

Jemez Valley Public Schools
SEVENTH GRADE SCIENCE • CONTENT MAP

Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand I: Scientific Thinking and Practice			
Standard I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.			
<p>(Apply Throughout Year)</p> <p>Use a variety of print and web resources to collect information, inform investigations, and answer a scientific question or hypothesis</p> <p>Use models to explain the relationships between variables being investigated</p> <p>Describe how bias can affect scientific investigation and conclusions</p> <p>Critique procedures used to investigate a hypothesis</p> <p>Analyze and evaluate scientific explanations</p> <p>Understand that the number of data (sample size) influences the reliability of a prediction</p> <p>Use mathematical expressions to represent data and observations collected in scientific investigations</p> <p>Select and use an appropriate model to examine a phenomenon</p>			<p>Use a variety of print and web resources to collect information, inform investigations, and answer a scientific question or hypothesis</p> <p>Use models to explain the relationships between variables being investigated</p> <p>Describe how bias can affect scientific investigation and conclusions</p> <p>Critique procedures used to investigate a hypothesis Analyze and evaluate scientific explanations</p> <p>Understand that the number of data (sample size) influences the reliability of a prediction</p> <p>Use mathematical expressions to represent data and observations collected in scientific investigations</p> <p>Select and use an appropriate model to examine a phenomenon</p>
Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand II: Content of Science			
Standard I: (Physical Science) Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.			
	<p>Identify characteristics of radioactivity, including: decay in time of some elements to others, release of energy, damage to cells</p> <p>Know that chemical reactions are essential to life processes</p> <p>Know how various forms of energy are transformed through organisms and ecosystems, including: sunlight and photosynthesis, energy transformation in living systems (e.g., cellular processes changing chemical energy to heat and motion)</p>	<p>Explain how matter is transferred from one organism to another and between organisms and their environment (e.g., consumption, the water cycle, the carbon cycle, the nitrogen cycle)</p> <p>Know that the total amount of matter (mass) remains constant although its form, location, and properties may change (e.g., matter in the food web)</p> <p>Describe how substances react chemically in characteristic ways to form new substances (compounds) with different properties (e.g., carbon and oxygen combine to form carbon dioxide in respiration)</p>	<p>Describe how substances react chemically in characteristic ways to form new substances (compounds) with different properties (e.g., carbon and oxygen combine to form carbon dioxide in respiration)</p> <p>Know that forces cause motion in living systems, including: the principle of a lever and how it gives mechanical advantage to a muscular/skeletal system lift objects, forces in specific systems in the human body (e.g., how the heart generates blood pressure, how muscles contract and expand to produce motion)</p>

		Know how various forms of energy are transformed through organisms and ecosystems: effect of mankind's use of energy and other activities on living systems (e.g., global warming, water quality)	
Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand II: Content of Science			
Standard I: (Life Science) Understand the properties, structures, and processes of living things and the interdependence of living things and their environments..			
Identify the living and nonliving parts of an ecosystem and describe the relationships among these components	Know that reproduction is a characteristic of all living things and is essential to the continuation of a species	Explain biomes (i.e., aquatic, desert, rainforest, grasslands, tundra) and describe the New Mexico biome	Know that reproduction is a characteristic of all living things and is essential to the continuation of a species
Explain the conditions and resources needed to sustain life in specific ecosystems	Identify the differences between sexual and asexual reproduction	Explain how individuals of species that exist together interact with their environment to create an ecosystem (e.g., populations, communities, niches, habitats, food webs)	Know that, in sexual reproduction, an egg and sperm unite to begin the development of a new individual
Know how to classify organisms: domain, kingdom, phylum, class, order, family, genus, species	Know that, in sexual reproduction, an egg and sperm unite to begin the development of a new individual Know that organisms that sexually reproduce fertile offspring are members of the same species	Explain the conditions and resources needed to sustain life in specific ecosystems	Explain how organs are composed of tissues of different types of cells (e.g., skin, bone, muscle, heart, intestines)
	Understand that some characteristics are passed from parent to offspring as inherited traits and others are acquired from interactions with the environment	Describe how the availability of resources and physical factors limit growth (e.g., quantity of light and water, range of temperature, composition of soil) and how the water, carbon, and nitrogen cycles contribute to the availability of those resources to support living systems	Describe how some cells respond to stimuli (e.g., light, heat, pressure, gravity)
	Know that hereditary information is contained in genes that are located in chromosomes, including: (a) determination of traits by genes, (b) traits determined by one or many genes, and (c) more than one trait sometimes influenced by a single gene	Understand how diverse species fill all niches in an ecosystem	Describe how factors (radiation, UV light, drugs) can damage cellular structure or function
	Understand that organisms are composed of cells and identify unicellular and multicellular organisms	Describe how typical traits may change from generation to generation due to environmental influences (e.g., color of skin, shape of eyes, camouflage, shape of beak)	
	Explain how organs are composed of tissues of different types of cells (e.g., skin, bone, muscle, heart, intestines)	Explain that diversity within a species is developed by gradual changes over generations	
	Understand that many basic functions of organisms are carried out in cells, including: growth and division to produce more cells (mitosis), specialized functions of cells (e.g., reproduction, nerve-signal transmission, digestion, excretion, movement, transport of oxygen)	Know that organisms can acquire unique characteristics through naturally occurring genetic variations	
	Compare the structure and processes of plant cells and animal cells	Identify adaptations that favor the survival of organisms in their environments (e.g., camouflage, shape of beak)	
	Describe how some cells respond to stimuli (e.g., light, heat, pressure, gravity)	Understand the process of natural selection	
		Explain how species adapt to changes in	

	Describe how factors (radiation, UV light, drugs) can damage cellular structure or function	the environment or become extinct and that extinction of species is common in the history of living things Know that the fossil record documents the appearance, diversification, and extinction of many life forms	
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Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand II: Content of Science			
Standard III: (Earth and Space Science) Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.			
	Explain how energy from the sun supports life on Earth Understand how the remains of living things give us information about the history of Earth, including: layers of sedimentary rock, the fossil record, and radioactive dating showing that life has been present on Earth for more than 3.5 billion years Understand how living organisms have played many roles in changes of Earth's systems through time (e.g., atmospheric composition, creation of soil, impact on Earth's surface)	Explain why Earth is unique in our solar system in its ability to support life Know that changes to ecosystems sometimes decrease the capacity of the environment to support some life forms and are difficult and/or costly to remediate	
Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand II: Science and Society			
Standard I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.			
			Analyze the contributions of science to health as they relate to personal decisions about smoking, drugs, alcohol, and sexual activity Analyze how technologies have been responsible for advances in medicine (e.g., vaccines, antibiotics, microscopes, DNA technologies) Describe how scientific information can help individuals and communities respond to health emergencies (e.g., CPR, epidemics, HIV, bio-terrorism)