

**NEVADA GRADE 8 SCIENCE**  
**Benchmarks and Item Specifications – July 2009**

C-1 PHYSICAL SCIENCE		
Standard	<b>Matter – Matter has various states with unique properties that can be used as basis for organization. The relationship between the properties of matter and its structure is an essential component of study in the physical sciences. The understanding of matter and its properties leads to practical applications, such as the capability to liberate elements from ore, create new drugs, manipulate the structure of genes and synthesize polymers.</b>	
Indicator	DOK**	Item Specifications
P.8.A.1 Students know particles are arranged differently in solids, liquids, and gases of the same substance. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Identify substances as solids, liquids and gases.</li> <li>• Describe the different states of matter using the terms shape and volume.</li> <li>• Given a diagram, recognize the arrangement of particles in solids, liquids and gases.</li> <li>• Describe the different states of matter as having more or less molecular kinetic energy.</li> </ul>
P.8.A.2 Students know elements can be arranged in the periodic table which shows repeating patterns that group elements with similar properties. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand that some elements can have similar properties (e.g., magnetism, conductivity, density, and solubility) based on their position in the periodic table.</li> <li>• Predict properties of different elements based on their arrangements in groups and periods on the periodic table.</li> </ul>
P.8.A.3 Students know methods for separating mixtures based on the properties of the components. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the terms solvent, solute, and solution.</li> <li>• Identify properties of matter including: magnetism, density, conductivity, solubility</li> <li>• Identify properties of matter that can be used to separate mixtures (e.g., filtering, chromatography, settling, chemical reaction, and evaporation).</li> </ul>
P.8.A.4 Students know atoms often combine to form molecules, and that compounds form when two or more different kinds of atoms chemically bond. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand physical and chemical properties.</li> <li>• Understand physical and chemical changes and identify evidence of chemical changes (e.g., releasing heat, absorbing heat, and producing gas).</li> <li>• Given a chemical formula, identify the number and type of atoms in molecule.</li> </ul>

		<ul style="list-style-type: none"> <li>Understand that chemical reactions can result in a pH change (acids, bases, and neutralizations).</li> </ul>
P.8.A.5 Students know mass is conserved in physical and chemical changes. E/S	DOK 2	<ul style="list-style-type: none"> <li>Identify that the total mass remains the same in a chemical change (i.e., the number and type of atoms in the reactants equals the number and type of atoms in the products).</li> <li>Know matter is conserved in a physical change.</li> </ul>
P.8.A.6 Students know matter is made up of tiny particles called atoms. E/S	DOK 2	<ul style="list-style-type: none"> <li>Identify that atoms are the smallest units of elements.</li> </ul>
P.8.A.7 Students know the characteristics of electrons, protons, and neutrons. E/S	DOK 2	<ul style="list-style-type: none"> <li>Know the structure of the atom.</li> <li>Know the electrical charges of electrons, protons, and neutrons.</li> <li>Know the relative size of electrons, protons, and neutrons compared to the overall atom.</li> </ul>
P.8.A.8 Students know substances containing only one kind of atom are elements which cannot be broken into smaller pieces by normal laboratory processes. E/S	DOK 2	<ul style="list-style-type: none"> <li>Identify that elements contain only one type of atom</li> </ul>

\*\* DOK essence – on state level assessments, at least 50% of items at the indicted DOK level or above

C-1 PHYSICAL SCIENCE		
Standard	<b>Force and Motion – The laws of motion are used to describe the effects of forces on the movement of objects.</b>	
Indicator	DOK**	Item Specifications
P.8.B.1 Students know the effects of <b>balanced</b> and <b>unbalanced</b> forces on an object's motion. E/S	DOK 2	<ul style="list-style-type: none"> <li>Know how motion is defined, described, and measured.</li> <li>Explain how balanced and unbalanced forces are related to the motion of an object.</li> <li>Explain the relationship between acceleration, force, and mass.</li> <li>Given a scenario, predict outcomes based on application of Newton's 3 laws of motion.</li> <li>Explain how the amount of friction between objects can be changed.</li> <li>Explain how an increase or decrease in friction can be beneficial.</li> <li>Create and/or interpret motion graphs.</li> </ul>
P.8.B.2 Students know electric currents can produce	DOK 2	<ul style="list-style-type: none"> <li>Understand the relationship between electric currents and</li> </ul>

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magnetic forces and magnets can cause electric currents. E/S		magnetic forces.
P.8.B.3 Students know every object exerts gravitational force on every other object, and the magnitude of this force depends on the mass of the objects and their distance from one another. I/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the relationship between mass and weight.</li> <li>• Explain the relationship between gravity and the motion of falling objects.</li> <li>• Identify and describe qualitatively the relationship between gravitational force, mass, and distance (Universal Law of Gravitation).</li> </ul>

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C-1 PHYSICAL SCIENCE		
Standard	<b>Energy – The total energy of the universe is constant. All events involve the transfer of energy in one form or another. In all energy transfers, the overall effect is that energy is spread out uniformly.</b>	
Indicator	DOK**	Item Specifications
P.8.C.1 Students know visible light is a narrow band within the electromagnetic spectrum. I/S	DOK 2	<ul style="list-style-type: none"> <li>• Know visible light is a small segment of the entire electromagnetic spectrum.</li> <li>• Recognize and identify the properties of light (e.g., color, brightness, wavelength, frequency, reflection, refraction, and diffraction).</li> <li>• Understand the relationship between the electromagnetic radiation emitted by an object and the object's temperature.</li> </ul>
P.8.C.2 Students know vibrations (e.g., sounds, earthquakes) move at different speeds in different materials, have different wavelengths, and set up wave-like disturbances that spread away from the source uniformly. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand that sound is produced and carried by molecules.</li> <li>• Identify and describe characteristics of waves: wavelength, frequency, amplitude and speed.</li> <li>• Recognize that waves transfer energy differently in different materials.</li> <li>• Identify the causes and effects of the Doppler Effect.</li> <li>• Understand the relationship between velocity, wavelength, and frequency.</li> <li>• Understand the difference between transverse waves and longitudinal waves.</li> </ul>
P.8.C.3 Students know physical, chemical, and nuclear changes involve a transfer of energy. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Recognize that in physical, chemical, and nuclear changes energy is transformed.</li> </ul>

<p>P.8.C.4 Students know energy cannot be created or destroyed, in a chemical or physical reaction, but only changed from one form to another. E/S</p>	<p>DOK 2</p>	<ul style="list-style-type: none"> <li>• Identify and describe differences between kinetic and potential energy.</li> <li>• Describe common energy transformations (e.g., chemical to motion, radiant to chemical, electrical to thermal, electrical to radiant).</li> </ul>
<p>P.8.C.5 Students know heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation. E/S</p>	<p>DOK 2</p>	<ul style="list-style-type: none"> <li>• Explain convection, conduction, and radiation using terms of heat transfer.</li> <li>• Given a scenario involving heat transfer, recognize convection, conduction, and radiation.</li> <li>• Compare different materials and their ability to transfer heat.</li> <li>• Understand the properties of conductors and insulators.</li> </ul>
<p>P.8.C.6 Students know electrical circuits provide a means of transferring electrical energy to produce heat, light, sound, and chemical changes. I/S</p>	<p>DOK 2</p>	<ul style="list-style-type: none"> <li>• Recognize and diagram parallel and series circuits.</li> <li>• Identify the different parts of parallel and series circuits.</li> <li>• Describe the function of each part of the circuit.</li> <li>• Understand the function of conductors, resistors, and insulators in circuits.</li> <li>• Describe the path electric current takes in parallel and series circuits.</li> <li>• Recognize that electricity is the transfer of energy through moving electrical charges (in both current and static electricity).</li> <li>• Know like charges repel and opposite charges attract (flow of electricity).</li> <li>• Know some mediums allow electricity to pass through them more readily than others.</li> <li>• Know electrical energy can be transformed into other types of energy (e.g., magnetic, heat, light, sound, and mechanical) and those other types can be transformed back into electrical energy.</li> </ul>

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C-2 LIFE SCIENCE		
Standard	<b>Heredity – Heredity is the genetic passing of a set of instructions from generation to generation. These instructions are encoded as DNA and may manifest themselves as characteristics. Some characteristics are inherited, and some result from interactions with the environment.</b>	
Indicator	DOK**	Item Specifications
L.8.A.1 Students know heredity is the passage of genetic instructions from one generation to the next generation. E/S	DOK 2	<ul style="list-style-type: none"> <li>Know reproduction of organisms includes cell division, transfer of genetic information, and the probability of certain characteristics passed from one generation to the next.</li> <li>Differentiate between asexual and sexual reproduction at the cellular level.</li> </ul>
L.8.A.2 Students know changes in genes of eggs and sperm can cause changes in inherited characteristics. E/S	DOK 2	<ul style="list-style-type: none"> <li>Know about inheritance, nature of mutations (beneficial and/or harmful), and genetic variation.</li> <li>Recognize that in sexual reproduction, mutations only get passed to the next generation when they occur in sex cells.</li> </ul>
L.8.A.3 Students know organisms can be bred for specific characteristics. I/L		
L.8.A.4 Students know some characteristics of an organism are the result of a combination of interaction with the environment and genetic information. E/S	DOK 2	<ul style="list-style-type: none"> <li>Distinguish between innate and learned behaviors.</li> <li>Describe physical traits that are inherited and influenced by the environment.</li> </ul>

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C-2 LIFE SCIENCE		
Standard	<b>Structure of Life – All living things are composed of cells. Cells can range from very simple to very complex and have structures which perform functions for the organism. Cells and cell structures can be damaged or fail because of intrinsic failures or disease.</b>	
Indicator	DOK**	Item Specifications
Students know all organisms are composed of cells, which are the fundamental units of life. E/S	DOK 2	<ul style="list-style-type: none"> <li>Know organisms are unicellular or multicellular.</li> <li>Recognize that cells are made of many specialized parts (i.e., nucleus, cell membrane, cell wall, chromosomes, chloroplast, vacuole, mitochondria)</li> </ul>
Students know cells grow, divide, and take in nutrients	DOK 2	<ul style="list-style-type: none"> <li>Understand the general process of cell division.</li> </ul>

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which they use to provide energy for cell functions. E/S		<ul style="list-style-type: none"> <li>• Identify that the specialized parts of cells perform specific functions.</li> <li>• Know the function of semi-permeable membranes.</li> <li>• Understand the general processes of cellular respiration and photosynthesis.</li> </ul>
Students know some organisms are made of just one cell and that multicellular organisms can consist of thousands to millions of cells working together. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Describe the specialization of cells in multicellular organisms (e.g., skeletal muscle, nerve cells, epidermal cells, cardiac muscle).</li> </ul>
Students know cells combine to form tissues that combine to form organs and organ systems that are specialized to perform life functions. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Know cells work together to form tissues, organs, and organ systems.</li> <li>• Know the functions of organs and organ systems. (i.e., skeletal, muscular, digestive, circulatory, respiratory, nervous)</li> <li>• Know there are different types of cells within tissues, organs, and organ systems in the same organism designed to take on specialized tasks.</li> </ul>
Students know disease can result from defects in body systems or from damage caused by infection. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the general ways that diseases are spread among organisms.</li> <li>• Understand the general ways that disease affects individual organisms.</li> <li>• Recognize that some diseases are caused by many different types of infections (e.g., virus – influenza, AIDS; bacteria – pneumonia, strep throat; protista – malaria; fungus – athlete's foot)</li> <li>• Identify that some diseases are infectious, others are inherited, and some result from a breakdown of body systems.</li> <li>• Know defects in body systems can be related to congenital, autoimmune, or environmental conditions.</li> </ul>

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C-2 LIFE SCIENCE

Standard	<b>Organisms and their Environment – A variety of ecosystems and communities exist on Earth. Ecosystems are dynamic interactions of organisms and their environment. Ecosystems have distinct characteristics and components that allow certain organisms to thrive. Change in one of more components can affect the entire ecosystem.</b>	
Indicator	DOK**	Item Specifications
L.8.C.1 Students know how matter and energy are transferred through food webs in an ecosystem. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Diagram and label a food web.</li> <li>• Given a scenario, identify the pathways of energy flow in the system.</li> <li>• Know the Sun is the primary source of energy for most living organisms on Earth.</li> <li>• Explain that matter and energy are transferred, transformed, and conserved within an ecosystem.</li> <li>• Know that in a food web, the amount of energy available decreases from producer to primary consumer to secondary consumer due to energy used for cellular/life functions that is lost as heat.</li> </ul>
L.8.C.2 Students know how to characterize organisms in any ecosystem by their functions. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Identify producers, consumers, decomposers and their functions in an ecosystem.</li> <li>• Understand how different populations interact within an ecosystem.</li> <li>• Understand different types of relationships (e.g., symbiotic, mutual, and parasitic/host) in an ecosystem.</li> <li>• Understand the process of succession (e.g., producers enter ecosystem first, followed by consumers).</li> </ul>
L.8.C.3 Students will evaluate how changes in environments can be beneficial or harmful. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Predict the beneficial and harmful results of a large change in an ecosystem.</li> <li>• Understand that ecosystems include both living (biotic) and non-living (abiotic) elements.</li> <li>• Given an example predict the relationships between living and non-living factors and the types of organisms that can live there.</li> <li>• Understand that changes in an ecosystem can be the result of human impact or natural causes/processes and can be beneficial and/or harmful.</li> </ul>
L.8.C.4 Students know inter-related factors affect the number and type of organisms an ecosystem can	DOK 2	<ul style="list-style-type: none"> <li>• Understand that inter-related factors include both living (biotic) and non-living (abiotic) elements.</li> </ul>

support. E/S		<ul style="list-style-type: none"> <li>• Predict and recognize the effect of a change in the inter-related factors in an ecosystem.</li> <li>• Understand that populations of organisms have specific adaptations that help them survive in an ecosystem and explain why an organism could/could not survive in a particular environment (e.g., due to specific adaptations, carrying capacity, and available biotic and abiotic resources).</li> <li>• Know living organisms compete for resources in an ecosystem and the amount of available resources limits the carrying capacity of an ecosystem</li> </ul>
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C-2 LIFE SCIENCE		
Standard	<p><b>Diversity of Life – Evidence suggests that living things change over periods of time. These changes can be attributed to genetic and/or environmental influences. This process of change over time is called biological evolution. The Diversity of life on Earth is classified using objective characteristics. Scientific classification uses a hierarchy of groups and subgroups based on similarities that reflect evolutionary relationships.</b></p>	
Indicator	DOK**	Item Specifications
L.8.D.1 Students know species can be identified and classified based upon their characteristics. (8.8.6) E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand how to classify species based on certain characteristics (e.g., DNA, skeletal structure, body covering, petal arrangement, and deciduous/coniferous) and behaviors.</li> <li>• Given a group of organisms and a key, classify organisms based on observable characteristics.</li> </ul>
L.8.D.2 Students know fossils provide evidence of how life and environmental conditions have changed throughout geologic time. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Know fossils provide evidence of how environments and organisms have changed over time.</li> <li>• Given examples, predict the relative age of rock layers based on the types of fossils that they contain.</li> <li>• Know the conditions necessary for fossil formation.</li> </ul>
L.8.D.3 Students know an organism’s behavior is based on both experience and on the species’ evolutionary history. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Know some mechanisms of biological evolution (e.g., natural selection, competition and survival, variation and adaptation, and genetic mutation).</li> <li>• Know that differences among individuals within a species can yield advantages and/or disadvantages in survival and/or reproduction.</li> </ul>

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C-3 EARTH/SPACE SCIENCE

Standard	<b>Atmospheric Processes and the Water Cycle - Earth systems have internal and external sources of energy, both of which create heat. Driven by sunlight and Earth's internal heat, a variety of cycles connect and continually circulate energy and material through the components of the earth systems.</b>	
Indicator	DOK**	Item Specifications
E.8.A.1 Students know seasons are caused by variations in the amounts of the Sun's energy reaching Earth's surface due to the planet's axial tilt. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the relationship between the sun and Earth and how equinoxes, solstices, and seasons occur.</li> <li>• Know Earth rotates on an axis, tilted at 23.5° as it orbits the sun (the tilt does not change orientation as Earth orbits the sun).</li> <li>• Know Earth's axial tilt produces winter in northern hemisphere when it is summer in the southern hemisphere and vice versa.</li> <li>• Know location and latitude affect the amount of sun's energy received.</li> </ul>
E.8.A.2 Students know how the processes involved in the water cycle affect climatic patterns. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the movement of water through the water cycle.</li> <li>• Understand the difference between climate and weather.</li> <li>• Understand the role of convection in the water cycle, weather, and climate (i.e., convection is the expansion and contraction of matter due to temperature).</li> <li>• Describe water in the atmosphere as water vapor, clouds, ice crystals, and describe its role as a greenhouse gas.</li> </ul>
E.8.A.3 Students know the properties that make water an essential component of the earth system. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand that water exists in all three states of matter on Earth.</li> <li>• Understand why ice floats on water and its impact on aquatic life.</li> <li>• Describe water in the atmosphere as water vapor, clouds, and ice crystals and describe its role as a greenhouse gas.</li> <li>• Know clouds, precipitation, glaciers, and polar ice caps are all sources of fresh water.</li> </ul>
E.8.A.4 Students understand the composition of Earth's atmosphere, emphasizing the role of the atmosphere in Earth's weather and climate. I/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand how temperature and altitude change in the different layers of the atmosphere.</li> <li>• Recognize that the Earth's atmosphere contains different gases and particulate matter, and is mostly nitrogen, and</li> </ul>

		<p>oxygen.</p> <ul style="list-style-type: none"> <li>Understand the role of atmospheric gases related to the greenhouse effect.</li> </ul>
E.8.A.5 Students know the difference between local weather and regional climate. I/S	DOK 2	<ul style="list-style-type: none"> <li>Know how weather systems work and how there are daily variations.</li> <li>Compare regional climates and describe how climate regions are influenced.</li> <li>Recognize and use weather instruments to determine local weather.</li> <li>Understand the result of human impact on local weather and climate (heat island effect, deforestation, thermal inversion, and fires).</li> </ul>
E.8.A.6 Students know topography and patterns of global and local atmospheric movement influence local weather which occurs primarily in the lower atmosphere. E/S	DOK 2	<ul style="list-style-type: none"> <li>Understand how topography affects local weather and seasons (e.g., rain shadow, global wind patterns, convection currents, lake effect, and global desert patterns).</li> <li>Recognize that most weather takes place in the part of the atmosphere closest to the Earth.</li> </ul>

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C-3 EARTH/SPACE SCIENCE		
Standard	<p><b>Solar System and Universe - The universe is a dynamic system of matter and energy. The universe is extremely large and massive with its components separated by vast distances. Tools of technology will continue to aid in the investigation of the components, origins, processes and age of the universe. Earth is one part of our solar system, which is within the Milky Way galaxy. The Sun is the energy producing star for our solar system. Most objects in our solar system are in predictable motion, resulting in phenomena such as day/night, year, and phases of the moon, tides, and eclipses.</b></p>	
Indicator	DOK**	Item Specifications
E.8.B.1 Students know the universe contains many billions of galaxies, and each galaxy contains many billions of stars. W/L		
E.8.B.2 Students know the solar system includes a great variety of planetary moons, asteroids, and comets. I/S	DOK 2	<ul style="list-style-type: none"> <li>Recognize the difference between moons, asteroids, and comets.</li> </ul>

E.8.B.3 Students know characteristics of the planets in our solar system. I/S	DOK 2	<ul style="list-style-type: none"> <li>Describe general planetary motions.</li> <li>Explain the relationship between moons and planets.</li> <li>Understand the characteristics of rocky (terrestrial) and gaseous planets.</li> </ul>
E.8.B.4 Students know Earth is part of a solar system located within the Milky Way Galaxy. E/S	DOK 1	<ul style="list-style-type: none"> <li>Identify the Earth as part of a solar system that is also part of a larger system that contains many thousands of star systems: the Milky Way Galaxy</li> </ul>
E.8.B.5 Students know the Sun is many thousands of times closer to Earth than any other star, and billions of times closer than the far end of the Milky Way Galaxy. W/L		
E.8.B.6 Students know the Sun is a medium-sized star located in the Milky Way Galaxy, part of which can be seen as a glowing band of light spanning the clear night sky. W/S	DOK 2	<ul style="list-style-type: none"> <li>Given examples, compare the mass, brightness, and color of the Sun to other stars.</li> </ul>
E.8.B.7 Students know regular and predictable motions of Earth around the Sun and the Moon around the Earth explain such phenomena as the day, the year, phases of the Moon, and eclipses. E/S	DOK 2	<ul style="list-style-type: none"> <li>Given a model, locate the position of Earth, the sun, and/or the moon that would produce a specific phase of the moon or type of eclipse, and determine the phase of the moon or types of eclipse based on the position of Earth, the sun, and the moon.</li> <li>Understand that the Earth/Moon system rotates and revolves around the sun and the moon rotates and revolves around Earth in a predictable pattern.</li> <li>Understand that our solar system is heliocentric.</li> </ul>

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C-3 EARTH/SPACE SCIENCE		
Standard	<b>Earth's Composition and Structure - Earth is composed of materials that move through the biogeochemical cycles. Earth's features are shaped by ongoing and dynamic processes. These processes can be constructive or destructive and occur over geologic time scales.</b>	
Indicator	DOK**	Item Specifications
E.8.C.1 Students know sedimentary rocks and fossils provide evidence for changing environments and the constancy of geologic processes. E/S	DOK 2	<ul style="list-style-type: none"> <li>Understand why most fossils are found in sedimentary rock.</li> <li>Given examples, identify how fossils and sedimentary rocks provide evidence of changing environments.</li> <li>Understand rocks are dated by several methods (e.g., the law of superposition, radiometric dating, and index fossils).</li> </ul>

E.8.C.2 Students know rocks at Earth's surface weather, forming sediments that are buried, then compacted, heated and often recrystallized into new rock. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the rock cycle, identify each type of rock (igneous, sedimentary, and metamorphic) and identify the processes needed to create each type of rock.</li> <li>• Recognize the processes of the rock cycle.</li> <li>• Understand that matter is conserved in the rock cycle.</li> </ul>
E.8.C.3 Students know Earth is composed of a crust (both continental and oceanic); hot convecting mantle; and dense, a metallic core. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Given a model, identify the major structural elements of the Earth (i.e., continental and oceanic crusts, mantle, and metallic core).</li> </ul>
E.8.C.4 Students know the very slow movement of large crustal plates results in geological events. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Know earthquakes, volcanoes, and mountain building are caused by heat from convection currents in the upper mantle powering the movement of plates in a continuous process.</li> <li>• Identify geological events that result from movements of crustal plates.</li> </ul>
E.8.C.5 Students know how geologic processes account for state and regional topography. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Relate geological processes to certain topographical features (e.g., basin and range, canyon, alluvial fans, and volcanoes).</li> <li>• Recognize and compare geologic processes that shape Nevada's regions.</li> </ul>
E.8.C.6 Students know minerals have different properties and different distributions according to how they form. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the properties of minerals (e.g., color, luster, hardness, reactivity, light transmission, and density).</li> <li>• Understand how minerals form and where they are typically found.</li> </ul>
E.8.C.7 Students know the characteristics, abundances, and location of renewable and nonrenewable resources found in Nevada. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Identify properties of renewable and nonrenewable resources.</li> <li>• Identify the common renewable and nonrenewable resources found in Nevada (e.g., copper, oil, coal, geothermal, wind, and silver).</li> <li>• Identify which resources are abundant and where they are found in Nevada.</li> </ul>
E.8.C.8 Students know soils have properties, such as color, texture, and water retention, and provide nutrients for life according to how they form. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Understand the relationship between particle size and soil composition and the ability of soil to retain water.</li> <li>• Identify properties of soils such as color, texture, and water retention.</li> <li>• Understand how soils form and the major components of soil.</li> </ul>

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**C-4 NATURE OF SCIENCE**

Standard	<p><b>Inquiry - Scientific Inquiry is the process by which humans systematically examine the natural world. Scientific inquiry is a human endeavor and involves observation, reasoning, insight, energy, skill, and creativity. Scientific inquiry is used to formulate and test explanations of nature through observation, experiments and theoretical or mathematical models. Scientific explanations and evidence are constantly reviewed and examined by others. Questioning, response to criticism and open communication are integral to the process of science.</b></p>	
Indicator	DOK**	Item Specifications
N.8.A.1 Students know how to identify and critically evaluate information in data, tables, and graphs. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Make inferences using information from data tables, charts, and graphs.</li> <li>• Identify meaningful data from an experiment and then organize the information into appropriate graphs, tables, or charts.</li> <li>• Given a data set (table, graph or chart) make prediction based on information presented.</li> <li>• Recognize the differences between precision, accuracy, and estimation.</li> </ul>
N.8.A.2 Students know how to critically evaluate information to distinguish between fact and opinion. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Make factual statements given an event, lab experiment, or observation, and then use those facts to make inferences and form conclusions.</li> </ul>
N.8.A.3 Students know different explanations can be given for the same evidence. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Given an example, recognize that results can be explained in more than one way</li> </ul>
N.8.A.4 Students know how to design and conduct a controlled experiment. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Given a specific question, design a way to test the question using appropriate variables and controls, defend the use of the experimental design, and describe weaknesses or flaws in the test, experiment, or research design.</li> <li>• Given an example identify which variable(s) should be controlled in the experimental design.</li> <li>• Explain how inquiry drives the procedures of science.</li> <li>• Use appropriate vocabulary when designing and conducting a controlled experiment (e.g., qualitative and quantitative, observations, inference, benefit, consequence, inferring, predicting, data, problem, hypothesis, conclusion, controls,</li> </ul>

		<ul style="list-style-type: none"> <li>and variable).</li> <li>• Understand how to report data and share findings.</li> </ul>
N.8.A.5 Students know how to use appropriate technology and laboratory procedures safely for observing, measuring, recording, and analyzing data. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Know established scientific procedures for lab activities and research (e.g., equipment gets used appropriately after instruction, accurately represent data, know and follow safety rules, and use data to provide evidence for a conclusion).</li> <li>• Given an example identify correct practices for safely conducting an experiment.</li> <li>• Use laboratory technology/equipment appropriately.</li> <li>• Use appropriate SI units.</li> </ul>
N.8.A.6 Students know scientific inquiry includes evaluating results of scientific investigations, experiments, observations, theoretical and mathematical models, and explanations proposed by other scientists. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Know and practice scientific inquiry.</li> <li>• Use reliable data collection, accurate graphing, experimental design and experimental controls.</li> <li>• Given multiple experiments addressing the same problem, compare, contrast, and analyze the meaning of all the results.</li> </ul>
N.8.A.7 Students know there are multiple methods for organizing items and information. E/S	DOK 2	<ul style="list-style-type: none"> <li>• Know how to use multiple methods such as data tables; choosing appropriate graphs to represent data and; using technology to organize information.</li> </ul>

\*\* DOK essence – on state level assessments, at least 50% of items at the indicted DOK level or above

**C-4 NATURE OF SCIENCE**

Standard	<p><b>Science, Technology, and Society - Technology defines a society or era. It can shape the environment in which people live, and it has increasingly become a larger part of people’s lives. While many of technology’s effects on society are regarded as desirable, other effects are seen as less desirable. These concepts are shared across subject areas such as science, math, technology, social studies, and language arts. The development and use of technology affects society and the environment in which we live, and at the same time, society influences the development of technology and its impact on culture.</b></p>	
Indicator	DOK**	Item Specifications
<p>N.8.B.1 Students understand that consequences of technologies can cause resource depletion and environmental degradation, but technology can also increase resource availability, mitigate environmental degradation, and make new resources economical. E/S</p>	<p align="center">DOK 2</p>	<ul style="list-style-type: none"> <li>• Identify examples and explain costs and benefits of a given technological advance.</li> <li>• Recognize and identify examples of the effect of technologies on use of resources.</li> <li>• Describe the development of major technological advances and explain the changing balance of cost and benefits.</li> <li>• Explain when and why society utilizes technology even though it can have a negative impact.</li> </ul>
<p>N.8.B.2 Students know scientific knowledge is revised through a process of incorporating new evidence gained through on-going investigation and collaborative discussion. E/S</p>	<p align="center">DOK 2</p>	<ul style="list-style-type: none"> <li>• Describe that scientific knowledge is constantly changing as scientists continue to investigate and share new information.</li> </ul>

\*\* DOK essence – on state level assessments, at least 50% of items at the indicted DOK level or above