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correlated to

Rhode Island Grade Span
Expectations (GSEs) in Science
Grades 4-8



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ScienceSaurus

correlated to

Rhode Island Grade Span Expectations in Science

Grades 4-8

The aligned pages of both *ScienceSaurus* Student Handbooks (Grades 4-5 and Grades 6-8) are correlated to the *Rhode Island Grade Span Expectations in Science* (GSEs) for **Grades 4-8**.

The GSEs are extracted from the assessment targets developed as part of the **NECAP** framework for assessment and are organized into three **domains; Life Science, Earth and Space Science; and Physical Science**.

ScienceSaurus is a valuable tool and resource for both students and teachers.

- *ScienceSaurus* can be used as a teacher handbook to review the standards covered in Grades 3-8 or as a source of non-fiction literature to support teaching units in science throughout the year. Teachers can also use the *sciLINKs* as an added part of lessons and *ScienceSaurus* is a great tool for differentiating instruction.
- *ScienceSaurus* is easy-to-understand and helps students learn and review essential science topics with clear examples. Often students have a hard time finding the information they need in textbooks. *ScienceSaurus* gives a short, yet complete compilation of important information and technology student can understand.
- *ScienceSaurus* arms students with a resource for explicit content knowledge to help attain their learning objectives. A comprehensive handbook, it covers all the major strands of science including life, physical, and earth science, natural resources, technology, and the environment.

NECAP Test Prep

Start now ... prepare for May 2008 when students will be tested on the science objectives as part of the NECAP Assessment for grades 4 and 8.

ScienceSaurus correlated to the GSEs gives teachers and students a **valuable tool to learn and review the content and concepts** expected of students on the NECAP in Grades 4-8.

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Rhode Island Science Grade San Expectations
Grades 4-5

Grade 4 Physical Science

PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance).	
Assessment Target	Grade Span Expectation
<p>PS1 (K-4) INQ –1</p> <p><i>Collect and organize data about physical properties in order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, flexibility).</i></p>	<p>1a identifying, comparing, and sorting objects by similar or different physical properties (e.g., size, shape, color, texture, smell, weight, temperature, flexibility).</p> <p>1b citing evidence (e.g., prior knowledge, data) to support conclusions about why objects are grouped/not grouped together.</p> <p>1c observing and describing physical changes (e.g. freezing, thawing, torn piece of paper).</p> <p style="color: red;">ScienceSaurus (Pages 244-247)</p>
<p>PS1 (K-4) POC –2</p> <p><i>Make a prediction about what might happen to the state of common materials when heated or cooled or categorize materials as solid, liquid, or gas.</i></p>	<p>2a describing properties of solids, liquids, and gases.</p> <p>2b identifying and comparing solids, liquids, and gases.</p> <p>2c making logical predictions about the changes in the state of matter when adding or taking away heat (e.g., ice melting, water boiling or freezing, condensation/evaporation)</p> <p style="color: red;">ScienceSaurus (Pages 244-247)</p>
<p>PS1 (K-4) SAE –3</p> <p><i>Use measures of weight (data) to demonstrate that the whole equals the sum of its parts.</i></p>	<p>3a measuring the weight of objects to prove that all matter has weight.</p> <p>3b using measures of weight to prove that the whole equals the sum of its parts.</p> <p>3c showing that the weight of an object remains the same despite a change in its shape.</p> <p style="color: red;">ScienceSaurus (Pages 270-271)</p>

PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.

Assessment Target	Grade Span Expectation
<p>PS2 (K-4) SAE -4</p> <p><i>Given a specific example or illustration (e.g., simple closed circuit, rubbing hands together), predict the observable effects of energy (i.e., light bulb lights, a bell rings, hands warm up(e.g., a test item might ask, “what will happen when...?”).</i></p>	<p>4a experimenting to identify and classify different pitches and volumes of sounds produced by different objects.</p> <p>4b using data to explain what causes sound to have different pitch or volume</p> <p>4c describing or showing that heat can be produced in many ways (e.g. electricity, friction, burning).</p> <p>4d drawing, diagramming, building, and explaining a complete electrical circuit.</p> <p>4e using experimental data to classify a variety of materials as conductors or insulators</p> <p>ScienceSaurus (Pages 247, 299, 300-303, 315-317)</p>
<p>PS2 (K-4) SAE – 5</p> <p><i>Use observations of light in relation to other objects/substances to describe the properties of light (can be reflected, refracted, or absorbed).</i></p>	<p>5a investigating observable effects of light using a variety of light sources (e.g., light travels in a straight line until it interacts with an object, blocked light rays produce shadows).</p> <p>5b predicting, describing, and investigating how light rays are reflected, refracted, or absorbed</p> <p>ScienceSaurus (Pages 309-314)</p>
<p>PS2 (K-4) SAE+INQ – 6</p> <p><i>Experiment, observe, or predict how heat might move from one object to another.</i></p>	<p>6a describing how heat moves from warm objects to cold objects until both objects are the same temperature.</p> <p>6b showing that heat moves from one object to another causing temperature change (e.g., when land heats</p> <p>ScienceSaurus (Pages 289-294)</p> <p>www.scilinks.org Code:GSS4515 Keyword: Heat and Temperature</p>

PS 3 - The motion of an object is affected by forces.

<p>PS3 (K-4)-INQ+SAE –7</p> <p><i>Use data to predict how a change in force (greater/less) might affect the position, direction of motion, or speed of an object (e.g., ramps and balls).</i></p>	<p>7a predicting the direction and describing the motion of objects (of different weights, shapes, sizes, etc.) if a force is applied to it.</p> <p>7b describing change in position relative to other objects or background.</p> <p>7c investigating and describing that different amounts of force can change direction/speed of an object in motion.</p> <p>7d conducting experiments to demonstrate that different objects fall to earth unless something is holding them up.</p> <p>ScienceSaurus (Pages 268-283)</p> <p>www.scilinks.org Code:GSS45100 Keyword: Forces and Motion</p>
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Assessment Target	Grade Span Expectation
<p>PS3 (K-4) INQ+ SAE –8</p> <p><i>Use observations of magnets in relation to other objects to describe the properties of magnetism (i.e., attract or repel certain objects or has no effect)</i></p>	<p>8a using prior knowledge and investigating to predict whether or not an object will be attracted to a magnet.</p> <p>8b describing what happens when like and opposite poles of a magnet are placed near each other.</p> <p>8c exploring relative strength of magnets (e.g., size of magnets, number of magnets, properties of materials).</p> <p>ScienceSaurus (Pages 272, 304-305)</p>

Grade 4 Earth and Space Science

ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.	
Assessment Target	Grade Span Expectation
<p>ESS1 (K-4) INQ –1</p> <p><i>Given certain earth materials (soils, rocks or minerals) use physical properties to sort, classify, and describe them</i></p>	<p>1a describing, comparing, and sorting rocks, soils, and minerals by similar or different physical properties (e.g., size, shape, color, texture, smell, weight, temperature, hardness, composition).</p> <p>1b recording and analyzing observations/data about physical properties (e.g., within a grouping, which characteristics are the same and which are different).</p> <p>1c citing evidence (e.g., prior knowledge, data) to support why rocks, soils, or minerals are classified/not classified together.</p> <p>1d identifying the four basic materials of the earth (water, soil, rocks, air).</p> <p>ScienceSaurus (Pages 160-169)</p> <p>www.scilinks.org Code: GSS4065 Keyword: Soil</p>
<p>ESS1 (K-4) INQ –2</p> <p><i>Use results from an experiment to draw conclusions about how water interacts with earth materials (e.g., percolation, erosion, frost heaves).</i></p>	<p>2a conducting investigations and using observational data to describe how water moves rocks and soils</p> <p>ScienceSaurus (Pages 171-172, 182-183)</p>

Assessment Target	Grade Span Expectation
<p>ESS 1 (K-4) NOS –3</p> <p><i>Explain how the use of scientific tools helps to extend senses and gather data about weather. (i.e., weather/wind vane: direction; wind sock: wind intensity; anemometer: speed; thermometer: temperature; meter sticks/rulers: snow depth; rain gauges: rain amount in inches).</i></p>	<p>3a explaining how the use of scientific tools helps to extend senses and gather data about weather (i.e., weather/wind vane: direction; wind sock: wind intensity; anemometer: speed;</p> <p>ScienceSaurus (Pages 200-205)</p> <p>Enrichment (Pages 10,18)</p>
<p>ESS1 (K-4) INQ+SAE –4</p> <p>Explain how wind, water, or ice shape and reshape the earth.</p>	<p>4a investigating local landforms and how wind, water, or ice have shaped and reshaped them (e.g. severe weather).</p> <p>4b using or building models to simulate the effects of how wind and water shape and reshape the land (e.g., erosion, sedimentation, deposition, glaciation).</p> <p>4c identifying sudden and gradual changes that affect the Earth (e.g. sudden change = flood; gradual change = erosion caused by oceans).</p> <p>ScienceSaurus (Pages170-183)</p> <p>www.scilinks.org Code:GSS45070Keyword: How Do Volcanoes Form?</p>
<p>ESS1 (K-4) POC –5</p> <p><i>Based on data collected from daily weather observations, describe weather changes or weather patterns</i></p>	<p>ScienceSaurus (Pages 188-190, 206)</p> <p>www.scilinks.org Code: GSS45075 Keyword: Water Cycle</p> <p>5a observing, recording, comparing, and analyzing weather data to describe weather changes or weather patterns.</p> <p>5b describing water as it changes into vapor in the air and reappears as a liquid when it’s cooled.</p> <p>5c explaining how this cycle of water relates to weather and the formation of clouds.</p>
<p>ESS1 (K-4) FAF -6</p> <p><i>Given information about earth materials explain how their characteristics lend themselves to specific uses</i></p>	<p>6a determining and supporting explanations of their uses (e.g., best soils to grow plants, best building material for a specific purpose, determining which rock size will best prevent erosion).</p> <p>ScienceSaurus (Pages 164-169)</p> <p>www.scilinks.org Code: GSS45065 Keyword: Soil</p>

ESS2 - The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships.	
Assessment Target	Grade Span Expectation
<p>No further targets for EK ESS2 at the K-4 Grade Span</p>	<p>7a observing that the sun, moon, and stars appear to move slowly across the sky.</p> <p>7b observing that the moon looks slightly different from day to day, but looks the same again in about 4 weeks.</p> <p>7c recognizing that the rotation of the Earth on its axis every 24 hours produces the day/night cycle.</p> <p>ScienceSaurus (Pages 218-222)</p>
<p>No further targets for EK ESS2 at the K-4 Grade Span</p>	<p>8a recognizing that: the sun is the center of our solar system; the Earth is one of several planets that orbits the sun; and the moon orbits the Earth.</p> <p>8b recognizing that it takes approximately 365 days for the Earth to orbit the sun.</p> <p>ScienceSaurus (Pages 220, 228-233)</p> <p>www.scilinks.org Code: GSS45090 Keyword: Solar System</p>
ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time	
<p>No further targets for EK ESS2 at the K-4 Grade Span</p> <p><i>The GSEs listed below are assessed at the local level only</i></p>	<p>9a recognizing that throughout history people have identified patterns of stars that we call constellations.</p> <p>ScienceSaurus (Pages 236-237)</p>

Grade 4 Life Science

LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).	
Assessment Target	Grade Span Expectation
<p>LS1 (K-4) - INQ+POC –1</p> <p><i>Sort/classify different living things using similar and different characteristics. Describe why organisms belong to each group or cite evidence about how they are alike or not alike.</i></p>	<p>1a citing evidence to distinguish between living and non-living things.</p> <p>1b identifying, sorting and comparing based on similar and/or different external features.</p> <p>1c recording and analyzing observations/data about external features (e.g., within a grouping, which characteristics are the same and which are different).</p> <p>1d citing evidence (e.g., prior knowledge, data) to draw conclusions explaining why organisms are grouped/not grouped together (e.g. mammal, bird, and fish). ScienceSaurus (Pages 76, 139-155)</p>
<p>LS1 (K-4) FAF –4</p> <p><i>Identify and explain how the physical structures of an organism (plants or animals) allow it to survive in its habitat/environment (e.g., roots for water; nose to smell fire).</i></p>	<p>4a identifying and explaining how the physical structure/characteristic of an organism allows it to survive and defend itself (e.g. of a characteristic – the coloring of a fiddler crab allows it to camouflage itself in the sand and grasses of its environment so that it will be protected from predators).</p> <p>4b analyzing the structures needed for survival of populations of plants and animals in a particular habitat/environment (e.g. populations of desert plants and animals require structures that enable them to obtain/conserves/ retain water). ScienceSaurus (Pages 92-97)</p>
<p>LS1 (K-4) SAE –2</p> <p><i>Identify the basic needs of plants and animals in order to stay alive. (i.e., water, air, food, space).</i></p>	<p>2a observing that plants need water, air, food, light and space to grow and reproduce; observing that animals need water, air, food, and shelter/space to grow and reproduce. ScienceSaurus (Pages 76-77)</p> <p>www.scilinks.org Code: GSS45035 Keyword: Behaviors and Adaptations</p>
<p>LS1 (K-4) POC –3</p> <p><i>Predict, sequence or compare the life stages of organisms – plants and animals (e.g., put images of life stages of an organism in order, predict the next stage in sequence, compare two organisms).</i></p>	<p>3a observing changes and recording data to scientifically draw and label the stages in the life cycle of a familiar plant and animal.</p> <p>3b sequencing the life cycle of a plant or animal when given a set of data/pictures.</p> <p>3c comparing the life cycles of 2 plants or 2 animals when given a set of data/ ScienceSaurus (Pages 86, 96)</p>

LS2 - Matter cycles and energy flows through an ecosystem.	
Assessment Target	Grade Span Expectation
<p>LS2 (K-4) SAE –5</p> <p><i>Recognize that energy is needed for all organisms to stay alive and grow or identify where a plant or animal gets its energy.</i></p>	<p>5a identifying sources of energy for survival of organisms (i.e. light or food).</p> <p>ScienceSaurus (Pages 76-81)</p> <p>www.scilinks.org Code: GSS45035 Keyword: Behaviors and Adaptations</p>
<p>LS2 (K-4) SAE –6</p> <p><i>Describe ways plants and animals depend on each other (e.g., shelter, nesting, food).</i></p>	<p>6a demonstrating in a food web that all animals’ food begins with the sun.</p> <p>6b using information about organisms to design a habitat and explain how the habitat provides for the needs of the organisms that live there</p> <p>6c explaining the way that plants and animals in that habitat depend on each other.</p> <p>ScienceSaurus (Pages 127, 137-138, 350-351)</p> <p>www.scilinks.org Code: GSS45055 Keyword: Food Chains and Food Webs</p>
LS3 - Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry).	
<p>LS3 (K-4) SAE –7</p> <p><i>Using information (data or scenario), explain how changes in the environment can cause organisms to respond (e.g., survive there and reproduce, move away, die).</i></p>	<p>7a explaining what plants or animals might do if their environment changes (e.g., changing food supply or habitat due to fire, human impact, sudden weather-related changes).</p> <p>7b explaining how the balance of the ecosystem can be disturbed (e.g., how does overpopulation of a species affect the rest of the ecosystem).</p> <p>ScienceSaurus (Pages 350-351)</p> <p>www.scilinks.org Code: GSS45130 Keyword: Endangered Species</p>
LS 4 - Humans are similar to other species in many ways, and yet are unique among Earth’s life forms.	
<p>LS4 (K-4) FAF -8</p> <p><i>Identify what the physical structures of humans do (e.g., sense organs – eyes, ears, skin, etc.) or compare physical structures of humans to similar structures of animals.</i></p>	<p>8a showing connections between external and internal body structures (i.e., organs and systems) and how they help humans survive.</p> <p>8b comparing and analyzing external features and characteristics of humans and other animals.</p> <p>ScienceSaurus (Pages 106, 112-126)</p> <p>www.scilinks.org Code: GSS45046 Keyword: Body Systems</p>

Assessment Target	Grade Span Expectation
<p>LS4 (K-4) POC -9</p> <p><i>Distinguish between characteristics of humans that are inherited from parents (i.e., hair color, height, skin color, eye color) and others that are learned (e.g., riding a bike, singing a song, playing a game, reading)</i></p>	<p>9a identifying similarities that are inherited from a biological parent.</p> <p>9b identifying that some behaviors are learned and some behaviors are instinctive.</p> <p>ScienceSaurus (Pages 82, 94-95)</p>

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Rhode Island Science Grade San Expectations
Grades 4-5

Grade 5 Physical Science

PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance).	
Assessment Target	Grade Span Expectation
<p>PS1 (5-8) INQ-1 Investigate the relationships among mass, volume and density.</p>	<p>1a comparing the masses of objects of equal volume made of different substances. ScienceSaurus (Pages 270-271)</p>
<p>PS1 (5-8) INQ+POC –2 <i>Given data about characteristic properties of matter (e.g., melting and boiling points, density, solubility) identify, compare, or classify different substances.</i></p>	<p>2a recognizing that different substances have properties, which allow them to be identified regardless of the size of the sample.</p> <p>2b classifying and comparing substances using characteristic properties (e.g., solid, liquid, gas). ScienceSaurus (Page 244)</p>
<p>PS1 (5-8) INQ+ SAE –3 <i>Collect data or use data provided to infer or predict that the total amount of mass in a closed system stays the same, regardless of how substances interact (conservation of matter).</i></p>	<p>3a explaining that regardless of how parts of an object are arranged, the mass of the whole is always the same as the sum of the masses of its parts. ScienceSaurus (Pages 270-271)</p>
<p>PS1 (5-8) SAE+MAS – 4 <i>Represent or explain the relationship between or among energy, molecular motion, temperature, and states of matter.</i></p>	<p>4a differentiating among the characteristics of solids, liquids, and gases.</p> <p>4b predicting the effects of heating and cooling on the physical state, volume and mass of a substance. ScienceSaurus (Pages 242-247, 260-265)</p>
<p>PS1 (5-8) MAS –5 <i>Given graphic or written information, classify matter as atom/molecule or element/compound (Not the structure of an atom).</i></p>	<p>5a distinguishing between solutions, mixtures, and “pure” substances, i.e. compounds and elements. ScienceSaurus (Pages 256-259)</p>

PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.	
Assessment Target	Grade Span Expectation
<p>PS2 (5-8)-SAE+ POC- 6 <i>Given a real-world example, show that within a system, energy transforms from one form to another (i.e., chemical, heat, electrical, gravitational, light, sound, mechanical).</i></p>	<p>6a differentiating among the properties of various forms of energy.</p> <p>6b explaining how energy may be stored in various ways (e.g. batteries, springs, height in terms of potential energy).</p> <p>6c describing sound as the transfer of energy through various materials (e.g. solids, liquids, gases). ScienceSaurus (Pages 256-259)</p>
<p>PS2 (5-8) INQ+SAE+POC – 7 <i>Use data to draw conclusions about how heat can be transferred (convection, conduction, radiation)</i></p>	<p>7a identifying real world applications where heat energy is transferred and showing the direction that the heat energy flows. ScienceSaurus (Pages 289-294) www.scilinks.org Code: GSS45115 Keyword: Heat and Temperature</p>
PS 3 - The motion of an object is affected by forces.	
<p>PS3 (5-8) INQ+ POC –8 <i>Use data to determine or predict the overall (net effect of multiple forces (e.g., friction, gravitational, magnetic) on the position, speed, and direction of motion of objects.</i></p>	<p>8a using data or graphs to compare the relative speed of objects.</p> <p>8b recognizing that a force is a push or a pull.</p> <p>8c explaining that changes in speed or direction of motion are caused by forces.</p> <p>8d showing that electric currents and magnets can exert a force on each other. ScienceSaurus (Pages 270-279, 306-307)</p>

Grade 5 Earth and Space Science

ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.	
Assessment Target	Grade Span Expectation
<p>ESS1 (5-8) INQ+ POC –1 Use geological evidence provided to support the idea that the Earth’s crust/lithosphere is composed of plates that move.</p>	<p>1a identifying and describing the layers of the earth.</p> <p>1b plotting location of volcanoes and earthquakes and explaining the relationship between the location of these phenomena and faults.</p> <p>ScienceSaurus (Pages 178-181, 184) www.scilinks.org Code: GSS45070 Keyword: How Do Volcanoes Form?</p>
<p>ESS1 (5-8) SAE–2 Explain the processes that cause the cycling of water into and out of the atmosphere and their connections to our planet’s weather patterns.</p>	<p>2a diagramming, labeling and explaining the processes of the water cycle including vaporation, precipitation, and run-off, condensation, transpiration, and groundwater.</p> <p>2b explaining how condensation of water vapor forms clouds which affects climate and weather.</p> <p>2c developing models to explain how humidity, temperature, and altitude affect air pressure and how this affects local weather.</p> <p>2d identifying composition and layers of earth’s atmosphere ScienceSaurus (Pages 188-192, 203, 205-207, 216) www.scilinks.org Code: GSS45075 Keyword: Water Cycle</p>
<p>ESS1 (5-8) POC –3 Explain how earth events (abruptly and over time) can bring about changes in Earth’s surface: landforms, ocean floor, rock features, or climate.</p>	<p>3a describing events and the effect they may have on climate (e.g. El Nino, deforestation, glacial melting, and an increase in greenhouse gases). ScienceSaurus (Pages 170-183) www.scilinks.org Code: GSS45070 Keyword: How Do Volcanoes Form?</p>
<p>ESS1 (5-8) SAE+ POC –4 Explain the role of differential heating or convection in ocean currents, winds, weather and weather patterns, atmosphere, or climate.</p>	<p>4a explaining how differential heating and convection affect Earth’s weather patterns.</p> <p>4b describing how differential heating of the oceans affects ocean currents which in turn influence weather and climate.</p> <p>4c explaining the relationship between differential heating/convection and the production of winds.</p> <p>4d analyzing global patterns of atmospheric movements to explain effects on weather.</p> <p>4e predicting temperature and precipitation changes associated with the passing of various fronts. ScienceSaurus (Pages 200-211)</p>
<p>ESS1 (5-8) INQ+ POC –5 Using data about a rock’s physical characteristics make and support an inference about the rock’s history and connection to rock cycle.</p>	<p>5a representing the processes of the rock cycle in words, diagrams, or models.</p> <p>5b citing evidence and developing a logical argument to explain the formation of a rock, given its characteristics and location. (e.g. classifying rock type using identification resources). ScienceSaurus (Pages 164-167)</p>

ESS2 - The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships.	
Assessment Target	Grade Span Expectation
<p>ESS2 (5-8) MAS –6 Compare and contrast planets based on data provided about size, composition, location, orbital movement, atmosphere, or surface features (includes moons).</p>	<p>6a identifying and comparing the size, location, distances, and movement (e.g. orbit of planets, path of meteors) of the objects in our solar system.</p> <p>6b comparing the composition, atmosphere, and surface features of objects in our solar system. ScienceSaurus (Pages 228-233) www.scilinks.org Code: GSS45090 Keyword: Solar System</p>
<p>ESS2 (5-8) NOS –7 <i>Explain how technological advances have allowed scientists to re-evaluate or extend existing ideas about the solar system.</i></p>	<p>No GSEs for the ESS2 (5-8) NOS-7 Assessment Target</p>
<p>ESS2 (5-8) SAE+ POC –8 <i>Explain temporal or positional relationships between or among the Earth, sun, and moon (e.g., night/day, seasons, year, tides) or how gravitational force affects objects in the solar system (e.g., moons, tides, orbits, satellites).</i></p>	<p>8a using models to describe the relative motion/position of the Earth, sun and moon.</p> <p>8b explaining night/day, seasons, year, and tides as a result of the regular and predictable motion of the Earth, sun, and moon.</p> <p>8c using a model of the Earth, sun and moon to recreate the phases of the moon.</p> <p>8d defining the Earth’s gravity as a force that pulls any object on or near the Earth toward its center without touching it. ScienceSaurus (Pages 226-228) www.scilinks.org Code: GSS45090 Keyword: Solar System</p>
ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time	
<p>No further targets for EK ESS3 at the 5-8 Grade Span <i>The GSEs listed below are assessed at the local level only</i></p>	<p>9a describing the apparent motion/position of the objects in the sky. (e.g. constellations, planets).</p> <p>9b identifying the sun as a medium-sized star located near the edge of a disk-shaped galaxy of stars. ScienceSaurus (Pages 226-228) www.scilinks.org Code: GSS45090 Keyword: Solar System</p>

Grade 5 Life Science

LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).	
Assessment Target	Grade Span Expectation
<p>LS1 (5-8) – INQ+ SAE- 1 Using data and observations about the biodiversity of an ecosystem make predictions or draw conclusions about how the diversity contributes to the stability of the ecosystem.</p>	<p>1a recognizing that organisms have different features and behaviors for meeting their needs to survive (e.g., fish have gills for respiration, mammals have lungs, bears hibernate). ScienceSaurus (Pages 139-155) www.scilinks.org CodeGSS45060 Keyword: Vertebrates and Invertebrates</p>
<p>LS1 (5-8) SAE+FAF –2 <i>Describe or compare how different organisms have mechanisms that work in a coordinated way to obtain energy, grow, move, respond, provide defense, enable reproduction, or maintain internal balance (e.g., cells, tissues, organs and systems).</i></p>	<p>2a describing structures or behaviors that help organisms survive in their environment (e.g., defense, obtaining nutrients, reproduction, and eliminating waste). ScienceSaurus (Pages 76-87) www.scilinks.org CodeGSS45035 Keyword: Behaviors and Adaptations</p>
<p>LS1 (5-8) POC -3 <i>Compare and contrast sexual reproduction with asexual reproduction</i></p>	<p>3a defining reproduction as a process through which organisms produce offspring. 3b describing reproduction in terms of being essential for the continuation of a species. 3c investigating and comparing a variety of plant and animal life cycles. ScienceSaurus (Pages 82-87)</p>
<p>LS1 (5-8) FAF –4 <i>Explain relationships between or among the structure and function of the cells, tissues, organs, and organ systems in an organism</i></p>	<p>4a identifying cells as the building blocks of organisms. 4b recognizing and illustrating (e.g. flow chart) the structural organization of an organism from a cell to tissue to organs to organ systems to organisms ScienceSaurus (Pages 99-103) www.scilinks.org CodeGSS45040 Keyword: Animal/Plant Cells</p>
LS2 - Matter cycles and energy flows through an ecosystem.	
<p>LS2 (5-8) INQ+SAE -5 <i>Using data and observations, predict outcomes when abiotic/biotic factors are changed in an ecosystem.</i></p>	<p>5a identifying and defining an ecosystem and the variety of relationships within it (e.g., predator/prey, consumer/ producer/decomposer, host/parasite, catastrophic events). ScienceSaurus (Pages 90, 130-131)</p>
<p>LS2 (5-8) SAE– 6 <i>Given a scenario trace the flow of energy through an ecosystem, beginning with the sun, through organisms in the food web, and into the environment (includes photosynthesis and respiration).</i></p>	<p>6a identifying the sun as the major source of energy for life on earth and sequencing the energy flow in an ecosystem. 6b. describing the basic processes and recognizing the substances involved in photosynthesis and respiration. ScienceSaurus (Pages 78-80, 132)</p>

Assessment Target	Grade Span Expectation
<p>LS2 (5-8) SAE-7 <i>Given an ecosystem, trace how matter cycles among and between organisms and the physical environment (includes water, oxygen, food web, decomposition, recycling but not carbon cycle or nitrogen cycle).</i></p>	<p>7a explaining the processes of precipitation, evaporation, condensation as parts of the water cycle.</p> <p>7b completing a basic food web for a given ecosystem ScienceSaurus (Pages 138, 188-189, 351)</p> <p>www.scilinks.org CodeGSS45055 Keyword: Food Chains and Food Webs www.scilinks.org CodeGSS45075 Keyword: Water Cycle</p>
<p>LS3 - Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry).</p>	
<p>LS3 (5-8) MAS+FAF – 8 <i>Use a model, classification system, or dichotomous key to illustrate, compare, or interpret possible relationships among groups of organisms (e.g., internal and external structures, anatomical features).</i></p>	<p>8a stating the value of, or reasons for, classification systems.</p> <p>8b following a taxonomic key to identify a given organism (e.g. flowering and non-flowering plants). ScienceSaurus (Pages 139, 140-155)</p> <p>www.scilinks.org CodeGSS45060 Keyword: Vertebrates and Invertebrates</p>
<p>LS3 (5-8) POC-9 <i>Cite examples supporting the concept that certain traits of organisms may provide a survival advantage in a specific environment and therefore, an increased likelihood to produce offspring.</i></p>	<p>9a explaining how a population’s or species’ traits affect their ability to survive over time.</p> <p>9b researching or reporting on possible causes for the extinction of an animal or plant.</p> <p>9c explaining how fossil evidence can be used to understand the history of life on Earth.</p> <p>ScienceSaurus (Pages 140-155, 350-353)</p> <p>www.scilinks.org CodeGSS45060 Keyword: Vertebrates and Invertebrates www.scilinks.org CodeGSS45130 Keyword: Endangered Species</p>
<p>LS 4 - Humans are similar to other species in many ways, and yet are unique among Earth’s life forms.</p>	
<p>LS4 (5-8) INQ-10 <i>Use data and observations to support the concept that environmental or biological factors affect human body systems (biotic & abiotic).</i></p>	<p>10a identifying the biotic factors (e.g., microbes, parasites, food availability, aging process) that have an effect on human body systems.</p> <p>10b identifying the abiotic factors (e.g., drugs, altitude, weather, pollution) that have an effect on human body systems.</p> <p>10c identifying the biotic (e.g., microbes, parasites, food availability, aging process) and abiotic (e.g., radiation, toxic materials, carcinogens) factors that cause disease and affect human health. ScienceSaurus (Pages 334, 339)</p>
<p>LS4 (5-8) INQ+POC-11 <i>Using data provided, select evidence that supports the concept that genetic information is passed on from both parents to offspring.</i></p>	<p>11a differentiating between inherited and acquired traits.</p> <p>11b observing, recording and comparing differences in inherited traits (e.g. connected earlobe, tongue rolling). ScienceSaurus (Pages 94-95)</p>

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correlated to
Rhode Island Science Grade San Expectations
Grades 6-8

Grade 6 Physical Science

PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance).	
Assessment Target	Grade Span Expectation
<p>PS1 (5-8) INQ-1 Investigate the relationships among mass, volume and density.</p>	<p>1a comparing the masses of objects of equal volume made of different substances. Grade 6-8 ScienceSaurus (Pages 250,276)</p>
<p>PS1 (5-8) INQ+POC –2 <i>Given data about characteristic properties of matter (e.g., melting and boiling points, density, solubility) identify, compare, or classify different substances.</i></p>	<p>2a recognizing that different substances have properties, which allow them to be identified regardless of the size of the sample.</p> <p>2b classifying and comparing substances using characteristic properties (e.g., solid, liquid, gas). Grade 6-8 ScienceSaurus (Pages 253-255) www.scilinks.org Code: GSSM255 Keyword: Atomic Models</p>
<p>PS1 (5-8) INQ+ SAE –3 <i>Collect data or use data provided to infer or predict that the total amount of mass in a closed system stays the same, regardless of how substances interact (conservation of matter).</i></p>	<p>3a explaining that regardless of how parts of an object are arranged, the mass of the whole is always the same as the sum of the masses of its parts. Grade 6-8 ScienceSaurus (Pages 253-255)</p>
<p>PS1 (5-8) SAE+MAS – 4 <i>Represent or explain the relationship between or among energy, molecular motion, temperature, and states of matter.</i></p>	<p>4a differentiating among the characteristics of solids, liquids, and gases.</p> <p>4b predicting the effects of heating and cooling on the physical state, volume and mass of a substance. Grade 6-8 ScienceSaurus (Pages 253-254)</p>
<p>PS1 (5-8) MAS –5 <i>Given graphic or written information, classify matter as atom/molecule or element/compound (Not the structure of an atom).</i></p>	<p>5a distinguishing between solutions, mixtures, and “pure” substances, i.e. compounds and elements. Grade 6-8 ScienceSaurus (Pages 259-264)</p>

PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.	
Assessment Target	Grade Span Expectation
<p>PS2 (5-8)-SAE+ POC- 6 <i>Given a real-world example, show that within a system, energy transforms from one form to another (i.e., chemical, heat, electrical, gravitational, light, sound, mechanical).</i></p>	<p>6a differentiating among the properties of various forms of energy.</p> <p>6b explaining how energy may be stored in various ways (e.g. batteries, springs, height in terms of potential energy).</p> <p>6c describing sound as the transfer of energy through various materials (e.g. solids, liquids, gases). Grade 6-8 ScienceSaurus (Pages 300,312)</p>
<p>PS2 (5-8) INQ+SAE+POC – 7 <i>Use data to draw conclusions about how heat can be transferred (convection, conduction, radiation)</i></p>	<p>7a identifying real world applications where heat energy is transferred and showing the direction that the heat energy flows. Grade 6-8 ScienceSaurus (Pages 301-304)</p>
PS 3 - The motion of an object is affected by forces.	
<p>PS3 (5-8) INQ+ POC –8 <i>Use data to determine or predict the overall (net effect of multiple forces (e.g., friction, gravitational, magnetic) on the position, speed, and direction of motion of objects.</i></p>	<p>8a using data or graphs to compare the relative speed of objects.</p> <p>8b recognizing that a force is a push or a pull.</p> <p>8c explaining that changes in speed or direction of motion are caused by forces.</p> <p>8d showing that electric currents and magnets can exert a force on each other. Grade 6-8 ScienceSaurus (Pages 275-282, 284) www.scilinks.org Code: GSSM283 Keyword: Newton’s Laws</p>

Grade 6 Earth and Space Science

ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.	
Assessment Target	Grade Span Expectation
<p>ESS1 (5-8) INQ+ POC –1 Use geological evidence provided to support the idea that the Earth’s crust/lithosphere is composed of plates that move.</p>	<p>1a identifying and describing the layers of the earth.</p> <p>1b plotting location of volcanoes and earthquakes and explaining the relationship between the location of these phenomena and faults. ScienceSaurus (Pages 177-178, 186-187, 195-196)</p>
<p>ESS1 (5-8) SAE–2 <i>Explain the processes that cause the cycling of water into and out of the atmosphere and their connections to our planet’s weather patterns.</i></p>	<p>2a diagramming, labeling and explaining the processes of the water cycle including vaporation, precipitation, and run-off, condensation, transpiration, and groundwater.</p> <p>2b explaining how condensation of water vapor forms clouds which affects climate and weather.</p> <p>2c developing models to explain how humidity, temperature, and altitude affect air pressure and how this affects local weather.</p> <p>2d identifying composition and layers of earth’s atmosphere ScienceSaurus (Pages 213-216, 218-227) www.scilinks.org Code GSSM 218 Keyword: Weather/Climate</p>
<p>ESS1 (5-8) POC –3 <i>Explain how earth events (abruptly and over time) can bring about changes in Earth’s surface: landforms, ocean floor, rock features, or climate.</i></p>	<p>3a describing events and the effect they may have on climate (e.g. El Nino, deforestation, glacial melting, and an increase in greenhouse gases). ScienceSaurus (Pages 213-216, 218-227) www.scilinks.org Code GSSM 218 Keyword: Weather/Climate</p>
<p>ESS1 (5-8) SAE+ POC –4 <i>Explain the role of differential heating or convection in ocean currents, winds, weather and weather patterns, atmosphere, or climate.</i></p>	<p>4a explaining how differential heating and convection affect Earth’s weather patterns.</p> <p>4b describing how differential heating of the oceans affects ocean currents which in turn influence weather and climate.</p> <p>4c explaining the relationship between differential heating/convection and the production of winds.</p> <p>4d analyzing global patterns of atmospheric movements to explain effects on weather.</p> <p>4e predicting temperature and precipitation changes associated with the passing of various fronts. ScienceSaurus (Pages 183, 217-226)</p>
<p>ESS1 (5-8) INQ+ POC –5 <i>Using data about a rock’s physical characteristics make and support an inference about the rock’s history and connection to rock cycle.</i></p>	<p>5a representing the processes of the rock cycle in words, diagrams, or models.</p> <p>5b citing evidence and developing a logical argument to explain the formation of a rock, given its characteristics and location. (e.g. classifying rock type using identification resources). ScienceSaurus (Pages 180)</p>

ESS2 - The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships.	
Assessment Target	Grade Span Expectation
<p>ESS2 (5-8) MAS –6 Compare and contrast planets based on data provided about size, composition, location, orbital movement, atmosphere, or surface features (includes moons).</p>	<p>6a identifying and comparing the size, location, distances, and movement (e.g. orbit of planets, path of meteors) of the objects in our solar system.</p> <p>6b comparing the composition, atmosphere, and surface features of objects in our solar system. ScienceSaurus (Pages 238-243)</p>
<p>ESS2 (5-8) NOS –7 Explain how technological advances have allowed scientists to re-evaluate or extend existing ideas about the solar system.</p>	<p>No GSEs for the ESS2 (5-8) NOS-7 Assessment Target</p>
<p>ESS2 (5-8) SAE+ POC –8 Explain temporal or positional relationships between or among the Earth, sun, and moon (e.g., night/day, seasons, year, tides) or how gravitational force affects objects in the solar system (e.g., moons, tides, orbits, satellites).</p>	<p>8a using models to describe the relative motion/position of the Earth, sun and moon.</p> <p>8b explaining night/day, seasons, year, and tides as a result of the regular and predictable motion of the Earth, sun, and moon.</p> <p>8c using a model of the Earth, sun and moon to recreate the phases of the moon.</p> <p>8d defining the Earth’s gravity as a force that pulls any object on or near the Earth toward its center without touching it. ScienceSaurus (Pages 232, 235, 283)</p>
ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time	
<p>No further targets for EK ESS3 at the 5-8 Grade Span. The GSEs listed below are assessed at the local level only.</p>	<p>9a describing the apparent motion/position of the objects in the sky. (e.g. constellations, planets).</p> <p>9b identifying the sun as a medium-sized star located near the edge of a disk-shaped galaxy of stars. ScienceSaurus (Pages 245, 248)</p>

Grade 6 Life Science

LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).	
Assessment Target	Grade Span Expectation
<p>LS1 (5-8) – INQ+ SAE- 1</p> <p>Using data and observations about the biodiversity of an ecosystem make predictions or draw conclusions about how the diversity contributes to the stability of the ecosystem.</p>	<p>1a recognizing that organisms have different features and behaviors for meeting their needs to survive (e.g., fish have gills for respiration, mammals have lungs, bears hibernate).</p> <p>ScienceSaurus (Pages 124)</p>
<p>LS1 (5-8) SAE+FAF –2</p> <p><i>Describe or compare how different organisms have mechanisms that work in a coordinated way to obtain energy, grow, move, respond, provide defense, enable reproduction, or maintain internal balance (e.g., cells, tissues, organs and systems).</i></p>	<p>2a describing structures or behaviors that help organisms survive in their environment (e.g., defense, obtaining nutrients, reproduction, and eliminating waste).</p> <p>ScienceSaurus (Pages 110, 134-135)</p>
<p>LS1 (5-8) POC -3</p> <p><i>Compare and contrast sexual reproduction with asexual reproduction</i></p>	<p>3a defining reproduction as a process through which organisms produce offspring.</p> <p>3b describing reproduction in terms of being essential for the continuation of a species.</p> <p>3c investigating and comparing a variety of plant and animal life cycles.</p> <p>ScienceSaurus (Pages 106-108, 113)</p>
<p>LS1 (5-8) FAF –4</p> <p><i>Explain relationships between or among the structure and function of the cells, tissues, organs, and organ systems in an organism</i></p>	<p>4a identifying cells as the building blocks of organisms.</p> <p>4b recognizing and illustrating (e.g. flow chart) the structural organization of an organism from a cell to tissue to organs to organ systems to organisms</p> <p>ScienceSaurus (Pages 76, 82)</p> <p>www.scilinks.org Code GSSM 076 Keyword: Cell Structures</p>

LS2 - Matter cycles and energy flows through an ecosystem.	
Assessment Target	Grade Span Expectation
<p>LS2 (5-8) INQ+SAE -5 <i>Using data and observations, predict outcomes when abiotic/biotic factors are changed in an ecosystem.</i></p>	<p>5a identifying and defining an ecosystem and the variety of relationships within it (e.g., predator/prey, consumer/ producer/decomposer, host/parasite, catastrophic events). ScienceSaurus (Pages 130, 133, 140)</p>
<p>LS2 (5-8) SAE- 6 <i>Given a scenario trace the flow of energy through an ecosystem, beginning with the sun, through organisms in the food web, and into the environment (includes photosynthesis and respiration).</i></p>	<p>6a. <i>identifying the sun as the major source of energy for life on earth and sequencing the energy flow in an ecosystem.</i> 6b. <i>describing the basic processes and recognizing the substances involved in photosynthesis and respiration.</i> ScienceSaurus (Pages 136-139)</p>
<p>LS2 (5-8) SAE-7 <i>Given an ecosystem, trace how matter cycles among and between organisms and the physical environment (includes water, oxygen, food web, decomposition, recycling but not carbon cycle or nitrogen cycle).</i></p>	<p>7a explaining the processes of precipitation, evaporation, condensation as parts of the water cycle. 7b completing a basic food web for a given ecosystem ScienceSaurus (Pages 133-135, 330)</p>
LS3 - Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry).	
<p>LS3 (5-8) MAS+FAF – 8 <i>Use a model, classification system, or dichotomous key to illustrate, compare, or interpret possible relationships among groups of organisms (e.g., internal and external structures, anatomical features).</i></p>	<p>8a stating the value of, or reasons for, classification systems. 8b following a taxonomic key to identify a given organism (e.g. flowering and non-flowering plants). ScienceSaurus (Pages 151-164) www.scilinks.org Code GSSM 151 Keyword: Classification Hierarchy</p>
<p>LS3 (5-8) POC-9 <i>Cite examples supporting the concept that certain traits of organisms may provide a survival advantage in a specific environment and therefore, an increased likelihood to produce offspring.</i></p>	<p>9a <i>explaining how a population’s or species’ traits affect their ability to survive over time.</i> 9b researching or reporting on possible causes for the extinction of an animal or plant. 9c explaining how fossil evidence can be used to understand the history of life on Earth. ScienceSaurus (Pages 126-128)</p>

LS 4 - Humans are similar to other species in many ways, and yet are unique among Earth's life forms.

<p>LS4 (5-8) INQ-10</p> <p><i>Use data and observations to support the concept that environmental or biological factors affect human body systems (biotic & abiotic).</i></p>	<p>10a identifying the biotic factors (e.g., microbes, parasites, food availability, aging process) that have an effect on human body systems.</p> <p>10b identifying the abiotic factors (e.g., drugs, altitude, weather, pollution) that have an effect on human body systems.</p> <p>10c identifying the biotic (e.g., microbes, parasites, food availability, aging process) and abiotic (e.g., radiation, toxic materials, carcinogens) factors that cause disease and affect human health.</p> <p>ScienceSaurus (Pages 84, 346-353)</p>
<p>LS4 (5-8) INQ+POC-11</p> <p><i>Using data provided, select evidence that supports the concept that genetic information is passed on from both parents to offspring.</i></p>	<p>11a differentiating between inherited and acquired traits.</p> <p>11b observing, recording and comparing differences in inherited traits (e.g. connected earlobe, tongue rolling).</p> <p>ScienceSaurus (Pages 117)</p>

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Rhode Island Science Grade Standards Expectations
Grades 6-8

Physical Science Grades 7-8

PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance).	
Assessment Target	Grade Span Expectation
PS1 (5-8) INQ-1 Investigate the relationships among mass, volume and density.	1a measuring mass and volume of both regular and irregular objects and using those values as well as the relationship $D=m/v$ to calculate density. ScienceSaurus Pages (250- 251) Enrichment Item (068)
PS1 (5-8) INQ+POC –2 <i>Given data about characteristic properties of matter (e.g., melting and boiling points, density, solubility) identify, compare, or classify different substances.</i>	2a identifying an unknown substance given its characteristic properties. 2b classifying and comparing substances using characteristic properties (e.g., solid, liquid, gas; metal, non-metal). ScienceSaurus Pages (250- 253)
PS1 (5-8) INQ+ SAE –3 <i>Collect data or use data provided to infer or predict that the total amount of mass in a closed system stays the same, regardless of how substances interact (conservation of matter).</i>	3a citing evidence to conclude that the amount of matter before and after undergoing a physical or a chemical change in a closed system remains the same. ScienceSaurus Pages (253-254)
PS1 (5-8) SAE+MAS – 4 <i>Represent or explain the relationship between or among energy, molecular motion, temperature, and states of matter.</i>	4a creating diagrams or models that represent the states of matter at the molecular level. 4b explaining the effect of increased and decreased heat energy on the motion and arrangement of molecules. 4c observing the physical processes of evaporation and condensation, or freezing and melting, and describe these changes in terms of molecular motion and conservation of mass. ScienceSaurus Pages (254, 259-261) www.scilinks.org CodeGSSM255, Keyword Atomic Models

Assessment Target	Grade Span Expectation
<p>PS1 (5-8) MAS –5</p> <p><i>Given graphic or written information, classify matter as atom/molecule or element/compound (Not the structure of an atom).</i></p>	<p>5a using models or diagrams to show the difference between atoms and molecules.</p> <p>5b classifying common elements and compounds using symbols and simple chemical formulas.</p> <p>5c interpreting the symbols and formulas of simple chemical equations.</p> <p>5d using symbols and chemical formulas to show simple chemical rearrangements that produce new substances (chemical change).</p> <p>5e explaining that when substances undergo physical changes, the appearance may change but the chemical makeup and chemical properties do not.</p> <p>5f explaining that when substances undergo chemical changes to form new substances, the properties of the new combinations may be very different from those of the old.</p> <p>ScienceSaurus Pages (255-271)</p> <p>www.scilinks.org CodeGSSM255, Keyword: Atomic Models</p> <p>www.scilinks.org CodeGSSM265 Keyword: Periodic Table</p>
<p>PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.</p>	
<p>PS2 (5-8)-SAE+ POC- 6</p> <p><i>Given a real-world example, show that within a system, energy transforms from one form to another (i.e., chemical, heat, electrical, gravitational, light, sound, mechanical).</i></p>	<p>6a using a real world example to explain the transfer of potential energy to kinetic energy.</p> <p>6b constructing a model to explain the transformation of energy from one form to another. (e.g. an electrical circuit changing electrical energy to light energy in a light bulb).</p> <p>6c explaining that while energy may be stored, transferred, or transformed, the total amount of energy is conserved.</p> <p>6d describing the effect of changing voltage in an electrical circuit.</p> <p>ScienceSaurus Pages (300, 314-319)</p>
<p>PS2 (5-8) INQ+SAE+POC – 7</p> <p><i>Use data to draw conclusions about how heat can be transferred (convection, conduction, radiation).</i></p>	<p>7a designing a diagram, model, or analogy to show or describe the motion of molecules for a material in a warmer and cooler state.</p> <p>7b explaining the difference among conduction, convection and radiation and creating a diagram to explain how heat energy travels in different directions and through different materials by each of these methods.</p> <p>ScienceSaurus Pages (303-304)</p>

PS 3 - The motion of an object is affected by forces.

Assessment Target	Grade Span Expectation
<p>PS3 (5-8) INQ+ POC –8 <i>Use data to determine or predict the overall (net effect of multiple forces (e.g., friction, gravitational, magnetic) on the position, speed, and direction of motion of objects.</i></p>	<p>8a measuring distance and time for a moving object and using those values as well as the relationship $s=d/t$ to calculate speed and graphically represent the data.</p> <p>8b solving for any unknown in the expression $s=d/t$ given values for the other two variables.</p> <p>8c differentiating among speed, velocity and acceleration.</p> <p>8d making and testing predictions on how unbalanced forces acting on objects change speed or direction of motion, or both.</p> <p>8e describing or graphically representing that the acceleration of an object is proportional to the force on the object and inversely proportional to the object's mass.</p> <p>8f differentiating between mass and weight.</p> <p>ScienceSaurus Pages (274-298)</p> <p>www.scilinks.org CodeGSSM283 Keyword: Newton's Laws</p> <p>www.scilinks.org CodeGSSM288 Keyword: Simple Machines</p>
<p>PS3 (5-8) SAE+INQ – Local Assessment Only <i>Experiment, observe, or predict how energy might be transferred by means of waves.</i></p>	<p>LAa experiment how light from the sun is made up of a mixture of many different colors of light (e.g. using prisms, spectrometers, crystals).</p> <p>LAB representing in words, diagrams, or other models <u>the visible spectrum as a part of the electromagnetic spectrum (consisting of visible light, infrared, and ultraviolet radiation) and composed of all colors of light</u></p> <p>LAc <u>differentiating between electromagnetic and mechanical waves.</u></p> <p>ScienceSaurus Pages (305-311, 321)</p> <p>www.scilinks.org CodeGSSM321</p> <p>Keyword: Electromagnetism</p>

Earth and Space Science

ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.	
Assessment Target	Grade Span Expectation
<p>ESS1 (5-8) INQ+ POC –1</p> <p>Use geological evidence provided to support the idea that the Earth’s crust/lithosphere is composed of plates that move.</p>	<p>1a citing evidence and developing a logical argument for plate movement using fossil evidence, layers of sedimentary rock, location of mineral deposits, and shape of the continents.</p> <p>ScienceSaurus (Page 181)</p> <p>www.scilinks.org CodeGSSM181, Keyword: Plate Tectonics</p>
<p>ESS1 (5-8) SAE–2</p> <p><i>Explain the processes that cause the cycling of water into and out of the atmosphere and their connections to our planet’s weather patterns.</i></p>	<p>No GSEs for the ESS1 (5-8) SAE-2 Assessment Target</p>
<p>ESS1 (5-8) POC –3</p> <p><i>Explain how earth events (abruptly and over time) can bring about changes in Earth’s surface: landforms, ocean floor, rock features, or climate</i></p>	<p>3a evaluating slow processes (e.g. weathering, erosion, mountain building, sea floor spreading) to determine how the earth has changed and will continue to change over time.</p> <p>3b evaluating fast processes (e.g. erosion, volcanoes and earthquakes) to determine how the earth has changed and will continue to change over time.</p> <p>3c investigating the effect of flowing water on landforms (e.g. stream table, local environment).</p> <p>ScienceSaurus Pages (188-193)</p> <p>www.scilinks.org CodeGSSM188, Keyword: Weathering/Erosion</p>
<p>ESS1 (5-8) SAE+ POC –4</p> <p><i>Explain the role of differential heating or convection in ocean currents, winds, weather and weather patterns, atmosphere, or climate.</i></p>	<p>4a explaining cause and effect relationships between global climate and energy transfer.</p> <p>4b using evidence to make inferences or predictions about global climate issues.</p> <p>ScienceSaurus Pages (227-230)</p> <p>www.scilinks.org CodeGSSM218, Keyword: Weathering/Climate</p>
<p>ESS1 (5-8) INQ+ POC –5</p> <p><i>Using data about a rock’s physical characteristics make and support an inference about the rock’s history and connection to rock cycle.</i></p>	<p>No GSEs for the ESS1 (5-8) INQ+POC-5 Assessment Target</p>

ESS2 - The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships.	
Assessment Target	Grade Span Expectation
<p><i>ESS2 (5-8) MAS –6</i></p> <p>Compare and contrast planets based on data provided about size, composition, location, orbital movement, atmosphere, or surface features (includes moons).</p>	<p>No GSEs for the ESS1 (5-8) INQ+POC-5 Assessment Target</p>
<p><i>ESS2 (5-8) NOS –7 Explain how technological advances have allowed scientists to re-evaluate or extend existing ideas about the solar system.</i></p>	<p>7a identifying major discoveries from different scientists and cultures and describing how these discoveries have contributed to our understanding of the solar system (e.g. timeline, research project, picture book).</p> <p>ScienceSaurus Pages (440-461)</p>
<p><i>ESS2 (5-8) SAE+ POC –8</i></p> <p><i>Explain temporal or positional relationships between or among the Earth, sun, and moon (e.g., night/day, seasons, year, tides) or how gravitational force affects objects in the solar system (e.g., moons, tides, orbits, satellites).</i></p>	<p>8a using or creating a model of the Earth, sun and moon system to show rotation and revolution.</p> <p>8b explaining night/day, seasons, year, and tides as a result of the regular and predictable motion of the Earth, sun, and moon.</p> <p>8c using a model of the Earth, sun and moon to recreate the phases of the moon.</p> <p>8d describing the relationship between mass and the gravitational force between objects.</p> <p>8e describing the relationship between distance and the gravitational force between objects. 8f explaining that the sun’s gravitational pull holds the Earth and other planets in their orbits, just as the planet’s gravitational pull keeps their moons in orbit.</p> <p>ScienceSaurus Pages (233-237)</p> <p>www.scilinks.org CodeGSSM238, Keyword: Solar System</p>
ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time	
<p>No further targets for EK ESS3 at the 5-8 Grade Span</p> <p><i>The GSEs listed below are assessed at the local level only</i></p>	<p><i>9a describing the universe as containing many billions of galaxies, and each galaxy contains many billions of stars</i></p> <p>ScienceSaurus (Pages (247))</p> <p>www.scilinks.org CodeGSSM238, Keyword: Solar System</p>

Life Science

LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).	
Assessment Target	Grade Span Expectation
<p>LS1 (5-8) – INQ+ SAE- 1</p> <p>Using data and observations about the biodiversity of an ecosystem make predictions or draw conclusions about how the diversity contributes to the stability of the ecosystem.</p>	<p>1a giving examples of adaptations or behaviors that are specific to a niche (role) within an ecosystem.</p> <p>1b explaining how organisms with different structures and behaviors have roles that contribute to each other’s survival and the stability of the ecosystem.</p> <p>ScienceSaurus (Pages 121, 127, 131-135)</p>
<p>LS1 (5-8) SAE+FAF –2</p> <p>Describe or compare how different organisms have mechanisms that work in a coordinated way to obtain energy, grow, move, respond, provide defense, enable reproduction, or maintain internal balance (e.g., cells, tissues, organs and systems).</p>	<p>2a explaining how the cell, as the basic unit of life, has the same survival needs as an organism (i.e., obtain energy, grow, eliminate waste, reproduce, provide for defense).</p> <p>2b observing and describing (e.g., drawing, labeling) individual cells as seen through a microscope targeting cell membrane, cell wall, nucleus, and chloroplasts.</p> <p>2c observing, describing and charting the growth, motion, responses of living organisms</p> <p>ScienceSaurus (Pages 76-82)</p> <p>www.scilinks.org CodeGSSM076, Keyword: Cell Structures</p>
<p>LS1 (5-8) POC -3</p> <p><i>Compare and contrast sexual reproduction with asexual reproduction.</i></p>	<p>3a explaining reproduction as a fundamental process by which the new individual receives genetic information from parent(s).</p> <p>3b describing forms of asexual reproduction that involve the genetic contribution of only one parent (e.g., binary fission, budding, vegetative propagation, regeneration).</p> <p>3c describing sexual reproduction as a process that combines genetic material of two parents to produce a new organism (e.g., sperm/egg, pollen/ova)</p> <p>ScienceSaurus (Pages 108, 113-123)</p> <p>www.scilinks.org CodeGSSM115, Keyword: DNA</p> <p>www.scilinks.org CodeGSSM118, Keyword: Human Genome Project</p>
<p>LS1 (5-8) FAF –4</p> <p><i>Explain relationships between or among the structure and function of the cells, tissues, organs, and organ systems in an organism.</i></p>	<p>4a explaining that specialized cells perform specialized functions. (e.g., muscle cells contract, nerve cells transmit impulses, skin cells provide protection).</p> <p>4b comparing individual cells of tissues and recognizing the similarities of cells and how they work together to perform specific functions.</p> <p>4c explaining how each type of cell, tissue, and organ has a distinct structure and set of functions that serve the organism as a whole.</p> <p>ScienceSaurus (Pages 76-99)</p> <p>www.scilinks.org CodeGSSM076, Keyword: Cell Structures</p>

LS2 - Matter cycles and energy flows through an ecosystem.

Assessment Target	Grade Span Expectation
<p>LS2 (5-8) INQ+SAE -5 <i>Using data and observations, predict outcomes when abiotic/biotic factors are changed in an ecosystem</i></p>	<p>5a identifying which biotic (e.g., bacteria, fungi, plants, animals) and abiotic (e.g., weather, climate, light, water, temperature, soil composition, catastrophic events) factors affect a given ecosystem.</p> <p>5b analyzing how biotic and abiotic factors affect a given ecosystem.</p> <p>5c predicting the outcome of a given change in biotic and abiotic factors in an ecosystem.</p> <p>5d using a visual model (e.g., graph) to track population changes in an ecosystem. ScienceSaurus (Pages 130-133, 140)</p>
<p>LS2 (5-8) SAE- 6 <i>Given a scenario trace the flow of energy through an ecosystem, beginning with the sun, through organisms in the food web, and into the environment (includes photosynthesis and respiration).</i></p>	<p>6a explaining the transfer of the sun’s energy through living systems and its effect upon them.</p> <p>6b describing the basic processes and recognizing the names and chemical formulas of the substances involved in photosynthesis and respiration.</p> <p>6c explaining the relationship between photosynthesis and respiration.</p> <p>6d creating or interpreting a model that traces the flow of energy in a food web. ScienceSaurus (Pages 135-138)</p>
<p>LS2 (5-8) SAE-7 <i>Given an ecosystem, trace how matter cycles among and between organisms and the physical environment (includes water, oxygen, food web, decomposition, recycling but not carbon cycle or nitrogen cycle).</i></p>	<p>7a diagramming or sequencing a series of steps showing how matter cycles among and between organisms and the physical environment.</p> <p>7b developing a model for a food web of local aquatic and local terrestrial environments.</p> <p>7c explaining the inverse nature or complementary aspects of photosynthesis/respiration in relation to carbon dioxide, water and oxygen exchange.</p> <p>7d conducting a controlled investigation that shows that the total amount of matter remains constant, even though its form and location change as matter is transferred among and between organisms and the physical environment (e.g., bottle biology, mass of a closed system over time). ScienceSaurus (Pages 135, 138-140)</p>

LS3 - Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry).

<p>LS3 (5-8) MAS+FAF – 8 <i>Use a model, classification system, or dichotomous key to illustrate, compare, or interpret possible relationships among groups of organisms (e.g., internal and external structures, anatomical features).</i></p>	<p>8a sorting organisms with similar characteristics into groups based on internal and external structures.</p> <p>8b explaining how species with similar evolutionary histories/characteristics are classified more closely together with some organisms than others (e.g., a fish and human have more common with each other than a fish and jelly fish)</p> <p>8c recognizing the classification system used in modern biology. ScienceSaurus (Pages 151-164) www.scilinks.org CodeGSSM151, Keyword: Classification Hierarchy</p>
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Assessment Target	Grade Span Expectation
<p>LS3 (5-8) POC-9</p> <p><i>Cite examples supporting the concept that certain traits of organisms may provide a survival advantage in a specific environment and therefore, an increased likelihood to produce offspring.</i></p>	<p>9a explaining that genetic variations/traits of organisms are passed on through reproduction and random genetic changes.</p> <p>9b gathering evidence that demonstrates evolutionary relationships among organisms (e.g., similarities in body structure, early development, traits).</p> <p>9c differentiating between acquired and inherited characteristics and giving examples of each.</p> <p>9d explaining how natural selection leads to evolution (e.g., survival of the fittest).</p> <p>9e describing how scientists’ understanding of the way species originate or become extinct has changed over time.</p> <p>ScienceSaurus (Pages 112-121, 126-127)</p> <p>www.scilinks.org CodeGSSM115, Keyword: DNA</p> <p>www.scilinks.org CodeGSSM118, Keyword: Human Genome Project</p>
<p>LS 4 - Humans are similar to other species in many ways, and yet are unique among Earth’s life forms.</p>	
<p>LS4 (5-8) INQ-10</p> <p><i>Use data and observations to support the concept that environmental or biological factors affect human body systems (biotic & abiotic).</i></p>	<p>10a predicting and explaining the effects of biotic factors (e.g., microbes, parasites, food availability, aging process) on human body systems.</p> <p>10b predicting and explaining the effect of abiotic factors (e.g., drugs, environmental conditions) on human body systems.</p> <p>10c researching and reporting on how biotic (e.g., microbes, parasites, food availability, aging process) and abiotic (e.g., radiation, toxic materials, carcinogens) factors cause disease and affect human health.</p> <p>ScienceSaurus (Pages 345-353)</p>
<p>LS4 (5-8) INQ+POC-11</p> <p><i>Using data provided, select evidence that supports the concept that genetic information is passed on from both parents to offspring.</i></p>	<p>11a recognizing that characteristics of an organism result from inherited traits of one or more genes from the parents and others result from interactions with the environment.</p> <p>11b tracing a genetic characteristic through a given pedigree (e.g., genealogical chart, Queen Victoria – hemophilia or hypothetical example) to demonstrate the passage of traits.</p> <p>11c identifying that genetic material (i.e. chromosomes and genes) is located in the cell’s nucleus.</p> <p>ScienceSaurus (Pages 109, 114-123)</p> <p>www.scilinks.org CodeGSSM115, Keyword: DNA</p> <p>www.scilinks.org CodeGSSM118, Keyword: Human Genome Project</p> <p>www.scilinks.org CodeGSSM1361, Keyword: Medical Ethics/Cloning</p>

Assessment Target	Grade Span Expectation
<p>LS4 (5-8) POC-12</p> <p><i>Describe the major changes that occur over time in human development from single cell through embryonic development to new born (i.e., trimesters: 1st – group of cells, 2nd - organs form, 3rd - organs mature.</i></p>	<p>12a identifying and sequencing the stages of human embryonic development.</p> <p>12b describing the changes from one stage of embryonic development to the next.</p> <p>12c comparing and contrasting embryonic development in various life forms (e.g., humans, frogs, chickens, sea urchins).</p> <p>12d comparing the patterns of human development after birth to life stages of other species.</p> <p>ScienceSaurus (Pages 82, 99-102, 106)</p>



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