

Science Achievement Indicators
Grade Span 6-8

Content Standard N8A

Students understand that scientific knowledge requires critical consideration of verifiable evidence obtained from inquiry and appropriate investigations.

Content Benchmarks	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<p>N.8.A.1 Students know how to identify and critically evaluate information in data, tables, and graphs.</p> <p>N.8.A.2 Students know how to critically evaluate information to distinguish between fact and opinion.</p> <p>N.8.A.3 Students know different explanations can be given for the same evidence.</p> <p>N.8.A.4 Students know how to design and conduct a controlled experiment.</p> <p>N.8.A.5 Students know how to use appropriate technology and laboratory procedures safely for observing, measuring, recording, and analyzing data.</p>	<p>the need for assistance to construct a data table or graph and/or make limited interpretations. (N.8.A.1)</p> <p>the need for assistance to distinguish fact from opinion. (N.8.A.2)</p> <p>the ability to explain phenomenon using a single scientific explanation. (N.8.A.3)</p> <p>the need for assistance to use variables in an experimental design. (N.8.A.4)</p> <p>the ability to collect data without regards to accuracy (N.8.A.5)</p> <p>the ability to conduct laboratory experiments using safe techniques. (N.8.A.5)</p>	<p>design and conduct an investigation, gathering evidence through observation. (N.8.A.1)</p> <p>draw conclusions when presented with scientific evidence. (N.8.A.1)</p> <p>identify variables in an investigation. (N.8.A.4)</p>	<p>interpret data tables and graphs. (N.8.A.1, N.8.A.5)</p> <p>generate a reasonable prediction based on information represented in graphs and charts. (N.8.A.1)</p> <p>distinguish between fact and opinion when given information. (N.8.A.2)</p> <p>explain that there can be more than one explanation for a phenomenon. (N.8.A.3)</p> <p>identify variable(s) that should be controlled in an experimental design. (N.8.A.4)</p> <p>recognize of the importance of accuracy in data collection and analysis. (N.8.A.5)</p> <p>safely and appropriately use laboratory equipment. (N.8.A.5)</p>	<p>communicate an argument by applying information from different representations of organized data. (N.8.A.1, N.8.A.3)</p> <p>design and conduct a scientific experiment. (N.8.A.4)</p>

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Content Standard N8A (continued)				
Students understand that scientific knowledge requires critical consideration of verifiable evidence obtained from inquiry and appropriate investigations.				
Content Benchmarks	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<p>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.</p> <p>N.8.A.7 Students know there are multiple methods for organizing items and information.</p>	<p>the need for assistance to identify a theoretical model to explain a scientific phenomenon. (N.8.A.6)</p>		<p>develop theoretical models to explain scientific phenomenon. (N.8.A.6)</p> <p>evaluate results from a scientific investigations, experiments, and observations. (N.8.A.6)</p>	<p>evaluate data for precision and accuracy based upon repeated experimentation shared through individual and collaborative work. (N.8.A.4, N.8.A.6)</p> <p>demonstrate cause-effect relationships using models. (N.8.A.6)</p>

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Content Standard N8B				
Students understand the interactions of science and society in an ever-changing world.				
Content Benchmarks	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<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.</p>	<p>recognition that the world is constantly changing. (N.8.B.1)</p>	<p>recognize that changes have costs or benefits associated with them. (N.8.B.1)</p>	<p>recognize that there are costs and benefits associated with technology. (N.8.B.1)</p>	<p>critique the costs/benefit tradeoffs of scientific, technological, and societal issues. (N.8.B.1)</p>
	<p>recognition that technologies and resources are related. (N.8.B.1)</p>	<p>give examples of the effect of technologies on resources. (N.8.B.1)</p> <p>explain that scientific contributions are made by individuals of all cultures, genders, ethnicities. (N.8.B.1)</p> <p>identify how the impact on society may be positive or negative when given an advance in technology. (N.8.B.1)</p>	<p>identify examples of the effect of technologies on resources. (N.8.B.1)</p>	<p>analyze the ethical influences on scientific, technological, and societal issues. (N.8.B.1)</p>
<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.</p>	<p>recognition scientific knowledge has changed. (N.8.B.2)</p>	<p>recognize that scientific knowledge is constantly changing as scientists investigate phenomena. (N.8.B.2)</p>	<p>recognize that scientific knowledge is constantly changing as scientists investigate and share new information. (N.8.B.2)</p>	
	<p>recognition that everybody can be a scientist. (N.8.B.2)</p>	<p>identify benefits of working with a team and sharing findings. (N.8.B.2)</p>		
	<p>ability to explain that scientists work together and share what they find out. (N.8.B.2)</p>			

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Grades 6-8

Content Standard P8A Students understand the properties and changes of properties in matter.				
Content Benchmarks	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<p>P.8.A.1 Students know particles are arranged differently in solids, liquids, and gases of the same substance.</p> <p>P.8.A.2 Students know elements can be arranged in the periodic table which shows repeating patterns that group elements with similar properties.</p> <p>P.8.A.3 Students know methods for separating mixtures based on the properties of the components.</p>	<p>recognition that matter can exist as solids, liquids, and gases and each are different. (P.8.A.1)</p> <p>recognize that elements are listed on a periodic table. (P.8.A.2)</p> <p>recognize that many things are mixtures. (P.8.A.3)</p> <p>the need of assistance to separate simple mixtures using filters, magnets and evaporation. (P.8.A.3)</p> <p>ability to sort objects according to properties (i.e., color, size, weight, shape, texture) (P.8.A.3)</p>	<p>recognize that matter can exist as a solids liquids, and gases with distinct physical properties. (P.8.A.1)</p> <p>recognize that matter is made of small particles. (P.8.A.2)</p> <p>explain that elements are represented by symbols in the periodic table. (P.8.A.2)</p> <p>explain that when two materials are combined, they sometimes form a completely different material. (P.8.A.3)</p>	<p>diagram the arrangement of particles in solids, liquids, and gases. (P.8.A.1)</p> <p>predict the properties of different elements by their arrangements in groups and periods on the periodic table. (P.8.A.2)</p> <p>physically separate mixtures using the properties of matter. (P.8.A.3)</p> <p>identify the following properties of matter: magnetism, density, conductivity and solubility. (P.8.A.3)</p>	<p>differentiate molecular motion of particles in solids, liquids, and gases. (P.8.A.1)</p> <p>identify atoms and ions by calculating the number of neutrons, protons, and electrons (P.8.A.2)</p> <p>experimentally apply the principles of magnetism, density, conductivity and solubility to separate mixtures. (P.8.A.3)</p> <p>distinguish between intrinsic and extrinsic properties. (P.8.A.3)</p>

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Content Standard P8A (continued)				
Students understand the properties and changes of properties in matter.				
Content Benchmarks	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
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.	ability to recognize that compounds are made of different atoms. (P.8.A.4)	name the atoms in the following compounds: table salt, water, and carbon dioxide. (P.8.A.4)	construct models of molecules and compounds. (P.8.A.4)	describe how atoms combine to form molecules, based on their electrons. (P.8.A.4)
P.8.A.5 Students know mass is conserved in physical and chemical changes.	ability to recognize the phases of water as its temperature changes. (P.8.A.5) recognizes that the mass of a substance remains the same while undergoing physical change in a concrete example. (P.8.A.5)	recognize that water's phase of matter is related to its temperature. (P.8.A.5) recognize that when matter goes through a physical change, the total mass remains the same. (P.8.A.5) recognize that the mass of a substance remains the same while undergoing chemical change in a concrete example. (P.8.A.5)	illustrate that when matter goes through a physical or chemical change, the total mass remains the same. (P.8.A.5) distinguish between physical and chemical changes. (P.8.A.5)	construct simple chemical equations. (P.8.A.5) balance basic chemical equations. (P.8.A.5)
P.8.A.6 Students know matter is made up of tiny particles called atoms.	the ability to recognize that many objects are made of many different types of materials. (P.8.A.6)	explain that an atom is "smaller" than a molecule. (P.8.A.6) name the atoms in a molecular formula for water, oxygen, and carbon dioxide. (P.8.A.6)	recognize that all matter is made of tiny particles called atoms. (P.8.A.6)	

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Content Standard P8B				
Students understand that position and motion of an object result from the net effect of the different forces acting on it.				
Content Benchmark	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<p>P.8.B.1 Students know the effects of balanced and unbalanced forces on an object's motion.</p>	<p>ability to predict how an object's position and /or motion will be changed when a push or pull is applied. (P.8.B.1)</p> <p>ability to describe the speed of an object. (P.8.B.1)</p> <p>recognition that a force is used to speed up or slow down an object. (P.8.B.1)</p>	<p>identify that unbalanced forces cause changes in an object's motion. (P.8.B.1)</p> <p>demonstrate that changes in an object's motion are dependent on its mass and the strength of the unbalanced force applied. (P.8.B.1)</p>	<p>apply the principles of balanced and unbalanced forces to describe the motion of an object. (P.8.B.1)</p>	<p>quantify the balanced and unbalanced forces to describe the speed and acceleration of an object. (P.8.B.1)</p>
<p>P.8.B.2 Students know electric currents can produce magnetic forces and magnets can cause electric currents.</p>	<p>ability to use magnets and/or electrically charged materials to move some objects without touching them. (P.8.B.2)</p>	<p>identify materials and objects that can be attracted by magnetic forces. (P.8.B.2)</p> <p>predict what will happen when two electrically charged materials are moved together. (P.8.B.2)</p> <p>demonstrate that an electric current can be used to produce a magnet. (P.8.B.2)</p>	<p>describe the relationship between electric current and magnetic forces. (P.8.B.2)</p>	

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Content Standard P8B (continued)				
Students understand that position and motion of an object result from the net effect of the different forces acting on it.				
Content Benchmark	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
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.	<p>ability to name gravity as a force. (P.8.B.3)</p> <p>ability to explain that gravity causes objects to fall to the ground unless something holds them up. (P.8.B.3)</p>	<p>explain that gravity is the force that pulls any object toward Earth without touching that object. (P.8.B.3)</p> <p>recognize that gravitational force is related to “size” and/or distance of two objects. (P.8.B.3)</p>	<p>explain that gravitational force depends on the relationship between object masses and the distances between them. (P.8.B.3)</p>	<p>describe gravity using the relationships between mass, and volume. (P.8.B.3)</p>

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Content Standard P8C Students understand transfer of energy.				
Content Standard	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
P.8.C.1 Students know visible light is a narrow band within the electromagnetic spectrum.	ability to recognize a wave. e.g. a rope, ocean wave, sound, earthquake and “slinky.” (P.8.C.1, P.8.C.2)	recognize that light and sound have wave properties. (P.8.C.1) recognize simple properties of light e.g. color, light and reflection. (P.8.C.1)	explain that there are visible and invisible wavelengths of light in the electromagnetic spectrum. (P.8.C.1)	
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.	ability to draw a wave and label parts with assistance. (P.8.C.2)	identify the characteristics of a wave: wavelength, frequency, amplitude and speed. (P.8.C.2) recognize that waves are related to energy. (P.8.C.2) distinguish between an open and a closed circuit. Ability to describe kinetic energy. (P.8.C.6) describe that waves travels through solids, liquids, and gases. (P.8.C.2)	describe the characteristics of a wave: wavelength, frequency, amplitude and speed. (P.8.C.2) describe that waves transfer energy differently (e.g. sound, earthquake and light), in different materials i.e. solids, liquids and gases. (P.8.C.2)	use models to demonstrate the transfer of energy in waves. (P.8.C.2) demonstrate that waves transfer energy differently in different materials. (P.8.C.2)
P.8.C.3 Students know physical, chemical, and nuclear changes involve a transfer of energy.	recognition that energy is present in objects. (P.8.C.3, P.8.C.4)	describe kinetic energy. (P.8.C.3, P.8.C.4)	differentiate between kinetic and potential energy. (P.8.C.3) explain that in physical, chemical, and nuclear changes energy is transformed. (P.8.C.3)	

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Content Standard P8C (continued) Students understand transfer of energy.				
Content Standard	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<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.</p>	<p>recognition that hot objects cool, and cool objects warm. (P.8.C.5)</p>	<p>name different types of energy. (P.8.C.4)</p>	<p>explain that one form of energy can be changed into another form of energy. (P.8.C.4)</p>	<p>describe the relationship between heat and temperature (P.8.C.5)</p>
<p>P.8.C.5 Students know heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation.</p>		<p>identify examples where heat is produced as a byproduct of energy conversion from one form to another. (P.8.C.4, P.8.C.5)</p> <p>describe examples of heat moving from one object to another by conduction, convection and radiation. P.8.C.5</p>	<p>describe conduction, convection, and radiation in terms of heat transfer using examples. (P.8.C.5)</p>	
<p>P.8.C.6 Students know electrical circuits provide a means of transferring electrical energy to produce heat, light, sound, and chemical changes.</p>		<p>recognition that some materials allow electricity to be transferred more easily than other. (P.8.C.6)</p>	<p>draw/label or construct a simple electrical circuit containing a battery or generator, wire, an electrical load (e.g., bulb), and a complete loop through which the electrical current can pass. (P.8.C.6)</p>	

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Grades 6-8

Content Standard L8A Students understand the role of genetic information in the continuation of a species.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
L.8.A.1 Students know heredity is the passage of genetic instructions from one generation to the next generation.	explain that animals and plants look like their parents, but can have some differences. (L.8.A.1)	recognize that genetic information is passed from one generation to another. (L.8.A.1) identify inherited physical characteristics in animals and plants. (L.8.A.1)	explain that genetic information is passed from one generation to another. (L.8.A.1) explain that there are differences between sexual and asexual reproduction. (L.8.A.1) recognize that ½ the genetic information is contributed by each parent in sexual reproduction. (L.8.A.1)	identify DNA as the site of genetic information. (L.8.A.1) explain the advantages and disadvantages between asexual and sexual reproduction. (L.8.A.1) explain how DNA copies are passed to offspring. (L.8.A.1) explain how ½ of the genetic information is contributed by each parent in sexual reproduction. (L.8.A.1)
L.8.A.2 Students know changes in genes of eggs and sperm can cause changes in inherited characteristics.	describe differences among the same kind of plant or animal. (L.8.A.2)	describe that reproduction is an essential characteristic for the continuation of every species. (L.8.A.2)	explain that in sexual reproduction mutations only get passed to the next generation when they happen in sex cells. (L.8.A.2) explain that changes in body cells do not get passed to offspring. (L.8.A.2)	explain how changes in body cells do not get passed to offspring. (L.8.A.2) explain that mutation is a source of variation and specification over time. (L.8.A.2)

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Content Standard L8A (continued)				
Students understand the role of genetic information in the continuation of a species.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
L.8.A.3 Students know organisms can be bred for specific characteristics.	identify variations among individuals within the human population. (L.8.A.2, L.8.A.3, L.8.A.4)	explain that, while offspring resemble their parents and each other, they also exhibit differences in characteristics. (L.8.A.3)	generate examples of selective breeding. (L.8.A.3)	explain advantages and disadvantages to selective breeding. (L.8.A.3)
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.	<p>identify, with assistance, the organisms that have been bred for selective traits. (L.8.A.4)</p> <p>can identify seasonal and/or environmental changes in plants and animals. (L.8.A.4)</p>	<p>recognize that humans breed animals and plants for characteristics. (L.8.A.3)</p> <p>recognize that not all mutations are harmful. (L.8.A.2, L.8.A.3, L.8.A.3, L.8.A.4)</p> <p>identify examples of learned behaviors in animals. (L.8.A.4)</p>	<p>differentiate between inherited and environmentally influenced traits. (L.8.A.4)</p>	<p>explain that there is natural variation within a species. (L.8.A.4)</p> <p>predict simple patterns of inheritance. (L.8.A.4)</p> <p>identify relationships between adaptations and survivability of a species. (L.8.A.4)</p>

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Content Standard L8B				
Students understand that living things are composed of cells, which are specialized in multi cellular organisms to perform a variety of life functions.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
L.8.B.1 Students know all organisms are composed of cells, which are the fundamental units of life.	give some characteristics of living versus non-living. (L.8.B.1)	explain that living things are made of cells. (L.8.B.1, L.8.B.3)	explain that all organisms are composed of one or more cells. (L.8.B.1)	use examples to explain how cell functions are related to cell structures. (L.8.B.1, L.8.B.2, L.8.B.3)
L.8.B.2 Students know cells grow, divide, and take in nutrients which they use to provide energy for cell functions.	distinguish plants from animals. (L.8.B.2, L.8.B.4)	recognize that cells divide in order to produce more cells. (L.8.B.2) explain that cells have components or parts. (L.8.B.2) identify only one or two structures in a cell diagram. (L.8.B.2) explain that animals have different kinds of cells within them. (L.8.B.2)	recognize that components of a cell replicate before a cell divides. (L.8.B.2) explain that cells have specialized components that perform specific functions. (L.8.B.2) describe that cells take in nutrients that provide energy for cell functions. (L.8.B.2)	differentiate between cells growing and organisms growing through cell division. (L.8.B.2) diagram the process of photosynthesis. (L.8.B.2) diagram the process of respiration. (L.8.B.2)
L.8.B.3 Students know some organisms are made of just one cell and that multicellular organisms can consist of thousands to millions of cells working together.	explain that plants and animals have structures that allow them to live, grow, and reproduce. (L.8.B.3, L.8.B.4)	match structures in plants and animals to their functions. (L.8.B.3)	explain the difference between unicellular versus multicellular organisms. (L.8.B.3)	

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Content Standard L8B (continued)				
Students understand that living things are composed of cells, which are specialized in multi cellular organisms to perform a variety of life functions.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<p>L.8.B.4 Students know cells combine to form tissues that combine to form organs and organ systems that are specialized to perform life functions.</p>		<p>identify the following human organ systems: muscular, skeletal, circulatory, reparatory, nervous, and digestive system. (L.8.B.4)</p>	<p>explain that tissues are composed of cells working together. (L.8.B.4)</p> <p>explain that organs are composed of tissues which work together. (L.8.B.4)</p> <p>explain that organ systems consist of organs working together. (L.8.B.4)</p>	<p>describe the basic functions of the following human organ systems: muscular, skeletal, circulatory, respiratory, nervous, and digestive system. (L.8.B.4)</p>
<p>L.8.B.5 Students know disease can result from defects in body systems or from damage caused by infection.</p>	<p>recognize that living organisms get diseases. (L.8.B.5)</p>	<p>recognition that not all diseases are infectious. (L.8.B.5)</p>	<p>explain that diseases occur when there is breakdown in the structure or function of a body system. (L.8.B.5)</p> <p>give examples of diseases that are inherited and diseases that are infectious. (L.8.B.5)</p>	<p>describe how a disease disrupts the homeostasis of an organism. (L.8.B.5)</p>

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Content Standard L8C				
Students understand how living and non-living components of ecosystems interact.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to ...
L.8.C.1 Students know how matter and energy are transferred through food webs in an ecosystem.	recognize that organisms are dependant on each other and their environment for survival. (L.8.C.1)	identify that the sun is the source of energy for many food webs. (L.8.C.1)	create a diagram illustrating the transfer of matter and energy in a food web. (L.8.C.1)	explain that energy is transformed and used for life processes within a food web. (L.8.C.1)
L.8.C.2 Students know how to characterize organisms in any ecosystem by their functions.	recognize that some animals eat plants and some animals eat other animals. (L.8.C.2)	identify producers, consumers, and decomposers. (L.8.C.1, L.8.C.2)	describe the relationships among producers, consumers, and decomposers. (L.8.C.1, L.8.C.2)	describe symbiotic relationships within an ecosystem. (L.8.C.2)
L.8.C.3 Students will evaluate how changes in environments can be beneficial or harmful.	<p>identify living and nonliving components within an environment. (L.8.C.3)</p> <p>recognize how plants and animals are affected by changes in their environment. (L.8.C.3)</p>	<p>give examples of an organism causing change in the environment. (L.8.C.3)</p> <p>identify changes in the environment that are beneficial or detrimental. (L.8.C.3)</p>	predict the beneficial and harmful results of a change in the environment. (L.8.C.3)	analyze trade-offs in decisions related to ecosystems. (L.8.C.1, L.8.C.2, L.8.C.3, L.8.C.4)

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Content Standard L8C (continued)				
Students understand how living and non-living components of ecosystems interact.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to ...
L.8.C.4 Students know inter-related factors affect the number and type of organisms an ecosystem can support.	name, with assistance, that there are many types of ecosystems. (L.8.C.4)	<p>describe many kinds of ecosystems (e.g. desert, marine, rain forest, etc.). (L.8.C.4)</p> <p>identify predator and prey. (L.8.C.4)</p> <p>explain how a given organism interacts with other organisms and the non-living parts of its ecosystem. (L.8.C.4)</p> <p>identify common adaptations that allow organisms to survive in specific ecosystems. (L.8.C.4)</p>	<p>predict relationships between non-living factors in an environment and the types of organisms that can live in that environment. (L.8.C.4)</p> <p>explain, using examples that ecosystems have limited resources affecting the number and type of organisms that can survive. (L.8.C.4)</p>	<p>explain how geography and climate determine type of ecosystem. (L.8.C.4)</p> <p>predict the impact on an organism when changes occur in an ecosystem. (L.8.C.4)</p> <p>compare the costs and benefits of man-made versus natural succession. (L.8.C.3, L.8.C.4)</p>

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Content Standard L8D				
Students understand that life forms change over time, contributing to the variety of organisms found on the Earth.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
L.8.D.1 Students know species can be identified and classified based upon their characteristics.	recognize the differences between plants and animals. (L.8.D.1)	classify animals and plants based on observable characteristics. (L.5.D.1, L.8.D.1)	classify organisms into species based upon their characteristics. (L.8.D.1)	explain how a scientific name is determined. (L.8.D.1)
L.8.D.2 Students know fossils provide evidence of how life and environmental conditions have changed throughout geologic time.	sort animals and plants based on observable characteristics. (L.8.D.1)	recognize that organisms are classified based on similarities and differences. (L.8.D.1)	infer changes in organisms and environmental conditions based on fossil evidence. (L.8.D.2)	explain a taxonomic hierarchy. (L.8.D.1)
	recognize that some plants and animals that once lived on the Earth are now extinct. (L.8.D.2)	explain how fossils are evidence of past life. (L.5.D.2, L.8.D.2)		identify an organism using a dichotomous key. (L.8.D.1)
		explain that some life forms have gone extinct. (L.8.D.2)		use fossil evidence to describe an ancient environment. (L.8.D.2)
		recognize that some organisms have changed from ancient ancestors but shows confusion about time involved. (L.8.D.2)		use fossil evidence to demonstrate a line of succession. (L.8.D.2)
				relate adaptations to the survival of a species. (L.8.D.2, L.8.D.3)

Achievement Indicators for Science
Grades 6-8

Content Standard L8D (continued)				
Students understand that life forms change over time, contributing to the variety of organisms found on the Earth.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
L.8.D.3 Students know an organism's behavior is based on both experience and on the species' evolutionary history.	list some adaptation plants and animals exhibit to seasonal and/or environmental changes e.g., hibernation, aestivation, migration, defoliation, and shedding. (L.8.D.3)	<p>identify a learned behavior. (L.8.D.3)</p> <p>contrast the differences among individuals within a species that give them advantages and/or disadvantages in surviving and reproducing. (L.8.D.3)</p>	<p>explain that organisms have passed changes to offspring over long periods of time. (L.8.D.3)</p> <p>differentiate between learned and inherited behaviors. (L.8.D.3)</p> <p>identify adaptation(s) that allow species to thrive and reproduce. (L.8.D.3)</p>	<p>provide evidence to explain natural selection. (L.8.D.3)</p> <p>explain that Evolution is an ongoing process (L.12.D.3)</p>

Achievement Indicators for Science
Grades 6-8

Content Standard E8A				
Students understand the relationship between the Earth's atmosphere, topography, weather and climate.				
Content Benchmark	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
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.	<p>know that the sun provides energy for the earth. (E.8.A.1)</p> <p>explain that the Earth is moving around the Sun. (E.8.A.1)</p> <p>explain that the Earth is spinning on its' axis. (E.8.A.1)</p>	<p>describe how the sun is the main source of energy for the earth. (E.8.A.1)</p> <p>explain that the Earth is rotating on its' axis. (E.8.A.1)</p> <p>explain that the Earth is revolving around the Sun. (E.8.A.1)</p> <p>relate seasonal change to amount of sunlight on the Earth. (E.8.A.1)</p> <p>understand that the earth has an axial tilt. (E.8.A.1)</p> <p>explain that the Sun is the major source of energy for Earth. (E.8.A.1)</p>	<p>explain the seasons are caused by the variations in the Sun's energy reaching Earth due to the planet's axial tilt. (E.8.A.1)</p> <p>distinguish between the characteristics of weather and the characteristics of climate. (E.8.A.1, E.8.A.5)</p>	<p>explain the seasons are caused by the variations in the Sun's energy reaching Earth due to the planet's axial tilt and how this variation causes changes in climate. (E.8.A.1)</p> <p>explain that the Earth's tilt does not change as it revolves around the Sun. (E.8.A.1)</p> <p>describe the differences between the rotational and revolutionary period of the Earth. (E.8.A.1)</p> <p>diagram an explanation for seasonal change. (E.8.A.1)</p> <p>explain the effect of the Earth's axial tilt on the Earth's weather and seasons. (E.8.A.1)</p> <p>explain that the sun's energy is the driving force for Earth's weather. (E.8.A.1)</p>

Achievement Indicators for Science
Grades 6-8

Content Standard E8A (continued)				
Students understand the relationship between the Earth's atmosphere, topography, weather and climate.				
Content Benchmark	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
E.8.A.2 Students know how the processes involved in the water cycle affect climatic patterns.	describe water on Earth as liquid (rain, rivers, lakes, oceans), or solid (snow and ice), and gas (water vapor). (E.8.A.2)	describe or diagram the water cycle. (E.8.A.2, E.8.A.3)	describe how the water cycle affects climate. (E.8.A.2) explain that energy transfers drive Earth's water cycle. (E.8.A.2)	describe the energy transfer at each part of the water cycle. (E.8.A.2)
E.8.A.3 Students know the properties that make water an essential component of the earth system.	describe and label the water cycle. (E.8.A.2, E.8.A.3)		identify the properties that make water an essential component on Earth. (E.8.A.3)	describe regional and global water resources and concerns. (E.8.A.3)
E.8.A.4 Students understand the composition of Earth's atmosphere, emphasizing the role of the atmosphere in Earth's weather and climate.	recognize that the Earth has an atmosphere. (E.8.A.4)	explain that the Earth is surrounded by an atmosphere of gases. (E.8.A.4) recognize that there is oxygen and water in the atmosphere. (E.8.A.4) explain that water can be fresh or salt water. (E.8.A.4) recognize that weather takes place in the Earth's atmosphere. (E.8.A.4) understand that the Earth's atmosphere is made of gasses. (E.8.A.4)	describe that the Earth's atmosphere contains gases and particulate matter, and is mostly composed of nitrogen and oxygen. (E.8.A.4)	describe the layers and composition of the atmosphere. (E.8.A.4)

Achievement Indicators for Science
Grades 6-8

Content Standard E8B				
Students understand characteristics of our solar system that is part of the Milky Way galaxy.				
Content Standard	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
E.8.B.1 Students know the universe contains many billions of galaxies, and each galaxy contains many billions of stars.	describe planets and stars. (E.8.B.1, E.8.B.2) explain that stars are like our Sun, but they are so far away that they look like points of light. (E.8.B.1, E.8.B.5, E.8.B.6)	describe that there are many more stars than can be seen by the unaided eye. (E.8.B.1) describe that stars have different colors and brightness. (E.8.B.1)	recognize that the universe contains many galaxies, each containing billions of stars. (E.8.B.1)	
E.8.B.2 Students know the solar system includes a variety of planetary moons, asteroids, and comets.	identify the solar system. (E.8.B.2, E.8.B.3, E.8.B.4)	describe Earth as part of the Solar System. (E.8.B.2)	model our Solar System. (E.8.B.2)	describe the differences among the Sun, planets, moons, asteroids, and comets. (E.8.B.2) describe the formation of the Sun and Solar System using evidence from available models. (E.8.B.2)
E.8.B.3 Students know characteristics of the planets of our solar system.	recognize that the moon reflects light from the Sun. (E.8.B.2, E.8.B.3, E.8.B.7)	explain that the moon reflects the Sun's light. (E.8.B.2, E.8.B.3) recognize that there are planets, moons, asteroids, and comets in the Solar System. (E.8.B.2)	compare the characteristics of planets in our Solar System. (E.8.B.3)	compare the daytime/nighttime cycles and years for various planets in the Solar System. (E.8.B.3)

Achievement Indicators for Science
Grades 6-8

Content Standard E8B (continued)				
Students understand characteristics of our solar system that is part of the Milky Way galaxy.				
Content Standard	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<p>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.</p> <p>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.</p>		<p>identify the Sun as a star. (E.8.B.1, E.8.B.2, E.8.B.3, E.8.B.4, E.8.B.5, E.8.B.6)</p> <p>explain that other stars are so far away that they appear as points of light. (E.8.B.5, E.8.B.6)</p> <p>model size and scale of the Earth/Moon system. (E.8.B.2, E.8.B.3, E.8.B.4, E.8.B.7)</p> <p>recognize that the Moon orbits the Earth. (E.8.B.2, E.8.B.3, E.8.B.4, E.8.B.7)</p> <p>record the cyclical patterns of the Sun and Moon (e.g., changes in the appearance of the Moon, changes in sunrise and sunset locations). (E.8.B.2, E.8.B.3, E.8.B.7)</p>	<p>compare the mass, brightness, and color of the Sun to other stars. (E.8.B.6)</p> <p>describe how days, year, phases of the moon, and eclipses occur. (E.8.B.7)</p>	

Achievement Indicators for Science
Grades 6-8

Content Standard E8C Students understand that landforms result from a combination of constructive and destructive processes.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
E.8.C.1 Students know sedimentary rocks and fossils provide evidence for changing environments and the constancy of geologic processes.	recognize fossils and explain how they are formed. (E.8.C.1)	recognize that scientists can determine the age of rocks and fossils. (E.8.C.1) describe how fossils are evidence of past life. (E.8.C.1)	discuss how fossils and sedimentary rocks provide evidence for changing environments. (E.8.C.1)	determine the approximate age of rocks given data related to superposition, radiometric dating, and index fossils. (E.8.C.1)
E.8.C.2 Students know rocks at Earth's surface weather, forming sediments that are buried, then compacted, heated and often recrystallized as new rock.	recognize that there are different types of rocks. (E.8.C.2)	describe how water, wind, and ice constantly change the Earth's land surface by eroding rock and soil and depositing them in other places. (E.8.C.2)	diagram the rock cycle. (E.8.C.2)	identify unknown rocks as sedimentary, metamorphic, and igneous. (E.8.C.2) describe how sedimentary, metamorphic, and igneous rocks are formed. (E.8.C.2)
E.8.C.3 Students know Earth is composed of a crust (both continental and oceanic); hot convecting mantle; and a dense, metallic core.	recognize the continents and oceans on Earth. (E.8.C.3, E.8.C.4)	explain that volcanoes bring matter from deep inside the Earth to the surface. (E.8.C.2, E.8.C.3, E.8.C.4, E.8.C.5)	diagram the structure of the earth including the continental and oceanic crust, hot convecting mantle, and metallic core. (E.8.C.3)	diagram the composition of the Earth's interior. (E.8.C.3) describe the composition of the Earth's layers. (E.8.C.3)

Achievement Indicators for Science
Grades 6-8

Content Standard E8C (continued)				
Students understand that landforms result from a combination of constructive and destructive processes.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
E.8.C.4 Students know the very slow movement of large crustal plates result in geological events.		<p>recognize that various landforms result from slow process (crustal movements, erosion) and fast processes (earthquakes, volcanoes). (E.8.C.2, E.8.C.3, E.8.C.4, E.8.C.5)</p> <p>explain that the Earth is different inside than it is on the surface. (E.8.C.3, E.8.C.4)</p> <p>recognize that continents have changed shape and location. (E.8.C.3, E.8.C.4)</p> <p>recognize of earthquakes as destructive forces. (E.8.C.4)</p> <p>recognize of volcanoes as constructive or destructive forces. (E.8.C.4)</p>	<p>model geological events that result from large crustal plate movements. (E.8.C.4)</p>	<p>explain where plates are converging and spreading. (E.8.C.4)</p> <p>explain how earthquakes happen, related to plate tectonics. (E.8.C.4)</p> <p>explain the relationship between convection and movement of crustal plates. (E.8.C.4)</p>
E.8.C.5 Students know how geologic processes account for state and regional topography.		<p>describe changes in land forms that result from both slow and fast geologic processes. (E.8.C.3, E.8.C.4, E.8.C.5)</p> <p>describe how weathering breaks down rocks. (E.8.C.5)</p>	<p>contrast the various geological processes that shape Nevada regions. (E.8.C.5)</p>	<p>describe, using evidence, how major landforms were formed. (E.8.C.5)</p>

Achievement Indicators for Science
Grades 6-8

Content Standard E8C (continued)				
Students understand that landforms result from a combination of constructive and destructive processes.				
Content Benchmarks	Work at the Emergent/Developing level may indicate ability to...	Work at the Approaches level may indicate ability to...	Work at the Meets level demonstrates ability to...	Work at the Exceeds level demonstrates ability to...
<p>E.8.C.6 Students know minerals have different properties and different distributions according to how they form.</p> <p>E.8.C.7 Students know the characteristics, abundances, and location of renewable and nonrenewable resources found in Nevada.</p> <p>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.</p>		<p>explain that each mineral has unique properties, but cannot list or describe the properties. (E.8.C.6)</p> <p>explain that rock is composed of different combinations of minerals. (E.8.C.6)</p> <p>recognize that minerals can be mined. (E.8.C.6, E.8.C.7)</p> <p>differentiate between renewable and nonrenewable resources. E.8.C.7</p> <p>explain that there are different kinds of soils. (E.8.C.8)</p> <p>describe the components of soil and how it varies from place to place. (E.8.C.8)</p>	<p>classify minerals according to their properties. (E.8.C.6)</p> <p>recognize that minerals are unevenly distributed throughout the Earth's crust according to how they form. (E.8.C.6)</p> <p>identify characteristics, abundances and locations of renewable and nonrenewable resources in Nevada. (E.8.C.7)</p> <p>identify properties of soils such as color, texture, and water retention. (E.8.C.8)</p> <p>explain how soils are formed through weathering and decomposition. (E.8.C.2, E.8.C.8)</p> <p>explain that soils provide nutrients for life. (E.8.C.8)</p>	<p>identify minerals using their properties. (E.8.C.6)</p> <p>describe how and where minerals are mined in Nevada. (E.8.C.7)</p> <p>discuss the costs and benefits of using renewable and nonrenewable resources. (E.8.C.7)</p>