



Science Scope and Sequence

	Quarter: 1	Quarter2	Quarter 3	Quarter 4
Strand	Physical Science (PS)	Earth Space Science (ESS)	Earth Space Science (ESS)	Life Science (LS)
Topic	<p>Conservation of Mass and Energy This topic focuses on the empirical evidence for the arrangements of atoms on the Periodic Table of Elements, conservation of mass and energy, transformation and transfer of energy.</p>	<p>Cycles and Patterns of Earth and the Moon This topic focuses on Earth’s hydrologic cycle, patterns that exist in atmospheric and oceanic currents, the relationship between thermal energy and the currents, and the relative position and movement of the Earth, sun and moon.</p>	<p>Cycles and Patterns of Earth and the Moon This topic focuses on Earth’s hydrologic cycle, patterns that exist in atmospheric and oceanic currents, the relationship between thermal energy and the currents, and the relative position and movement of the Earth, sun and moon.</p>	<p>Cycles of Matter and Flow of Energy This topic focuses on the impact of matter and energy transfer within the biotic component of ecosystems.</p>
Content Statement	<p>7.PS.1: Elements can be organized by properties. Elements can be classified as metals, non-metals and metalloids, and can be organized by similar properties such as color, solubility, hardness, density, conductivity, melting point and boiling point, viscosity, and malleability.</p> <p>7.PS.2: Matter can be separated or changed, but in a closed system, the number and types of atoms remains constant. When substances interact and form new substances the properties of the new substances may be very different from those of the original</p>	<p>7.ESS.1: The hydrologic cycle illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere and atmosphere. Thermal energy is transferred as water changes state throughout the cycle. The cycling of water in the atmosphere is an important part of weather patterns on Earth. The rate at which water flows through soil and rock is dependent upon the porosity and permeability of the soil or rock.</p> <p>7.ESS.2: Thermal-energy transfers in the ocean and the</p>	<p>7.ESS.3: The atmosphere has different properties at different elevations and contains a mixture of gases that cycle through the lithosphere, biosphere, hydrosphere and atmosphere. The atmosphere is held to the Earth by the force of gravity. There are defined layers of the atmosphere that have specific properties, such as temperature, chemical composition and physical characteristics. Gases in the atmosphere include nitrogen, oxygen, water vapor, carbon dioxide and other trace gases. Biogeochemical cycles</p>	<p>7.LS.1: Energy flows and matter is transferred continuously from one organism to another and between organisms and their physical environments. Plants use the energy in light to make sugars out of carbon dioxide and water (photosynthesis). These materials can be used or stored for later use. Organisms that eat plants break down plant structures to release the energy and produce the materials they need to survive. The organism may then be consumed by</p>

	<p>substances, but the amount of mass does not change. Physically combining two or more substances form a mixture, which can be separated through physical processes.</p> <p>7.PS.3: Energy can be transformed or transferred but is never lost. When energy is transferred from one system to another, the quantity of energy before transfer equals the quantity of energy after transfer. When energy is transformed from one form to another, the total amount of energy remains the same.</p> <p>7.PS.4: Energy can be transferred through a variety of ways. Mechanical energy can be transferred when objects push or pull on each other over a distance. Mechanical and electromagnetic waves transfer energy when they interact with matter. Thermal energy can be transferred through radiation, convection and conduction. An electrical circuit transfers energy from a source to a device.</p>	<p>atmosphere contribute to the formation of currents, which influence global climate patterns. The sun is the major source of energy for wind, air and ocean currents and the hydrologic cycle. As thermal energy transfers occur in the atmosphere and ocean, currents form. Large bodies of water can influence weather and climate. The jet stream is an example of an atmospheric current and the Gulf Stream is an example of an oceanic current. Ocean currents are influenced by factors other than thermal energy, such as water density, mineral content (such as salinity), ocean floor topography and Earth's rotation. All of these factors delineate global climate patterns on Earth.</p> <p>7.ESS.3: The atmosphere has different properties at different elevations and contains a mixture of gases that cycle through the lithosphere, biosphere, hydrosphere and atmosphere. The atmosphere is held to the Earth by the force of gravity.</p>	<p>illustrate the movement of specific elements or molecules (such as carbon or nitrogen) through the lithosphere, biosphere, hydrosphere and atmosphere.</p> <p>7.ESS.4: The relative patterns of motion and positions of Earth, moon and sun cause solar and lunar eclipses, tides and phases of the moon. The moon's orbit and its change of position relative to Earth and sun result in different parts of the moon being visible from Earth (phases of the moon). A solar eclipse is when Earth moves into the shadow of the moon (during a new moon). A lunar eclipse is when the moon moves into the shadow of Earth (during a full moon). Gravitational force between Earth and the moon causes daily oceanic tides. When the gravitational forces from the sun and moon align (at new and full moons) spring tides occur. When the gravitational forces of the sun and moon are perpendicular (at first and last</p>	<p>other organisms for materials and energy. Energy can transform from one form to another in living things. Animals get energy from oxidizing food, releasing some of its energy as heat. The total amount of matter and energy remains constant, even though its form and location change.</p> <p>7.LS.2: In any particular biome, the number, growth and survival of organisms and populations depend on biotic and abiotic factors. The variety of physical (abiotic) conditions that exists on Earth gives rise to diverse environments (biomes) and allows for the existence of a wide variety of organisms (biodiversity). Biomes are regional ecosystems characterized by distinct types of organisms that have developed under specific soil and climatic conditions. Ecosystems are dynamic in nature; the number and types of species fluctuate over time.</p>
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Resources	McGraw Hill Inspire Science ODE Model Curriculum	McGraw Hill Inspire Science ODE Model Curriculum	McGraw Hill Inspire Science ODE Model Curriculum	McGraw Hill Inspire Science ODE Model Curriculum
Notes	<p>*PS.1 This is the conceptual introduction of the Periodic Table of Elements and should be limited to classifications based on observable properties; it should not include the names of the families.</p> <p>*PS.2 Under these standards, classifying specific changes as chemical or physical is not appropriate.</p>		<p>*ESS.3 The emphasis is on why the atmosphere has defined layers, not on naming the layers</p>	<p>*LS.1 Chemical reactions in terms of subatomic structures of atoms are not appropriate at this grade level. Chemical reactions are presented as the rearrangement of atoms in molecules.</p>

	<p>*PS.4 Energy transfers should be experiential and observable at this grade level.</p>			
<p>Vocabulary</p>				

Quarter(s) 1-4

SCIENCE INQUIRY AND APPLICATIONS

During the years of grades 5 through 8, all students must have developed the ability to:

SIA 1:Identify questions that can be answered through scientific investigations;

SIA 2:Design and conduct a scientific investigation; Use appropriate mathematics, tools and techniques to gather data and information

SIA 3:Analyze and interpret data; Develop descriptions, models, explanations and predictions;

SIA 4:Think critically and logically to connect evidence and explanations;

SIA 5:Recognize and analyze alternative explanations and predictions;

SIA 6: Communicate scientific procedures and explanations.