

Grades 9, 10, 11, 12

Adopted 2018

Matter and Its Interactions

SES-HS-PS1-1. Using a model, identify the parts of an atom (protons, neutrons, electrons). [SES-HS-PS1-1](#)

SES-HS-PS1-2. Use a periodic table to identify symbols and atomic numbers for five main group elements (1-20.) [SES-HS-PS1-2](#)

SES-HS-PS1-3. Using models, investigate the results of changes in states of matter. [SES-HS-PS1-3](#)

SES-HS-PS1-4. Using a model, determine if the product absorbs or releases energy, when given the reactants in a chemical reaction. [SES-HS-PS1-4](#)

SES-HS-PS1-5. Conduct an investigation measuring temperature differences, while observing and recording the reactions. [SES-HS-PS1-5](#)

SES-HS-PS1-6. Conduct a chemical experiment by changing a variable. [SES-HS-PS1-6](#)

SES-HS-PS1-7. Integrated in PS1-4. [SES-HS-PS1-7](#)

SES-HS-PS1-8. Compare models which illustrate fusion, fission, and radioactive decay. [SES-HS-PS1-8](#)

Motion and Stability: Forces and Interactions

SES-HS-PS2-1. Predict the outcome, when changing either mass or force, in an experiment using Newton's Second Law of Motion. [SES-HS-PS2-1](#)

SES-HS-PS2-2. Demonstrate what happens to the velocity of an object when the mass of the [SES-HS-PS2-2](#)

SES-HS-PS2-3. Select between a variety of designs to minimize force on an object, during a collision, and record outcomes. [SES-HS-PS2-3](#)

SES-HS-PS2-4. Demonstrate that gravitational forces are constant. [SES-HS-PS2-4](#)

SES-HS-PS2-5. Conduct an experiment to test for a magnetic field around an electromagnet. [SES-HS-PS2-5](#)

SES-HS-PS2-6. Demonstrate why material selection is important in building stable structures. [SES-HS-PS2-6](#)

Energy	SES-HS-PS3-1. Demonstrate the differences in the energy of a system when a component is changed. SES-HS-PS3-1
	SES-HS-PS3-2. Demonstrate that energy manifests itself in multiple ways, such as motion, sound, light, and thermal energy. SES-HS-PS3-2
	SES-HS-PS3-3. Conduct an experiment to convert one form of energy to another form of energy. SES-HS-PS3-3
	SES-HS-PS3-4. Conduct an experiment demonstrating the transfer of thermal energy when two components, of different temperature, are combined within a closed system. SES-HS-PS3-4
	SES-HS-PS3-5. Demonstrate that when two interacting objects change position, the interacting forces change. SES-HS-PS3-5
Waves and Their Applications in Technologies for Information Transfer	SES-HS-PS4-1. Demonstrate that simple waves have a repeating pattern with a specific wavelength, frequency, and amplitude. SES-HS-PS4-1
	SES-HS-PS4-2. Explore both physical and digital storage. SES-HS-PS4-2
	SES-HS-PS4-3. Not applicable. SES-HS-PS4-3
	SES-HS-PS4-4. No standard at this level. SES-HS-PS4-4
	SES-HS-PS4-5. Not applicable. SES-HS-PS4-5
From Molecules to Organisms: Structures & Processes	SES-HS-LS1-1. Construct a model of DNA. SES-HS-LS1-1
	SES-HS-LS1-2. Construct a model of hierarchical organization of interacting systems from smallest to largest. SES-HS-LS1-2
	SES-HS-LS1-3. Identify a feedback mechanism that helps maintain homeostasis. SES-HS-LS1-3
	SES-HS-LS1-4. Use a model to demonstrate mitosis. SES-HS-LS1-4
	SES-HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. SES-HS-LS1-5
	SES-HS-LS1-6. Construct models of carbon-based molecules. SES-HS-LS1-6
	SES-HS-LS1-7. Use a model to demonstrate that energy can be transferred through breaking and forming bonds. SES-HS-LS1-7
Ecosystems: Interactions, Energy, and Dynamics	SES-HS-LS2-1. Describe how the population of a species changes in relation to the availability of resources. SES-HS-LS2-1

	SES-HS-LS2-2. Identify factors that affect biodiversity in different environments. SES-HS-LS2-2
	SES-HS-LS2-3. Construct models of matter and energy cycles. SES-HS-LS2-3
	SES-HS-LS2-4. Integrated in SES-HS-LS2-3. SES-HS-LS2-4
	SES-HS-LS2-5. Construct a model of the carbon cycle to include interaction with the atmosphere. SES-HS-LS2-5
	SES-HS-LS2-6. Demonstrate how a change in conditions can change an ecosystem. SES-HS-LS2-6
	SES-HS-LS2-7. Compare and contrast detrimental or enhancing impacts on the environment. SES-HS-LS2-7
	SES-HS-LS2-8. Identify organisms that demonstrate group behaviors. SES-HS-LS2-8
Heredity: Inheritance and Variation of Traits	SES-HS-LS3-1. Identify traits that are passed from parent to offspring. SES-HS-LS3-1
	SES-HS-LS3-2. Demonstrate that mutations can occur in DNA. SES-HS-LS3-2
	SES-HS-LS3-3. Not applicable. SES-HS-LS3-3
Biological Evolution: Unity & Diversity	SES-HS-LS4-1. Construct a model demonstrating lineage from an ancient extinct animal to a modern animal. SES-HS-LS4-1
	SES-HS-LS4-2. Demonstrate how a population can adapt to survive. SES-HS-LS4-2
	SES-HS-LS4-3. Not applicable. SES-HS-LS4-3
	SES-HS-LS4-4. Demonstrate how a population can change based on natural selection. SES-HS-LS4-4
	SES-HS-LS4-5. Using evidence indicate the emergence of a new species over time. SES-HS-LS4-5
	SES-HS-LS4-6. Observe and describe the impacts of human activity on biodiversity. SES-HS-LS4-6
Earth's Place in the Universe	SES-HS-ESS1-1. Construct a model to illustrate the life span of the sun. SES-HS-ESS1-1
	SES-HS-ESS1-2. Construct a model of the expanding Universe. SES-HS-ESS1-2
	SES-HS-ESS1-3. Compare life cycles of other stars to our sun. SES-HS-ESS1-3
	SES-HS-ESS1-4. Use a simulation to represent the motion of orbiting objects in the solar system. SES-HS-ESS1-4

	SES-HS-ESS1-5. Use models to explore the theory of plate tectonics. SES-HS-ESS1-5
	SES-HS-ESS1-6. From a model, construct an account of Earth's formation and early history. SES-HS-ESS1-6
Earth's Systems	SES-HS-ESS2-1. Construct a model that demonstrates the formation of valleys and mountains. SES-HS-ESS2-1 SES-HS-ESS2-2. Construct a model demonstrating that one change to Earth's surface can cause changes to other Earth systems. SES-HS-ESS2-2 SES-HS-ESS2-3. Construct a model of the Earth's interior. SES-HS-ESS2-3 SES-HS-ESS2-4. Use a model to identify changes in the flow of energy that can change the climate. SES-HS-ESS2-4 SES-HS-ESS2-5. Construct a model depicting how water in the form of ice, liquid, and/or gas has changed the landscape. SES-HS-ESS2-5 SES-HS-ESS2-6. Integrated in SES-HS-LS2-5. SES-HS-ESS2-6 SES-HS-ESS2-7. Explain how life on Earth had to adapt to changes in the atmosphere, hydrosphere, or geosphere. SES-HS-ESS2-7
Earth and Human Activity	SES-HS-ESS3-1. Demonstrate how the availability of natural resources, the occurrence of natural hazards, and/or changes in climate have influenced human activity. SES-HS-ESS3-1 SES-HS-ESS3-2. From factors provided, select which factors need to be considered, prior to developing energy or mineral resources. SES-HS-ESS3-2 SES-HS-ESS3-3. Integrated in SES-HS-ESS3-2. SES-HS-ESS3-3 SES-HS-ESS3-4. Construct a model of a technological solution that reduces impacts of human activities on natural systems. SES-HS-ESS3-4 SES-HS-ESS3-5. Use global climate models to identify global, or regional, change in climate and associated future impacts to Earth systems. SES-HS-ESS3-5 SES-HS-ESS3-6. Use a computational representation to illustrate how changes to the environment affect Earth systems. SES-HS-ESS3-6
Engineering, Technology, & Applications of Science	SES-HS-ETS1-1. Identify a local, regional, or global challenge for solutions that account for societal needs and wants. SES-HS-ETS1-1

SES-HS-ETS1-2. Identify a solution to a real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. [SES-HS-ETS1-2](#)

SES-HS-ETS1-3. Identify solutions to a real-world problem based on a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts. [SES-HS-ETS1-3](#)

SES-HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a real-world problem. [SES-HS-ETS1-4](#)

SES-HS-ETS1-5. Given reliable materials, identify valid vs. invalid claims. [SES-HS-ETS1-5](#)