

OpenSciEd Units:

6th Grade:				
Unit 1: Light and Matter Investigative Storyline: Why do we sometimes see different things when looking at the same object?	Unit 2: Thermal Energy Investigative Storyline: How can containers keep stuff from warming up or cooling down?	Unit 3: Weather and Climate Investigative Storyline: Why does a lot of hail, rain, or snow fall at some times and not others?	Unit 4: Cells and Life Systems Investigative Storyline: How do living things heal?	Unit 5: Plate Tectonics and Rock Cycling Investigative Storyline: What causes Earth's surfaces to change?
MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. 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.	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. MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. 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. MS-PS3-5: Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.	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. 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. MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. 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.	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. MS-LS1-2: Develop and use a model to the function of a cell as a whole and ways parts of cells contribute to the function. MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. 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.	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. MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. 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. MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

	MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. 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.			
7th Grade:				
Unit 1 Chemical Reactions and Matter Investigative Storyline: How can we make something new that was not there before?	Unit 2 Chemical Reactions and Energy Investigative Storyline: How can we use chemical reactions to design a solution to a problem?	Unit 3: Metabolic Reactions Investigative Storyline: How do things inside our bodies work together to make us feel the way we do?	Unit 4: Matter Cycling and Photosynthesis Investigative Storyline: Where does food come from, and where does it go next?	Unit 5: Ecosystems Investigative Storyline: How does changing an ecosystem affect what lives there?
MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures. 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. 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	MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design	MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures. 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. MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems	MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. 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. 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.	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. MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across

conserved. 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.	solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. 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.	composed of groups of cells. 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. MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	multiple ecosystems. MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services. MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. 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.
8th Grade:				
Unit 1: Contact Forces Investigative Storyline: Why do things sometimes get damaged when they hit each other?	Unit 2: Sound Waves Investigative Storyline: How can a sound make something move?	Unit 3: Forces at a Distance Investigative Storyline: How can a magnet move another object without touching it?	Unit 4: Earth in Space Investigative Storyline: How are we connected to the patterns we see in the sky and space?	Unit 5: Genetics Investigative Storyline: Why are living things different from one another?
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. MS-LS2-4: Construct an	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.	MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. MS-PS2-5: Conduct an investigation and evaluate	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.	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. MS-LS1-4: Use argument based on empirical evidence

argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services. MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. 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.	MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. 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.	the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. 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.	MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. 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. MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.	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. MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. 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. 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. MS-LS4-5: Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.
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