A:** Evidence of Common Ancestry and Diversity	Scale, Proportion, and Quantity
	⭐ **Fossil Evidence & Dinosaurs** How do we know what dinosaurs looked like?	**3-LS4-1.** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Analyzing and Interpreting Data Engaging in Argument from Evidence	**LS4.A:** Evidence of Common Ancestry and Diversity	Structure and Function Patterns
	**Trace Fossil Evidence & Animal Movement** Can you outrun a dinosaur?	**3-LS4-1.** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Using Mathematics and Computational Thinking Planning and Carrying Out Investigations	**LS4.A:** Evidence of Common Ancestry and Diversity	Patterns

⭐ New Lesson
✔ Unit Restructured for the 2023-2024 School Year
See all Content Updates

✔ Life Cycles Unit (Circle of Life) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 1	**Animal Life Cycles** How is your life like an alligator's life?	**3-LS1-1.** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Developing and Using Models	**LS1.B:** Growth and Development of Organisms	Patterns
 Lesson 2	**Environmental Change & Engineering** What's the best way to get rid of mosquitoes?	**3-LS4-4.** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	Obtaining, Evaluating, and Communicating Information Constructing Explanations and Designing Solutions	**LS4.D** Biodiversity and Humans **LS2.C:** Ecosystem Dynamics, Functioning, & Resilience **ETS1.B:** Developing Possible Solutions	Cause and Effect Systems and System Models
 Lesson 3	**Pollination & Plant Reproduction** Why do plants grow flowers?	**Foundational for 3-LS1-1.** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Developing and Using Models Analyzing and Interpreting Data	**LS1.B:** Growth and Development of Organisms	Patterns Structure and Function
 Lesson 4	**Fruit, Seeds, & Plant Reproduction** Why do plants give us fruit?	**Foundational for 3-LS1-1.** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Analyzing and Interpreting Data	**LS1.B:** Growth and Development of Organisms	Patterns Structure and Function
 Lesson 5	**Plant Life Cycles** Why are there so many different kinds of flowers?	**3-LS1-1.** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Developing and Using Models	**LS1.B:** Growth and Development of Organisms	Patterns

✔ Unit Restructured for the 2023-2024 School Year
See all Content Updates

✔⭐ Heredity, Survival, & Selection Unit (Fates of Traits) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Trait Variation, Inheritance, & Artificial Selection** How could you make the biggest fruit in the world?	**3-LS3-1.** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	Analyzing and Interpreting Data	**LS3.A:** Inheritance of Traits **LS3.B:** Variation of Traits	Patterns
Lesson 2 	**Trait Variation, Inheritance, & Artificial Selection** What kinds of animals might there be in the future?	**3-LS3-1.** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	Constructing Explanations and Designing Solutions	**LS3.A:** Inheritance of Traits **LS3.B:** Variation of Traits	Patterns
Lesson 3 	**Trait Variation, Natural Selection, & Survival** Can selection happen without people?	**3-LS3-1.** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. **3-LS4-2.** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. **3-LS4-3.** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Planning and Carrying Out Investigations Analyzing and Interpreting Data Engaging in Argument from Evidence	**LS3.A:** Inheritance of Traits **LS3.B:** Variation of Traits **LS4.B:** Natural Selection **LS4.C:** Adaptation	Cause and Effect Systems and System Models Stability and Change

Continued on next page

⭐ New Unit
✔ Unit Restructured for the 2023-2024 School Year
See all Content Updates

✔⭐ Heredity, Survival, & Selection Unit (Fates of Traits) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 4 	**Animal Groups & Survival** Why do dogs wag their tails?	**3-LS2-1.** Construct an argument that some animals form groups that help members survive.	Obtaining, Evaluating, and Communicating Information Engaging in Argument from Evidence	**LS2.D:** Social Interactions and Group Behavior	Cause and Effect
Lesson 5 	**Traits & Environmental Variation** How long can people (and animals) survive in outer space?	**3-LS3-2.** Use evidence to support the explanation that traits can be influenced by the environment.	Constructing Explanations and Designing Solutions	**LS3.A:** Inheritance of Traits **LS3.B:** Variation of Traits	Cause and Effect

⭐ New Unit
✔ Unit Restructured for the 2023-2024 School Year
See all Content Updates

Weather & Climate Unit (Stormy Skies) • Page 1 of 2

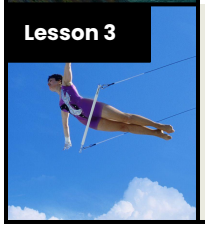
	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 **Lesson 1**	**Water Cycle & Phases of Matter** Where do clouds come from?	**Foundational for 3-ESS2-1.** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Planning and Carrying Out Investigations Developing and Using Models	**ESS2.D:** Weather and Climate	Structure and Function Stability and Change
 **Lesson 2**	**Local Weather Patterns & Weather Prediction** How can we predict when it's going to storm?	**Foundational for 3-ESS2-1.** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Analyzing and Interpreting Data	**ESS2.D:** Weather and Climate	Patterns
 **Lesson 3**	**Seasonal Weather Patterns** Where's the best place to build a snow fort?	**3-ESS2-1.** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Analyzing and Interpreting Data	**ESS2.D:** Weather and Climate	Patterns

Continued on next page

Weather & Climate Unit (Stormy Skies) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 4 	**Climate & Global Weather Patterns** Why are some places always hot?	**3-ESS2-2.** Obtain and combine information to describe climates in different regions of the world. **3-ESS2-1.** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Obtaining, Evaluating, and Communicating Information Analyzing and Interpreting Data	**ESS2.D:** Weather and Climate	Patterns
Lesson 5 	**Natural Hazards & Engineering** How can you keep a house from blowing away in a windstorm?	**3-ESS3-1.** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. **3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Analyzing and Interpreting Data	**ESS3.B:** Natural Hazards **ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Cause and Effect

Forces, Motion, & Magnets Unit (Invisible Forces) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 1	**Balanced & Unbalanced Forces** How could you win a tug-of-war against a bunch of adults?	**3-PS2-1.** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**PS2.A:** Forces and Motion **PS2.B:** Types of Interactions	Cause and Effect
 Lesson 2	**Balanced Forces & Engineering** What makes bridges so strong?	**3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions	**ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Structure and Function
 Lesson 3	⭐ **Patterns of Motion, Gravity, & Friction** How high can you swing on a flying trapeze?	**3-PS2-2.** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	Developing and Using Models Planning and Carrying Out Investigations	**PS2.A:** Forces and Motion	Patterns Cause and Effect

Continued on next page

⭐ New Lesson
See all Content Updates

Forces, Motion, & Magnets Unit (Invisible Forces) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 **Lesson 4**	**Magnets & Forces** What can magnets do?	**3-PS2-3.** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	Asking Questions and Defining Problems	**PS2.B:** Types of Interactions	Cause and Effect
 **Lesson 5**	**Magnets & Engineering** How can you unlock a door using a magnet?	**3-PS2-4.** Define a simple design problem that can be solved by applying scientific ideas about magnets. **3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions	**PS2.B:** Types of Interactions **ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Cause and Effect

All 4th Grade Units • Units may be taught in any order

Page 35 • Web Link

NGSS Performance Expectations:

- 4-LS1-1
- 4-LS1-2
- 4-PS4-2

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 4 Anchor Connections
- 1 Performance Task

Page 36 • Web Link

NGSS Performance Expectations:

- 4-ESS1-1
- 4-ESS2-1
- 4-ESS2-2
- 4-ESS3-2
- 3-5-ETS1-2

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 5 Anchor Connections
- 1 Performance Task

⭐

Page 37 • Web Link

NGSS Performance Expectations:

- 4-PS4-1
- 4-PS4-3
- 3-5-ETS1-2
- 3-5-ETS1-3

Unit Breakdown:

- 4 Lessons & Activities
- 4 Lesson Assessments
- 4 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 4 Anchor Connections
- 1 Performance Task

⭐

Page 38 • Web Link

NGSS Performance Expectations:

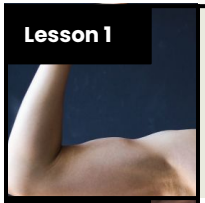
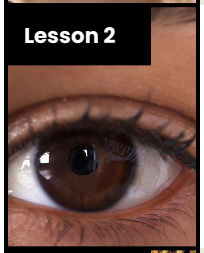
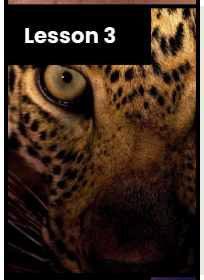
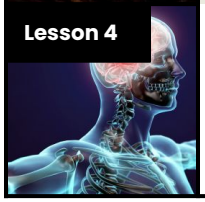
- 4-PS3-1
- 4-PS3-2
- 4-PS3-3
- 4-PS3-4
- 4-ESS3-1
- 3-5-ETS1-1
- 3-5-ETS1-2
- 3-5-ETS1-3

Unit Breakdown:

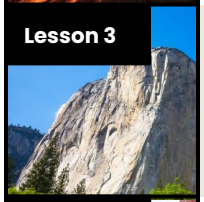
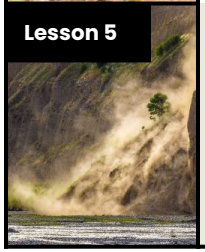
- 8 Lessons & Activities
- 8 Lesson Assessments
- 8 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 6 Anchor Connections
- 1 Performance Task

Human Body, Vision, & The Brain Unit (Human Machine)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 **Lesson 1**	**Muscles & Skeleton** Why do your biceps bulge?	**4-LS1-1.** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Developing and Using Models Constructing Explanations and Designing Solutions	**LS1.A:** Structure and Function	Systems and System Models Cause and Effect
 **Lesson 2**	**Light, Eyes, & Vision** What do people who are blind see?	**4-LS1-1.** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. **4-PS4-2.** Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	Developing and Using Models Constructing Explanations and Designing Solutions	**LS1.A:** Structure and Function **PS4.B:** Electromagnetic Radiation	Systems and System Models Cause and Effect
 **Lesson 3**	**Structure & Function of Eyes** How can some animals see in the dark?	**4-LS1-1.** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. **4-PS4-2.** Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	Planning and Carrying Out Investigations Developing and Using Models Constructing Explanations and Designing Solutions	**LS1.A:** Structure and Function **PS4.B:** Electromagnetic Radiation	Systems and System Models Cause and Effect
 **Lesson 4**	**Brain, Nerves, & Information Processing** How does your brain control your body?	**4-LS1-2.** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**LS1.D:** Information Processing	Systems and System Models

Earth's Features & Processes Unit (Birth of Rocks)

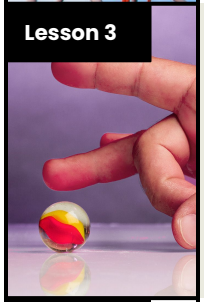
	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 1	**Volcanoes & Patterns of Earth's Features** Could a volcano pop up where you live?	**4-ESS2-2.** Analyze and interpret data from maps to describe patterns of Earth's features.	Analyzing and Interpreting Data Engaging in Argument from Evidence	**ESS2.B:** Plate Tectonics and Large-Scale System Interactions	Patterns
 Lesson 2	**Volcanoes & Rock Cycle** Why do some volcanoes explode?	**4-ESS1-1.** Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	Constructing Explanations and Designing Solutions	**ESS1.C:** The History of Planet Earth	Cause and Effect
 Lesson 3	**Weathering & Erosion** Will a mountain last forever?	**4-ESS2-1.** Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**ESS2.A:** Earth Materials and Systems **ESS2.E:** Biogeology	Cause and Effect
 Lesson 4	**Sedimentary Rock & Fossils** What did your town look like 100 million years ago?	**4-ESS1-1.** Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	Constructing Explanations and Designing Solutions Developing and Using Models	**ESS1.C:** The History of Planet Earth	Patterns
 Lesson 5	**Erosion, Natural Hazards, & Engineering** How could you survive a landslide?	**4-ESS3-2.** Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	Constructing Explanations and Designing Solutions	**ESS3.B:** Natural Hazards **ETS1.B:** Designing Solutions to Engineering Problems	Cause and Effect

Sound, Waves, & Communication Unit (Waves of Sound)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 1	⭐ **Pattern Transfer & Technology** How do you send a secret code?	**4-PS4-3.** Generate and compare multiple solutions that use patterns to transfer information. **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Constructing Explanations and Designing Solutions	**PS4.C:** Information Technologies and Instrumentation **ETS1.C:** Optimizing the Design Solution	Patterns
 Lesson 2	**Sound, Vibration, & Engineering** How far can a whisper travel?	**Foundational for 4-PS4-1.** Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	Developing and Using Models Planning and Carrying Out Investigations	**PS4.A:** Wave Properties **ETS1.B:** Developing Possible Solutions	Patterns
 Lesson 3	**Sound & Vibrations** What would happen if you screamed in outer space?	**4-PS4-1.** Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	Developing and Using Models	**PS4.A:** Wave Properties	Patterns
 Lesson 4	**Sound Waves & Wavelength** Why are some sounds high and some sounds low?	**4-PS4-1.** Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	Developing and Using Models	**PS4.A:** Wave Properties	Patterns

⭐ New Lesson
See all Content Updates

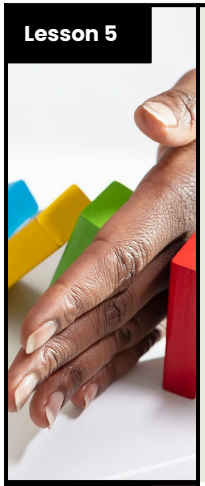
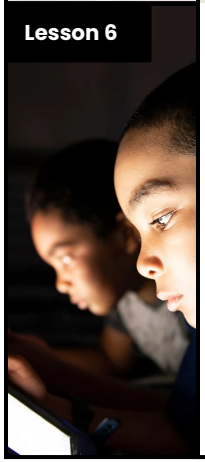
Energy, Energy Transfer, & Electricity Unit (Energizing Everything) • Page 1 of 3

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 **Lesson 1**	**Speed & Energy** How is your body similar to a car?	**4-PS3-1.** Use evidence to construct an explanation relating the speed of an object to the energy of that object.	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions	**PS3.A:** Definitions of Energy	Energy and Matter Systems and System Models
 **Lesson 2**	**Gravitational Energy, Speed, & Collisions** What makes roller coasters go so fast?	**4-PS3-1.** Use evidence to construct an explanation relating the speed of an object to the energy of that object. **4-PS3-3.** Ask questions and predict outcomes about the changes in energy that occur when objects collide.	Developing and Using Models Analyzing and Interpreting Data	**PS3.A:** Definitions of Energy	Energy and Matter Systems and System Models
 **Lesson 3**	⭐ **Collisions & Energy Transfer** How can marbles save the world?	**4-PS3-3.** Ask questions and predict outcomes about the changes in energy that occur when objects collide.	Asking Questions and Defining Problems	**PS3.A:** Definitions of Energy **PS3.B:** Conservation of Energy and Energy Transfer **PS3.C:** Relationship Between Energy and Forces	Energy and Matter
 **Lesson 4**	**Energy Transfer & Engineering** Could you knock down a building using only dominoes?	**4-PS3-4.** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another **3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	Developing and Using Models	**PS3.B:** Conservation of Energy and Energy Transfer **PS3.C:** Relationship Between Energy and Forces **ETS1.A:** Defining and Delimiting Engineering Problems	Energy and Matter

Continued on next page

⭐ New Lesson
See all Content Updates

Energy, Energy Transfer, & Electricity Unit (Energizing Everything) • Page 2 of 3

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 5 	**Energy Transfer & Engineering** Can you build a chain reaction machine?	**4-PS3-4.** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another **3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Developing and Using Models	**PS3.A:** Definitions of Energy **PS3.C:** Relationship Between Energy and Forces **ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Energy and Matter
Lesson 6 	**Electrical Energy** What if there were no electricity?	**4-PS3-2.** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. **4-PS3-4.** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. **3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Constructing Explanations and Designing Solutions Developing and Using Models	**PS3.D:** Energy in Chemical Processes and Everyday Life **ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Energy and Matter

Continued on next page

Energy, Energy Transfer, & Electricity Unit (Energizing Everything) • Page 3 of 3

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 7 	**Heat Energy & Energy Transfer** How long did it take to travel across the country before cars and planes?	**4-PS3-2.** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. **4-PS3-4.** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another	Planning and Carrying Out Investigations	**PS3.B:** Conservation of Energy and Energy Transfer **PS3.D:** Energy in Chemical Processes and Everyday Life	Energy and Matter
Lesson 8 	**Renewable Energy & Natural Resources** Where does energy come from?	**4-ESS3-1.** Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking	**ESS3.A:** Natural Resources	Energy and Matter Cause and Effect

mystery science

All 5th Grade Units • Units may be taught in any order

⭐

Page 42 • Web Link

NGSS Performance Expectations:

- 5-LS1-1
- 5-LS2-1
- 5-ESS3-1
- 5-PS3-1

Unit Breakdown:

- 7 Lessons & Activities
- 7 Lesson Assessments
- 7 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 7 Anchor Connections
- 1 Performance Task

Page 44 • Web Link

NGSS Performance Expectations:

- 5-ESS2-1
- 5-ESS2-2
- 5-PS1-2
- 3-5-ETS1-1
- 3-5-ETS1-2
- 3-5-ETS1-3

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 5 Anchor Connections
- 1 Performance Task

⭐

Page 45 • Web Link

NGSS Performance Expectations:

- 5-ESS1-1
- 5-ESS1-2
- 5-PS2-1

Unit Breakdown:

- 8 Lessons & Activities
- 8 Lesson Assessments
- 8 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 8 Anchor Connections
- 1 Performance Task

Page 47 • Web Link

NGSS Performance Expectations:

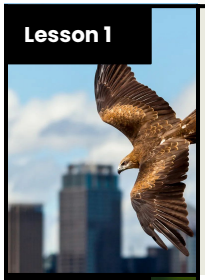
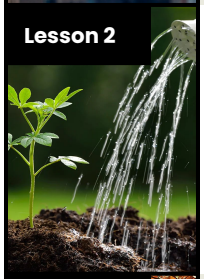
- 5-PS1-1
- 5-PS1-2
- 5-PS1-3
- 5-PS1-4

Unit Breakdown:

- 5 Lessons & Activities
- 5 Lesson Assessments
- 5 Extension Blocks
- 1 Unit Assessment

Anchor Layer Adds:
- 1 Anchor Phenomena
- 5 Anchor Connections
- 1 Performance Task

Ecosystems & The Food Web Unit (Web of Life) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 1	**Food Chains, Producers, & Consumers** Why would a hawk move to New York City?	**5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Developing and Using Models	**LS2.A:** Interdependent Relationships in Ecosystems **LS2.B:** Cycles of Matter and Energy Transfer in Ecosystems	Energy and Matter Systems and System Models
 Lesson 2	**Matter & Plant Growth** What do plants eat?	**5-LS1-1.** Support an argument that plants get the materials they need for growth chiefly from air and water. **Foundational for 5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Planning and Carrying Out Investigations Analyzing and Interpreting Data Constructing Explanations and Designing Solutions	**LS1.C.** Organization for Matter and Energy Flow in Organisms **LS2.B:** Cycles of Matter and Energy Transfer in Ecosystems	Cause and Effect Energy and Matter
 Lesson 3	**Decomposers & Matter Cycle** Where do fallen leaves go?	**5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Planning and Carrying Out Investigations	**LS2.A:** Interdependent Relationships in Ecosystems **LS2.B:** Cycles of Matter and Energy Transfer in Ecosystems	Energy and Matter

Continued on next page

Ecosystems & The Food Web Unit (Web of Life) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 4	**Decomposers, Nutrients, & Matter Cycle** Do worms really eat dirt?	**5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Planning and Carrying Out Investigations	**LS2.A:** Interdependent Relationships in Ecosystems **LS2.B:** Cycles of Matter and Energy Transfer in Ecosystems	Energy and Matter
 Lesson 5	**Ecosystems & Matter Cycle** Why do you have to clean a fish tank but not a pond?	**5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Developing and Using Models	**LS2.A:** Interdependent Relationships in Ecosystems **LS2.B:** Cycles of Matter and Energy Transfer in Ecosystems	Systems and System Models Energy and Matter
 Lesson 6	⭐ **Protecting Environments** How can we protect Earth's environments?	**5-ESS3-1.** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	Obtaining, Evaluating, and Communicating Information	**ESS3.C:** Human Impacts on Earth Systems	Systems and System Models
 Lesson 7	**Food Webs & Flow of Energy** Why did the dinosaurs go extinct?	**5-PS3-1.** Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	Developing and Using Models Constructing Explanations and Designing Solutions	**PS3.D:** Energy in Chemical Processes and Everyday Life **LS1.C.** Organization for Matter and Energy Flow in Organisms	Energy and Matter Systems and System Models

⭐ New Lesson
See all Content Updates

Water Cycle & Earth's Systems Unit (Watery Planet)

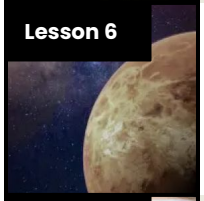
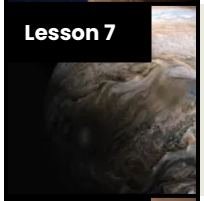
	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Hydrosphere & Water Distribution** How much water is in the world?	**5-ESS2-2.** Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	Analyzing and Interpreting Data Using Mathematics and Computational Thinking	**ESS2.C:** The Roles of Water in Earth's Surface Processes	Scale, Proportion, and Quantity
Lesson 2 	**Mixtures & Solutions** How much salt is in the ocean?	**5-PS1-2.** 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.	Developing and Using Models Using Mathematics and Computational Thinking	**PS1.A**: Structure and Properties of Matter	Scale, Proportion, and Quantity
Lesson 3 	**Groundwater as a Natural Resource** When you turn on the faucet, where does the water come from?	**5-ESS2-2.** Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	Obtaining, Evaluating, and Communicating Information Engaging in Argument from Evidence	**ESS2.C:** The Roles of Water in Earth's Surface Processes	Patterns
Lesson 4 	**Water Cycle** Can we make it rain?	**5-ESS2-1.** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Developing and Using Models Planning and Carrying Out Investigations	**ESS2.A:** Earth Materials and Systems	Systems and System Models
Lesson 5 	**Natural Disasters & Engineering** How can you save a town from a hurricane?	**3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3-5-ETS1-2.** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking	**ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	Systems and System Models

Stars & The Solar System Unit (Spaceship Earth) • Page 1 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 1	**Day, Night, & Earth's Rotation** How fast does the Earth spin?	**5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Developing and Using Models Using Mathematics and Computational Thinking	**ESS1.B:** Earth and the Solar System	Patterns Cause and Effect
 Lesson 2	**Earth's Rotation & Daily Shadow Patterns** Who set the first clock?	**5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**ESS1.B:** Earth and the Solar System	Patterns Cause and Effect
 Lesson 3	**Seasonal Changes & Shadow Length** How can the Sun tell you the season?	**5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Analyzing and Interpreting Data Engaging in Argument from Evidence	**ESS1.B:** Earth and the Solar System	Patterns Cause and Effect
 Lesson 4	**Seasonal Patterns & Earth's Orbit** Why do the stars change with the seasons?	**5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Developing and Using Models Constructing Explanations and Designing Solutions	**ESS1.B:** Earth and the Solar System	Patterns Cause and Effect

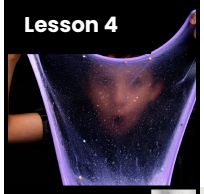
Continued on next page

Stars & The Solar System Unit (Spaceship Earth) • Page 2 of 2

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
 Lesson 5	**Moon Phases, Lunar Cycle** Why does the Moon change shape?	**5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Developing and Using Models Planning and Carrying Out Investigations	**ESS1.B:** Earth and the Solar System	Patterns Cause and Effect
 Lesson 6	⭐ **Solar System & Sun Brightness** How can the Sun help us explore other planets?	**5-ESS1-1.** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.	Developing and Using Models Engaging in Argument from Evidence	**ESS1.A:** The Universe and its Stars	Scale, Proportion, and Quantity Systems and System Models
 Lesson 7	**Gravity** Why is gravity different on other planets?	**5-PS2-1.** Support an argument that the gravitational force exerted by Earth on objects is directed down.	Using Mathematics and Computational Thinking Analyzing and Interpreting Data	**PS2.B:** Types of Interactions	Patterns Cause and Effect
 Lesson 8	**Star Brightness & Habitable Planets** Could there be life on other planets?	**5-ESS1-1.** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.	Obtaining, Evaluating, and Communicating Information Engaging in Argument from Evidence	**ESS1.A:** The Universe and its Stars	Scale, Proportion, and Quantity

⭐ New Lesson
See all Content Updates

Chemical Reactions & Properties of Matter Unit (Chemical Magic)

	Topic & Guiding Question	NGSS Performance Expectations (PEs)	Science & Eng. Practices (SEPs)	Disciplinary Core Ideas (DCIs)	Crosscutting Concepts (CCCs)
Lesson 1 	**Conservation of Matter** Are magic potions real?	**Foundational for 5-PS1-1.** Develop a model to describe that matter is made of particles too small to be seen. **5-PS1-2.** 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.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**PS1.A**: Structure and Properties of Matter **PS1.B:** Chemical Reactions	Cause and Effect Scale, Proportion, and Quantity
Lesson 2 	**Dissolving & Particulate Nature of Matter** Could you transform something worthless into gold?	**Foundational for 5-PS1-1.** Develop a model to describe that matter is made of particles too small to be seen. **5-PS1-2.** 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.	Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	**PS1.A**: Structure and Properties of Matter **PS1.B:** Chemical Reactions	Energy and Matter Scale, Proportion, and Quantity
Lesson 3 	**Properties of Matter: Acids** What would happen if you drank a glass of acid?	**5-PS1-3.** Make observations and measurements to identify materials based on their properties.	Planning and Carrying Out Investigations Analyzing and Interpreting Data	**PS1.A**: Structure and Properties of Matter	Cause and Effect
Lesson 4 	**Chemical Reactions** What do fireworks, rubber, and Silly Putty have in common?	**5-PS1-4.** Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	**PS1.B:** Chemical Reactions	Cause and Effect
Lesson 5 	**Gases & Particle Models** Why do some things explode?	**5-PS1-1.** Develop a model to describe that matter is made of particles too small to be seen.	Planning and Carrying Out Investigations Developing and Using Models	**PS1.A**: Structure and Properties of Matter	Scale, Proportion, and Quantity

MAJOR TOPIC	Sub-topic	Suggested 5E Section: SUITABLE for all E's 5E Lessons - Lab Member Links *includes Station Labs and INBs	EXPLORATION Station Labs - Lab Member Links *included in 5E Lessons	EXPLANATION INBs - Lab Member Links *included in 5E Lessons	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* *NOT included in 5E Lessons	ELABORATION STEM Challenges - Lab Member Links *NOT included in 5E Lessons	EVALUATION Escape Games - Lab Member Links *NOT included in 5E Lessons	EVALUATION Game Boards - Lab Member Links *NOT included in 5E Lessons	VARIES Bell Ringers - Lab Member Links *NOT included in 5E Lessons
BODY SYSTEMS	Body Systems	Circulatory System Digestive System Endocrine System Excretory System Muscular System Nervous System Respiratory System Skeletal System	Circulatory System Digestive System Endocrine System Muscular System Nervous System Respiratory System Skeletal System	Structure of Life Interactive Notebook	Circulatory System Inquiry Lab Digestive System Inquiry Lab Endocrine System Inquiry Lab Muscular System Inquiry Lab Nervous System Inquiry Lab Respiratory System Inquiry Lab Skeletal System Inquiry Lab	n/a	Body Systems Escape Room	Body Systems & Cells Review Game	Full Year Resource Life Science Bell Ringers
CHEMISTRY	Atoms to Molecules	Elements, Compounds, and Mixtures Molecules Organic Compounds Atoms Counting Atoms and Elements Acids and Bases Chemical Bonds Physical and Chemical Changes Balancing Chemical Equations	Elements, Compounds, and Mixtures Molecules Organic Compounds Atoms Counting Atoms and Elements Acids and Bases Chemical Bonds Chemical Changes and Physical Changes Balancing Chemical Equations	Chemistry Interactive Notebook	Elements and Compounds Inquiry Lab Elements of Earth Inquiry Lab Chemical Changes Inquiry Lab Organic Compounds Inquiry Lab Atoms Inquiry Lab Molecules Inquiry Lab Synthetic Materials Inquiry Lab Reactivity Inquiry Lab Law of Conservation of Mass Inquiry Lab Chemical Changes and Physical Changes Inquiry Lab Evidence of a Chemical Change Inquiry Lab Acids and Bases Chemical Bonding Food Chemistry Inquiry Lab	n/a	Atoms Escape Game Periodic Table Escape Room	Chemistry Review Game	Full Year Resource Physical Science Bell Ringers
CHEMISTRY	Periodic Table	Periodic Table and Reactivity Metals, Nonmetals, and Metalloids	Periodic Table and Reactivity Metals, Nonmetals, and Metalloids	Chemistry Interactive Notebook	Metals Nonmetals and Metalloids Inquiry Lab Periodic Table Arrangment Inquiry Lab	n/a	n/a	Chemistry Review Game	Full Year Resource Physical Science Bell Ringers
CHEMISTRY	States of Matter	Properties of Water Solids, Liquids, and Gases	Properties of Water Solids, Liquids, and Gases	Chemistry Interactive Notebook	Properties of Water Inquiry Lab (coming soon) Solids, Liquids, and Gases Inquiry Lab Phases of Matter in the Water Cycle (coming soon)	n/a	n/a	Chemistry Review Game	Full Year Resource

Suggested 5E Section:		SUITABLE for all E's 5E Lessons - Lab Member Links *includes Station Labs and INBs	EXPLORATION Station Labs - Lab Member Links *included in 5E Lessons	EXPLANATION INBs - Lab Member Links *included in 5E Lessons	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* *NOT included in 5E Lessons	STEM Challenges - Lab Member Links *NOT included in 5E Lessons	EVALUATION Escape Games - Lab Member Links *NOT included in 5E Lessons	Game Boards - Lab Member Links *NOT included in 5E Lessons	VARIES Bell Ringers - Lab Member Links *NOT included in 5E Lessons
MAJOR TOPIC	Sub-topic								
EARTH SCIENCE	Fossils	Geologic Time Scale Fossils	Geologic Time Scale Fossils	Earth Science Interactive Notebook (geologic time, fossilization)	Geologic Time Inquiry Lab Pangaea Plate Movement Inquiry Lab Fossil Evidence Inquiry Lab	n/a	Plate Tectonics Escape Room	Earth Science Review Game	Full Year Resource Earth Science Bell Ringers
EARTH SCIENCE	Rocks/Minerals	Density of a Regular-Shaped Object Density of an Irregular-Shaped Object Properties of Minerals Rock Cycle Weathering, Erosion, and Deposition	Density of a Regular-Shaped Object Density of an Irregular-Shaped Object Properties of Minerals Rock Cycle Weathering and Erosion	Earth Science Interactive Notebook	Rock Cycle Inquiry Lab Rock Cycle Inquiry Lab - NGSS Focus Density Inquiry Lab Minerals Inquiry Lab Weathering and Erosion Inquiry Lab Volcanoes	n/a	Density Escape Room	Earth Science Review Game	Full Year Resource Physical Science Bell Ringers Earth Science Bell Ringers
EARTH SCIENCE	Structure of Earth	Earthquakes Volcanoes Earth's Layers Plate Tectonics Oceans Continental Drift Theory Topographic Maps	Earthquakes Volcanoes Earth's Layers Plate Tectonics Oceans Continental Drift Theory Topographic Maps	Earth Science Interactive Notebook	Earth's Changing Surface Inquiry Lab Water Cycle Inquiry Lab Geoscience Processes: Groundwater Distribution Inquiry Lab Geoscience Processes: Fossil Fuel Distribution Inquiry Lab Geoscience Processes: Mineral Distribution Inquiry Lab Natural Hazards Inquiry Lab Earth's Layers Inquiry Lab Major Tectonic Plates Inquiry Lab Plate Tectonics Inquiry Lab Theory of Continental Drift Inquiry Lab Plate Tectonics Crustal Features Inquiry Lab Topographic Maps Inquiry Lab	n/a	Plate Tectonics Escape Room Properties of Minerals Renewable and Nonrenewable Energy Escape Room Topographic Escape Room	Earth Science Review Game	Full Year Resource Earth Science Bell Ringers
ECOSYSTEMS	Environment	Biotic and Abiotic Factors Biodiversity Ecological Succession Natural Selection Nitrogen Cycle Carbon Cycle Watersheds and Human Impact Short and Long Term Environmental Impacts to Organisms Nonrenewable Energy Resources Renewable Energy Resources Tropisms and Turgor Pressure	Abiotic and Biotic Factors Biodiversity Succession Natural Selection and Selective Breeding Nitrogen Cycle Carbon Cycle Watersheds and Human Impact Short and Long Term Environmental Impacts Nonrenewable Resources Renewable Resources Tropisms and Turgor Pressure	Ecosystems Interactive Notebook	Biotic and Abiotic Factors in an Ecosystem Inquiry Lab Microhabitats Inquiry Lab Biodiversity Inquiry Lab Natural and Artificial Selection Inquiry Lab Succession Inquiry Lab Adaptations and Internal Structures Inquiry Lab Nitrogen Cycle Inquiry Lab (coming soon) Carbon Cycle Inquiry Lab (coming soon) Homeostasis Inquiry Lab - External Responses Homeostasis Inquiry Lab - Internal Responses Water Pollution Inquiry Lab Human Impact on Natural Resources Inquiry Lab Greenhouse Effect Inquiry Lab Invasive Species Inquiry Lab (coming soon)	Project Save the Oceans Project Thrills	Renewable and Nonrenewable Energy Escape Room	Ecosystems Review Game	Full Year Resource Physical Science Bell Ringers

Suggested 5E Section:		SUITABLE for all E's 5E Lessons - Lab Member Links *includes Station Labs and INBs	EXPLORATION Station Labs - Lab Member Links *included in 5E Lessons	EXPLANATION INBs - Lab Member Links *included in 5E Lessons	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* **NOT included in 5E Lessons*	ELABORATION STEM Challenges - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Escape Games - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Game Boards - Lab Member Links **NOT included in 5E Lessons*	VARIES Bell Ringers - Lab Member Links **NOT included in 5E Lessons*
MAJOR TOPIC	**Sub-topic**								
ECOSYSTEMS	**Organism Relationships**	Symbiosis Classification Food Webs Organism Relationships Energy Pyramids	Symbiosis Classification of Living Things Food Webs Organism Relationships Energy Pyramids	Ecosystems Interactive Notebook	Classification of Living Things Inquiry Lab Organization in an Ecosystem Inquiry Lab Food Chains, Webs, and Pyramids Inquiry Lab Competition for Resources Inquiry Lab Advantages and Disadvantages of Energy Types Inquiry Lab Pollination Inquiry Lab Population Resources Inquiry Lab Ecosystem Patterns Inquiry Lab Energy Pyramids Inquiry Lab Human Impact on Oceans Inquiry Lab Designs for Biodiversity Inquiry Lab Natural and Artificial Selection Inquiry Lab Invasive Species Inquiry Lab (coming soon) Symbiosis Inquiry Lab (coming soon) Mutations Inquiry Lab	Project Birdman	Biome Escape Room Biotic and Abiotic Factors Escape Room Dichotomous Key Escape Room Food Webs and Energy in an Ecosystem Escape Room Prokaryotic and Eukaryotic Escape Room Photosynthesis Escape Room	Ecosystems Review Game	Full Year Resource Life Science Bell Ringers
ENERGY	**Forms and Transfer**	Electric and Magnetic Forces Conduction, Convection, and Radiation Potential and Kinetic Energy Energy Transformations Properties of Waves Sound Waves Visible Light Photosynthesis	Electric and Magnetic Forces Conduction, Convection, and Radiation Kinetic and Potential Energy Energy Transformations Properties of Waves Sound Waves Visible Light Photosynthesis	Energy Interactive Notebook	Electrical Forces Inquiry Lab Thermal Energy - Conduction, Convection, Radiation Inquiry Lab Heat Transfer Inquiry Lab Energy Transformation Inquiry Lab Energy Tranformations in an Organism Inquiry Lab Electromagnetic Spectrum Inquiry Lab Kinetic Energy Inquiry Lab Potential Energy and Height Inquiry Lab Photosynthesis and Energy Inquiry Lab Exothermic and Endothermic Reactions Inquiry Lab Electromagnetism Inquiry Lab Calorimetry Inquiry Lab Kinetic Energy Inquiry Lab Properties of Waves Inquiry Lab Wave Characteristics: Reflection Absorption Transmission Inquiry Lab Communication Signals: Digital vs Analog Inquiry Lab Potential and Kinetic Energy Inquiry Lab	Project Thrills	Electromagnetic Escape Room Energy Transformation Escape Room Heat Transfer Escape Room Potential and Kinetic Energy Escape Room Rock Cycle Escape Room Waves Escape Room	Energy Review Game	Full Year Resource Physical Science Bell Ringers

MAJOR TOPIC	Sub-topic	Suggested 5E Section: SUITABLE for all E's 5E Lessons - Lab Member Links *includes Station Labs and INBs	EXPLORATION Station Labs - Lab Member Links *included in 5E Lessons	EXPLANATION INBs - Lab Member Links *included in 5E Lessons	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* *NOT included in 5E Lessons	ELABORATION STEM Challenges - Lab Member Links *NOT included in 5E Lessons	EVALUATION Escape Games - Lab Member Links *NOT included in 5E Lessons	EVALUATION Game Boards - Lab Member Links *NOT included in 5E Lessons	VARIES Bell Ringers - Lab Member Links *NOT included in 5E Lessons
					Sound Waves Inquiry Lab (coming soon)				
FORCE AND MOTION	Force and Motion	Simple Machines Balanced and Unbalanced Forces Net Force Work Speed, Velocity, and Acceleration Motion Graphing Newton's Laws	Simple Machines Balanced and Unbalanced Forces Net Force Work Average Speed Motion Graphing Newton's Laws - First Law Newton's Laws - Second Law Newton's Laws - Third Law	Force and Motion Interactive Notebook	Balanced and Unbalanced Force Inquiry Lab Inclined Planes Inquiry Lab Newton's Laws Inquiry Lab - First Law Newton's Laws Inquiry Lab - Second Law Newton's Laws Inquiry Lab - Third Law Average Speed Inquiry Lab Graphing Motion Inquiry Lab Net Force Inquiry Lab Average Speed and Velocity Inquiry Lab Acceleration Inquiry Lab	Project Inhabit Mars Project Move Project Skydive Project Thrills	Graphing Escape Room Net Force Escape Room Potential and Kinetic Energy Escape Room Newton's Laws Escape Room Speed, Velocity, Acceleration Escape Room	Force and Motion Review Game	Full Year Resource Physical Science Bell Ringers
PROCEDURAL	CER - Hypothesis - Scientific Method - Lab Safety	n/a	n/a	n/a	CER Inquiry Lab (coming soon)	n/a	Scientific Method Escape Room Measurement Escape Room Lab Safety Escape Room	n/a	Full Year Resource
PROCEDURAL	Engineering Process	n/a	n/a	n/a	n/a	n/a	Engineering Design Process Escape Room	n/a	n/a
SPACE	Earth/Planets	Eclipses Planets Asteroids, Meteors, and Comets Seasons Lunar Cycle Tides	Eclipses Gravity Asteroids, Meteors, and Comets Seasons Lunar Cycle Tides Inner Planets Outer Planets	Space Interactive Notebook	Movements of Celestial Bodies Inquiry Lab Gravity in the Solar System Inquiry Lab Seasons and Daylight Inquiry Lab Lunar Cycle Inquiry Lab Lunar Cycle NGSS Focus Inquiry Lab Tides Inquiry Lab Eclipses Inquiry Lab Seasons - Rotation and Revolution Inquiry Lab Scaled Properties of Objects in the Solar System Inquiry Lab Gravity and Mass Inquiry Lab	n/a	Seasons Day and Night Escape Room Planets Escape Room Lunar Cycle Escape Room	Space Review Game	Full Year Resource Earth Science Bell Ringers
SPACE	The Universe	Galaxies and Light Years Big Bang Theory HR Diagram Life Cycle of a Star	Galaxies Big Bang Theory HR Diagram Life Cycle of a Star	Space Interactive Notebook	Galaxies Inquiry Lab Manned Space Flight Inquiry Lab Theories of the Universe Inquiry Lab Light Years Inquiry Lab (coming soon) Space Exploration Inquiry Lab Solar System Life Inquiry Lab	n/a	n/a	Space Review Game	Full Year Resource Earth Science Bell Ringers

Suggested 5E Section:		SUITABLE for all E's	EXPLORATION	EXPLANATION	ELABORATION		EVALUATION		VARIES
		5E Lessons - Lab Member Links	Station Labs - Lab Member Links	INBs - Lab Member Links	Inquiry Labs - Lab Member Links *also EXPLORATION*	STEM Challenges - Lab Member Links	Escape Games - Lab Member Links	Game Boards - Lab Member Links	Bell Ringers - Lab Member Links
MAJOR TOPIC	Sub-topic	*includes Station Labs and INBs	*included in 5E Lessons	*included in 5E Lessons	*NOT included in 5E Lessons	*NOT included in 5E Lessons	*NOT included in 5E Lessons	*NOT included in 5E Lessons	*NOT included in 5E Lessons
STRUCTURE OF LIFE	Cells to Organisms	Cell Theory Prokaryotic and Eukaryotic Cells Characteristics of Organisms Dichotomous Keys Plant and Animal Cells	Cell Theory Prokaryotic and Eukaryotic Cells Characteristics of Organisms Dichotomous Keys Plant and Animal Cells Cells	Structure of Life Interactive Notebook	Plant and Animal Cells Inquiry Lab Prokaryote Eukaryote Inquiry Lab Characteristics of Organisms Inquiry Lab Dichotomous Key Inquiry Lab Plant and Animal Cell Organelles Inquiry Lab Cell Function Inquiry Lab Cell Theory Inquiry Lab Cells to Systems Inquiry Lab Comparing Skeletal Structures Inquiry Lab Microscope Inquiry Lab Mitosis Inquiry Lab (coming soon) Meiosis Inquiry Lab (coming soon)	n/a	Cells Escape Room Classification Escape Room Prokaryotic and Eukaryotic Escape Room	Structure of Life Review Game	Full Year Resource Life Science Bell Ringers
STRUCTURE OF LIFE	Reproduction	Mitosis and Meiosis Sexual and Asexual Reproduction Genetics Inherited Traits	Mitosis and Meiosis Sexual and Asexual Reproduction Genetics Inherited Traits and Genetic Material	Structure of Life Interactive Notebook	Heredity Inquiry Lab Genetic Variation Inquiry Lab Sexual and Asexual Reproduction Inquiry Lab Inherited Traits Inquiry Lab Comparative Embryology Inquiry Lab Selective Breeding - CRISPR Technology Inquiry Lab	Project Birdman	n/a	Structure of Life Review Game	Full Year Resource Life Science Bell Ringers
WEATHER	Major Events	Catastrophic Events Hurricanes	Catastrophic Events Hurricane Formation	Weather Interactive Notebook	Catastrophic Event Inquiry Lab Hurricanes Inquiry Lab	n/a	n/a	Weather Review Game	n/a
WEATHER	Patterns	Water Cycle Atmosphere Convection Currents Weather Maps and Air Pressure	Water Cycle Atmosphere Convection Currents Weather Maps and Air Pressure Air Masses and Fronts	Weather Interactive Notebook	Phases of Water in the Water Cycle (coming soon) Convection Currents Inquiry Lab Weather Maps and Air Pressure Inquiry Lab	n/a	Weather Escape Room	Weather Review Game	Full Year Resource
SEASONAL/FUN		n/a	n/a	n/a	n/a	n/a	Winter Wonderland Escape Room Valentines Escape Room	n/a	n/a

Suggested 5E Section: NGSS Standards (shared standards in parentheses)	SUITABLE for all E's 5E Lessons - Lab Member Links **includes Station Labs and INBs*	EXPLORATION Station Labs - Lab Member Links **included in 5E Lessons*	EXPLANATION INBs - Lab Member Links **included in 5E Lessons*	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* **NOT included in 5E Lessons*	STEM Challenges - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Escape Games - Lab Member Links **NOT included in 5E Lessons*	Game Boards - Lab Member Links **NOT included in 5E Lessons*	VARIES Bell Ringers - Lab Member Links **NOT included in 5E Lessons*
MS ESS1-1-Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	Lunar Cycle Eclipses Seasons	Lunar Cycle Eclipses Seasons	Space Interactive Notebook	Eclipses Inquiry Lab Lunar Phases Inquiry Lab - NGSS Focus Seasons - Rotation and Revolution Inquiry Lab	n/a	Lunar Cycle Escape Room Seasons, Day and Night Escape Room	Space	Full Year Resource Earth Science
MS ESS1-2-Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	Galaxies and Light Years Planets (ESS1-2 and 1-3)	Galaxies Inner Planets Outer Planets	Space Interactive Notebook	Solar System Gravity Inquiry Lab	n/a	Planets Escape Room (MS ESS 1-2, MS ESS 1-3)	Space	Full Year Resource
MS ESS1-3-Analyze and interpret data to determine scale properties of objects in the solar system.	Planets (ESS1-2 and 1-3)	Inner Planets Outer Planets	Space Interactive Notebook	Scale Properties of Space Objects Inquiry Lab	n/a	Planets Escape Room (MS ESS 1-2, MS ESS 1-3)	Space	n/a
MS ESS1-4-Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.	Fossils (ESS1-4, 2-3, LS4-1, 4-2) Geologic Time Scale (ESS1-4, 2-3, LS4-1)	Fossils (ESS1-4, 2-3, LS4-1, 4-2) Geologic Time Scale (ESS1-4, 2-3, LS4-1)	Earth Science Interactive Notebook	Geologic Time Inquiry Lab	n/a	n/a	n/a	Full Year Resource Earth Science
MS ESS2-1-Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	Nitrogen Cycle Carbon Cycle Water Cycle (ESS2-1, 2-4, 3-1)	Nitrogen Cycle Carbon Cycle Water Cycle (ESS2-1, 2-4, 3-1)	Earth Science Interactive Notebook	Rock Cycle Inquiry Lab - NGSS Focus	n/a	Rock Cycle Escape Room	n/a	n/a
MS ESS2-2-Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	Volcanoes (ESS2-2, 3-2) Plate Tectonics Continental Drift Topographic Maps	Volcanoes (ESS2-2, 3-2) Plate Tectonics Continental Drift Topographic Maps	Earth Science Interactive Notebook	Earth's Changing Surface Inquiry Lab	n/a	Plate Tectonics Escape Room (MS ESS2-2, MS ESS2-3) Topographic Escape Room	Earth Science	Full Year Resource Earth Science
MS ESS2-3-Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	Fossils (ESS1-4, 2-3, LS4-1, 4-2) Geologic Time Scale (ESS1-4, 2-3, LS4-1)	Fossils (ESS1-4, 2-3, LS4-1, 4-2) Geologic Time Scale (ESS1-4, 2-3, LS4-1)	Earth Science Interactive Notebook	Pangaea Plate Movement Inquiry Lab	n/a	Plate Tectonics Escape Room (MS ESS2-2, MS ESS2-3)	n/a	Full Year Resource Earth Science
MS ESS2-4-Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	Watersheds and Human Impact (ESS2-4, 3-1) Water Cycle (ESS2-1, 2-4, 3-1) Convection Currents (ESS2-4, -6) Weather Maps and Air Pressure (MS ESS2-3, -4)	Watersheds and Human Impact (ESS2-4, 3-1) Water Cycle (ESS2-1, 2-4, 3-1) Convection Currents (ESS2-4, 2-6) Weather Maps and Air Pressure (MS ESS2-3, -4)	Earth Science Interactive Notebook	Water Cycle Inquiry Lab	n/a	n/a	Earth Science	Earth Science
MS ESS2-5-Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	Weather Maps and Air Pressure (MS ESS2-3, -4) Atmosphere	Air Pressure Air Masses and Fronts Atmosphere	n/a	Weather Maps and High-Low Pressure Inquiry Lab	n/a	Weather Escape Room	Weather	Full Year Resource
MS ESS2-6-Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	Convection Currents (ESS2-4, 2-6) Hurricanes Oceans	Convection Currents (ESS2-4, 2-6) Hurricanes Oceans	n/a	Convection Currents Inquiry Lab	n/a	n/a	Weather	n/a
MS ESS3-1-Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	Rock Cycle (mineral dist.) Watersheds (ESS2-4, 3-1) Water Cycle (ESS2-1, 2-4, 3-1) Weathering, Erosion, and Deposition	Rock Cycle (mineral dist.) Watersheds (ESS2-4, 3-1) Water Cycle (ESS2-1, 2-4, 3-1) Weathering and Erosion	n/a	Groundwater Distribution Inquiry Lab Fossil Fuel Distribution Inquiry Lab Mineral Distribution Inquiry Lab	n/a	Properties of Minerals Escape Room Renewable and Nonrenewable Energy Escape Room (MS ESS3-1, MS ESS3-4)	Earth Science	Full Year Resource Life Science (watershed aquifer) Earth Science

Suggested 5E Section: NGSS Standards (shared standards in parentheses)	SUITABLE for all E's 5E Lessons - Lab Member Links **includes Station Labs and INBs*	EXPLORATION Station Labs - Lab Member Links **included in 5E Lessons*	EXPLANATION INBs - Lab Member Links **included in 5E Lessons*	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* **NOT included in 5E Lessons*	ELABORATION STEM Challenges - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Escape Games - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Game Boards - Lab Member Links **NOT included in 5E Lessons*	VARIES Bell Ringers - Lab Member Links **NOT included in 5E Lessons*
MS ESS3-2-Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	Volcanoes (ESS2-2, 3-2) Earthquakes Catastrophic Events Hurricanes	Volcanoes (ESS2-2, 3-2) Earthquakes Catastrophic Events Hurricanes	Earth Science Interactive Notebook	Natural Hazards Inquiry Lab	n/a	n/a	Earth Science	n/a
MS ESS3-3-Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Short and Long Term Environmental Impacts (MS ESS3-3, -4) Nonrenewable Energy Resources (MS ESS3-3, -4) Renewable Energy Resources (MS ESS3-3, -4) Biotic and Abiotic Factors (MS ESS3-3, -4, LS2-1, -3, -4)	Short and Long Term Environmental Impacts (MS ESS3-3, -4) Nonrenewable Resources (MS ESS3-3, -4) Renewable Resources (MS ESS3-3, -4) Abiotic and Biotic Factors (MS ESS3-3, -4, LS2-1, -3, -4)	Ecosystems Interactive Notebook	Water Pollution Inquiry Lab	Project Save the Oceans (MS ESS3-3, MS-ETS1-1, -2, -3, -4) Project Wind and Sky (MS ESS3-3, MS-ETS 1-1, -2, -3, -4)	n/a	Ecosystems	n/a
MS ESS3-4-Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	Short and Long Term Environmental Impacts to Organisms (MS ESS3-3, -4) Nonrenewable Resources (MS ESS3-3, -4) Renewable Resources (MS ESS3-3, -4) Biotic and Abiotic Factors (MS ESS3-3, -4, LS2-1, -3, -4)	Short and Long Term Environmental Impacts (MS ESS3-3, -4) Nonrenewable Resources (MS ESS3-3, -4) Renewable Resources (MS ESS3-3, -4) Abiotic and Biotic Factors (MS ESS3-3, -4, LS2-1, -3, -4)	Ecosystems Interactive Notebook	Human Impact Inquiry Lab	n/a	Renewable and Nonrenewable Energy Escape Room (MS ESS3-1, MS ESS3-4)	Ecosystems	n/a
MS ESS3-5-Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	Short and Long Term Environmental Impacts to Organisms (MS ESS3-3, -4)	Short and Long Term Environmental Impacts (MS ESS3-3, -4)	n/a	Greenhouse Effect Inquiry Lab	n/a	n/a	Ecosystems	n/a
MS LS1-1-Conduct an investigation to provide evidence that living things are made of cells either one cell or many different numbers and types of cells.	Cell Theory (MS LS1-1, -2, -3) Plant and Animal Cells (MS LS1-1, -2, -3) Prokaryotic and Eukaryotic Cells (MS LS1-1, -2, -3) Characteristics of Organisms (MS LS1-1, -2, -3)	Cell Theory (MS LS1-1, -2, -3) Plant and Animal Cells (MS LS1-1, -2, -3) Prokaryotic and Eukaryotic Cells (MS LS1-1, -2, -3) Characteristics of Organisms (MS LS1-1, -2, -3)	Structure of Life Interactive Notebook	Cell Theory Inquiry Lab	n/a	Body Systems Escape Room (MS LS1-1 and MS LS1-2) Cells Escape Room (MS LS1-1, LS1-2, LS1-3) Prokaryotic and Eukaryotic Escape Room (MS LS1-1, MS LS1-2, MS LS1-4)	Body Systems & Cells	Full Year Resource Life Science (body systems)
MS LS1-2-Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	Cell Theory (MS LS1-1, -2, -3) Plant and Animal Cells (MS LS1-1, -2, -3) Prokaryotic and Eukaryotic Cells (MS LS1-1, -2, -3) Characteristics of Organisms (MS LS1-1, -2, -3)	Cell Theory (MS LS1-1, -2, -3) Plant and Animal Cells (MS LS1-1, -2, -3) Prokaryotic and Eukaryotic Cells (MS LS1-1, -2, -3) Characteristics of Organisms (MS LS1-1, -2, -3)	Structure of Life Interactive Notebook	Plant and Animal Cell Comparison Inquiry Lab	n/a	Body Systems Escape Room (MS LS1-1 and MS LS1-2) Cells Escape Room (MS LS1-1, LS1-2, LS1-3) Prokaryotic and Eukaryotic Escape Room (MS LS1-1, MS LS1-2, MS LS1-4)	Body Systems & Cells	Life Science
MS LS1-3-Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	Cell Theory (MS LS1-1, -2, -3) Plant and Animal Cells (MS LS1-1, -2, -3) Prokaryotic and Eukaryotic Cells (MS LS1-1, -2, -3) Characteristics of Organisms (MS LS1-1, -2, -3)	Cell Theory (MS LS1-1, -2, -3) Plant and Animal Cells (MS LS1-1, -2, -3) Prokaryotic and Eukaryotic Cells (MS LS1-1, -2, -3) Characteristics of Organisms (MS LS1-1, -2, -3)	Structure of Life Interactive Notebook	Cells to Systems Inquiry Lab	n/a	Cells Escape Room (MS LS1-1, LS1-2, LS1-3)	Body Systems & Cells	Life Science
MS LS1-4-Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.	Symbiosis Organism Relationships (MS LS1-4, 2-2) Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4)	Symbiosis Organism Relationships (MS LS1-4, 2-2) Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4)	n/a	Pollination Inquiry Lab	n/a	Body Systems Escape Room (MS LS1-1 and MS LS1-2) Cells Escape Room (MS LS1-1, LS1-2, LS1-3) Prokaryotic and Eukaryotic Escape Room (MS LS1-1, MS LS1-2, MS LS1-4)	Ecosystems	Full Year Resource Life Science (adaptation)

Suggested 5E Section: NGSS Standards (shared standards in parentheses)	SUITABLE for all E's 5E Lessons - Lab Member Links **includes Station Labs and INBs*	EXPLORATION Station Labs - Lab Member Links **included in 5E Lessons*	EXPLANATION INBs - Lab Member Links **included in 5E Lessons*	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* **NOT included in 5E Lessons*	ELABORATION STEM Challenges - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Escape Games - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Game Boards - Lab Member Links **NOT included in 5E Lessons*	VARIES Bell Ringers - Lab Member Links **NOT included in 5E Lessons*
MS LS1-5-Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	Tropisms and Turgor Pressure Genetics (MS LS1-5, 3-1, 4-4) Inherited Traits (MS LS1-5, 3-1)	Tropisms and Turgor Pressure Genetics (MS LS1-5, 3-1, 4-4) Inherited Traits (MS LS1-5, 3-1)	Ecosystems Interactive Notebook	Natural and Artificial Selection Inquiry Lab (MS LS1-4 MS LS4-6)	n/a	n/a	Body Systems & Cells	Full Year Resource Life Science
MS LS1-6-Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	Photosynthesis Food Webs (MS LS1-6, 2-1, -3) Energy Pyramids (MS LS1-6, 2-3)	Photosynthesis Food Webs (MS LS1-6, 2-1, -3) Energy Pyramids (MS LS1-6, 2-3)	Chemistry Interactive Notebook, photosynthesis page	Food Chains, Webs, Pyramids Inquiry Lab	n/a	Prokaryotic and Eukaryotic Escape Room (MS LS1-1, MS LS1-2, MS LS1-4) Cells Escape Room (MS LS1-1, LS1-2, LS1-3) Body Systems Escape Room (MS LS1-1 and MS LS1-2)	Ecosystems	Life Science
MS LS1-7-Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	Digestive System Molecules Balancing Chemical Equations Physical and Chemical Changes	Digestive System Molecules Balancing Chemical Equations Chemical Changes and Physical Changes	n/a	Food Chemistry Inquiry Lab	n/a	n/a	Body Systems & Cells	n/a
MS LS1-8 - Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	Nervous System	Nervous System	Structure of Life Interactive Notebook	Nervous System Inquiry Lab	n/a	n/a	n/a	n/a
MS LS2-1-Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	Biotic and Abiotic Factors (MS ESS3-3, -4, LS2-1, -3, -4) Biodiversity (MS LS2-1,-3) Food Webs (MS LS1-6, 2-1, -3)	Abiotic and Biotic Factors (MS ESS3-3, -4, LS2-1, -3, -4) Biodiversity (MS LS2-1,-3) Food Webs (MS LS1-6, 2-1, -3)	n/a	Population Resources Inquiry Lab	n/a	Food Web Escape Room (MS LS1-6, LS2-1, LS 2-2, LS2-4, LS2-5)	Ecosystems	Full Year Resource Life Science
MS LS2-2-Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	Organism Relationships (MS LS1-4, 2-2)	Organism Relationships (MS LS1-4, 2-2)	Ecosystems Interactive Notebook	Ecosystem Patterns Inquiry Lab	n/a	Biome Escape Room (covers MS LS 2-2, 2-5, and 2-1)	Ecosystems	Full Year Resource Life Science
MS LS2-3-Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	Biotic and Abiotic Factors (MS ESS3-3, -4, LS2-1, -3, -4) Biodiversity (MS LS2-1,-3) Food Webs (MS LS1-6, 2-1, -3) Energy Pyramids (MS LS1-6, 2-3)	Abiotic and Biotic Factors (MS ESS3-3, -4, LS2-1, -3, -4) Biodiversity (MS LS2-1,-3) Food Webs (MS LS1-6, 2-1, -3) Energy Pyramids (MS LS1-6, 2-3)	Ecosystems Interactive Notebook	Food Chains, Food Webs, and Energy Pyramids Inquiry Lab	n/a	Food Web and Energy in and Ecosystem Escape Room (MS LS1-6, LS2-1, LS 2-2, LS2-4, LS2-5) Biotic and Abiotic Factors Escape Room Photosynthesis Escape Room	Ecosystems	Life Science
MS LS2-4-Construct an argument supported by empirical evidence that shows changes to physical or biological components of an ecosystem affect populations	Biotic and Abiotic Factors (MS ESS3-3, -4, LS2-1, -3, -4) Short and Long Term Environmental Impacts to Organisms (MS ESS3-3, -4)	Abiotic and Biotic Factors (MS ESS3-3, -4, LS2-1, -3, -4) Short and Long Term Environmental Impacts (MS ESS3-3, -4)	Ecosystems Interactive Notebook	Human Impact on Oceans Inquiry Lab	n/a	Food Web Escape Room (MS LS1-6, LS2-1, LS 2-2, LS2-4, LS2-5)	Ecosystems	Life Science
MS LS2-5-Evaluate competing design solutions for maintaining biodiversity and ecosystem services.			n/a	Designs for Biodiversity Inquiry Lab	n/a	Food Web Escape Room (MS LS1-6, LS2-1, LS 2-2, LS2-4, LS2-5)	Ecosystems	Life Science
MS LS3-1-Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	Mitosis and Meiosis Inherited Traits (MS LS1-5, 3-1) Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4) Genetics (MS LS1-5, 3-1, 4-4)	Mitosis and Meiosis Inherited Traits (MS LS1-5, 3-1) Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4) Genetics (MS LS1-5, 3-1, 4-4)	Structure of Life Interactive Notebook	Mutations Inquiry Lab	n/a	n/a	Body Systems & Cells	Full Year Resource Life Science
MS LS3-2-Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4)	Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4)	Structure of Life Interactive Notebook	Asexual vs Sexual Reproduction Inquiry Lab	n/a	n/a	Body Systems & Cells	Life Science

Suggested 5E Section: NGSS Standards (shared standards in parentheses)	SUITABLE for all E's 5E Lessons - Lab Member Links **includes Station Labs and INBs*	EXPLORATION Station Labs - Lab Member Links **included in 5E Lessons*	EXPLANATION INBs - Lab Member Links **included in 5E Lessons*	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* **NOT included in 5E Lessons*	ELABORATION STEM Challenges - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Escape Games - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Game Boards - Lab Member Links **NOT included in 5E Lessons*	VARIES Bell Ringers - Lab Member Links **NOT included in 5E Lessons*
MS LS4-1-Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	Fossils (ESS1-4, 2-3, LS4-1, 4-2) Geologic Time Scale (ESS1-4, 2-3, LS4-1)	Fossils (ESS1-4, 2-3, LS4-1, 4-2) Geologic Time Scale (ESS1-4, 2-3, LS4-1)	Earth Science Interactive Notebook	Fossil Evidence Inquiry Lab	n/a	n/a	n/a	Full Year Resource
MS LS4-2-Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	Fossils (ESS1-4, 2-3, LS4-1, 4-2)	Fossils (ESS1-4, 2-3, LS4-1, 4-2)	n/a	Comparing Skeletal Structures Inquiry Lab	n/a	n/a	n/a	n/a
MS LS4-3-Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	n/a	n/a	n/a	Comparative Embryology Inquiry Lab	n/a	n/a	Body Systems & Cells	n/a
MS LS4-4-Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	Genetics (MS LS1-5, 3-1, 4-4) Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4)	Genetics (MS LS1-5, 3-1, 4-4) Sexual and Asexual Reproduction (MS LS1-4, 3-1, -2, 4-4)	n/a	Genetic Variation Inquiry Lab	Project Birdman (MS-ETS 1-1, -2, -3, -4, MS LS4-4, MS LS 4-6)	n/a	Body Systems & Cells	Life Science
MS LS4-5-Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.			n/a	Selecting Breeding: CRISPR Technology Inquiry Lab	n/a	n/a	Body Systems & Cells	n/a
MS LS4-6-Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	Natural Selection	Natural Selection	n/a	Natural Selection Inquiry Lab	Project Birdman (MS-ETS 1-1, -2, -3, -4, MS LS4-4, MS LS 4-6)	n/a	Ecosystems	Full Year Resource Life Science
MS PS1-1 - Develop models to describe the atomic composition of simple molecules and extended structures.	Atoms Elements and Compounds Molecules Counting Atoms and Elements Organic Compounds	Atoms Elements, Compounds, and Mixtures Molecules Counting Atoms and Elements Organic Compounds	Chemistry Interactive Notebook	Molecules Inquiry Lab	n/a	Atoms Escape Game Periodic Table Escape Room	Chemistry	Full Year Resource Physical Science
MS PS1-2 - Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred	Chemical Bonds Physical and Chemical Changes Density of a Regular-Shaped Object Density of an Irregular-Shaped Object	Chemical Bonds Chemical Changes and Physical Changes Density of a Regular-Shaped Object Density of an Irregular-Shaped Object	Chemistry Interactive Notebook	Chemical Changes and Physical Changes Inquiry Lab	n/a	Physical and Chemical Changes	Chemistry	Physical Science
MS PS1-3 - Gather and make sense of information to describe that synthetic materials come from natural resources and impact society	n/a	n/a	n/a	Synthetic Materials Inquiry Lab	n/a	Density Escape Room	Chemistry	n/a
MS PS1-4 - Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	Conduction, Convection, and Radiation (MS PS1-3, -6, 4-4) Energy Transformations (MS PS1-6)	Conduction, Convection, and Radiation (MS PS1-3, -6, 4-4) Energy Transformations (MS PS1-6)	n/a	Heat Transfer Inquiry Lab	n/a		n/a	Physical Science
MS PS1-5 - Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	Balancing Chemical Equations	Balancing Chemical Equations	Chemistry Interactive Notebook	Law of Conservation of Mass Inquiry Lab	n/a	Counting Atoms and Balancing Equations Escape Game	Chemistry	Physical Science
MS PS1-6 - Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes	Conduction, Convection, and Radiation (MS PS1-3, -6, 4-4) Energy Transformations (MS PS1-4)	Conduction, Convection, and Radiation (MS PS1-3, -6, 4-4) Energy Transformations (MS PS1-4)	n/a	Exothermic and Endothermic Reactions Inquiry Lab	n/a		Energy	Physical Science

Suggested 5E Section: NGSS Standards (shared standards in parentheses)	SUITABLE for all E's 5E Lessons - Lab Member Links **includes Station Labs and INBs*	EXPLORATION Station Labs - Lab Member Links **included in 5E Lessons*	EXPLANATION INBs - Lab Member Links **included in 5E Lessons*	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* **NOT included in 5E Lessons*	ELABORATION STEM Challenges - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Escape Games - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Game Boards - Lab Member Links **NOT included in 5E Lessons*	VARIES Bell Ringers - Lab Member Links **NOT included in 5E Lessons*
MS PS2-1-Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	Balanced and Unbalanced Forces (MS PS2-1, -2) Newton's Laws (MS PS2-1, -2) Motion Graphing (MS PS2-1, -2) Net Force (MS PS2-1, -2)	Balanced and Unbalanced Forces (MS PS2-1, -2) Newton's Laws - Third Law (MS PS2-1, -2) Motion Graphing (MS PS2-1, -2) Net Force (MS PS2-1, -2)	Force and Motion Interactive Notebook	Newton's 3rd Law Inquiry Lab	n/a	Newton's Laws Escape Room (MS PS2-1, MS PS2-2)	Force & Motion	n/a
MS PS2-2-Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	Balanced and Unbalanced Forces (MS PS2-1, -2) Newton's Laws (MS PS2-1, -2) Motion Graphing (MS PS2-1, -2) Net Force (MS PS2-1, -2)	Balanced and Unbalanced Forces (MS PS2-1, -2) Newton's Laws - First Law (MS PS2-1, -2) Newton's Laws - Second Law (MS PS2-1, -2) Newton's Laws - Third Law (MS PS2-1, -2) Motion Graphing (MS PS2-1, -2) Net Force (MS PS2-1, -2)	Force and Motion Interactive Notebook	Newton's 2nd Law Inquiry Lab	Project Inhabit Mars (MS-ETS 1-1, -2, -3, -4, MS PS 2-2) Project Move (MS-ETS 1-1, -2, -3, -4, MS PS 2-2) Project Skydive (MS PS 2-2, MS-ETS 1-1, -2, -3, -4)	Speed, Velocity, Acceleration Escape Room (MS PS2-2, MS PS3-1) Newton's Laws Escape Room (MS PS2-1, MS PS2-2) Net Force Escape Room	Force & Motion	Full Year Resource
MS PS2-3-Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	Electric and Magnetic Forces	Electric and Magnetic Forces	Force and Motion Interactive Notebook	Electromagnetism Inquiry Lab	n/a	Electromagnetic Escape Room (also MS PS2-5)	Energy	Physical Science
MS PS2-4-Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	n/a	n/a	n/a	Gravity and Mass Inquiry Lab	n/a	n/a	Space	
MS PS2-5-Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	n/a	n/a	n/a	Electrical Forces Inquiry Lab	n/a	Electromagnetic Escape Room (also MS PS2-5)	Force & Motion	Full Year Resource Physical Science
MS PS3-1-Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	Potential and Kinetic Energy (MS PS3-1, -5)	Kinetic and Potential Energy (MS PS3-1, -5)	Force and Motion Interactive Notebook	Kinetic Energy Inquiry Lab	n/a	Graphing Escape Room (MS PS3-1, MS) Potential and Kinetic Energy Escape Room (MS PS3-1, MS PS3-2, MS PS3-5) Speed, Velocity, Acceleration Escape Room (MS PS2-2, MS PS3-1)	Force & Motion	Full Year Resource Physical Science
MS PS3-2-Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	n/a	n/a	Force and Motion Interactive Notebook	Potential Energy Inquiry Lab	Project Thrills (MS PS3-2, MS PS3-5, MS-ETS 1-1, -2, -3, -4)	n/a	Force & Motion	Physical Science
MS PS3-3-Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.*	Conduction, Convection, and Radiation (MS PS1-3, -6, 4-4)	Conduction, Convection, and Radiation (MS PS1-3, -6, 4-4)	n/a	Thermal Energy Transfer Inquiry Lab	n/a	Energy Transformation Escape Room (MS PS3-3 and PS3-4) Heat Transfer Escape Room (MS PS3-3, MS PS3-4) Potential and Kinetic Energy Escape Room (MS PS3-1, MS PS3-2, MS PS3-5)	Energy	n/a
MS PS3-4-Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	Energy Transformations	Energy Transformations	n/a	Calorimetry Inquiry Lab	n/a	Energy Transformation Escape Room (MS PS3-3 and PS3-4) Heat Transfer Escape Room (MS PS3-3, MS PS3-4)	Energy	Physical Science (energy transformation)
MS PS3-5-Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	Potential and Kinetic Energy (MS PS3-1, -5)	Kinetic and Potential Energy (MS PS3-1, -5)	Energy Interactive Notebook	Kinetic Energy Transfer Inquiry Lab	Project Electric (MS PS3-5, MS-ETS 1-1, -2, -3, -4)	Potential and Kinetic Energy Escape Room (MS PS3-1, MS PS3-2, MS PS3-5)	Energy	Physical Science
MS PS4-1-Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	Properties of Waves (MS PS4-1, -2)	Properties of Waves (MS PS4-1, -2)	Energy Interactive Notebook	Wave Models Inquiry Lab	Project Thrills (MS PS3-2, MS PS3-5, MS-ETS 1-1, -2, -3, -4)	Waves Escape Room (MS PS4-1, MS PS4-2)	Energy	Full Year Resource
MS PS4-2-Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	Properties of Waves (MS PS4-1, -2)	Properties of Waves (MS PS4-1, -2)	Energy Interactive Notebook	Wave Characteristic Inquiry Lab	n/a	Waves Escape Room (MS PS4-1, MS PS4-2)	Energy	Physical Science

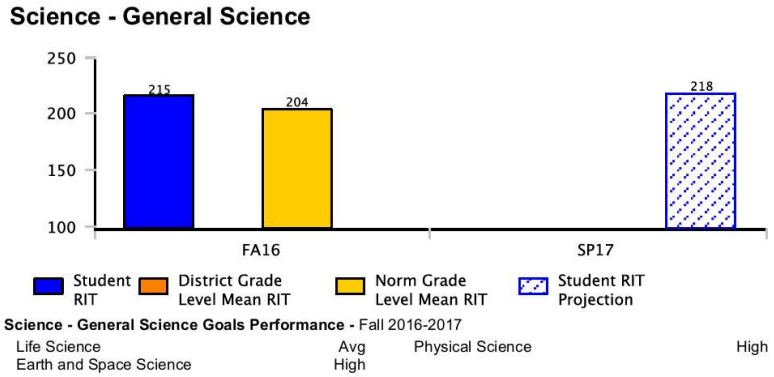
Suggested 5E Section: NGSS Standards (shared standards in parentheses)	SUITABLE for all E's 5E Lessons - Lab Member Links **includes Station Labs and INBs*	EXPLORATION Station Labs - Lab Member Links **included in 5E Lessons*	EXPLANATION INBs - Lab Member Links **included in 5E Lessons*	ELABORATION Inquiry Labs - Lab Member Links *also EXPLORATION* **NOT included in 5E Lessons*	ELABORATION STEM Challenges - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Escape Games - Lab Member Links **NOT included in 5E Lessons*	EVALUATION Game Boards - Lab Member Links **NOT included in 5E Lessons*	VARIES Bell Ringers - Lab Member Links **NOT included in 5E Lessons*
MS PS4-3-Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	n/a	n/a	n/a	Communication Signals Inquiry Lab	n/a	n/a	Energy	n/a
MS ETS1.A - Defining and delimiting engineering problems.	n/a	n/a	n/a	n/a	All STEM Challenges	Engineering Design Process Escape Room (MS ETS1.A and ETS1.B)	n/a	n/a
MS ETS1.B - Developing possible solutions	n/a	n/a	n/a	n/a	All STEM Challenges	Engineering Design Process Escape Room (MS ETS1.A and ETS1.B)	n/a	n/a
MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	n/a	n/a	n/a	n/a	ALL STEM Challenges meet this standard	n/a	n/a	
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	n/a	n/a	n/a	n/a	ALL STEM Challenges meet this standard	n/a	n/a	
MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristicsof each that can be combined into a new solution to better meet the criteria for success.	n/a	n/a	n/a	n/a	ALL STEM Challenges meet this standard	n/a	n/a	
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	n/a	n/a	n/a	n/a	ALL STEM Challenges meet this standard	n/a	n/a	
MS Crosscutting Concepts: patterns cause and effect scale, proportion, and quantity structure and function stability and change	n/a	n/a	n/a	n/a	n/a	Graphing Escape Room (MS PS3-1, MS)	n/a	n/a
Scientific practices include planning and carrying out investigations, analyzing and interpreting data, using mathematical and computational thinking, constructing explanations and designing solutions, engaging in argumentation based on evidence	n/a	n/a	n/a	n/a	n/a	Measurement Escape Room Scientific Method Escape Room	n/a	n/a

Assessment of the academic growth and achievement of each student

Each individual teacher will assess the academic growth of their students on a regular basis. Teachers assess students in a variety of ways (e.g. worksheets, class discussions, paragraph writing, projects, quizzes, and tests). The length and level of the assessment is dependent on the grade level being taught.

Evidence of fundamental principles of student growth

MAP standardized assessment tools are used to determine the achievement level of each student. Our students in 3-8 grade take the Science MAP test two times a year (Fall and Spring). The test results show Students growth over the course of the year and makes predictions on what score a student will receive the next time they take the test. Below is a screen shot of the test results of one of our students.



Term/ Year	Grade	RIT (+/- Std Err)	RIT Growth	Growth Projection	Percentile Range
FA16	6	212-**215**-218			74-**83**-89