

# K-12 Science Strands Scope and Sequence

Mexico Public Schools Created Spring 2009

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## Matter and Energy - Forms of Energy

K	1	2	3	4	5
<p>Use senses, simple tools, and standard measures to describe, identify, and sort physical property of objects.</p> <p>Compare different sounds and their sources.</p> <p>Identify the ear as a receiver of sound.</p>	<p>Measure and compare mass using an equal arm balance.</p> <p>Measure and compare temperature of objects using a thermometer.</p> <p>Identify causes of changing temperature.</p> <p>Identify plants need sun to grow.</p>	<p>Use simple tools (equal arm balances) to describe and compare physical properties including mass and volume.</p> <p>Observe, describe, and classify mixtures.</p> <p>Recognize and describe how sound travels, pitch changes, and how vibrations affect loudness.</p>	<p>Identify sources of thermal energy.</p> <p>Describe how the addition of heat changes the three forms of matter (by conducting simple investigations).</p> <p>Identify everyday objects (by using observations including the 5 senses) as solids, liquids and gases and be able to compare their properties (such as mass and volume).</p> <p>Identify the three things necessary to produce a shadow.</p>	<p>Describe and compare the masses and volume of objects using balances and cylinders while recognizing space and matter properties.</p> <p>Classify materials as conductors or insulators of electricity while conducting and observing the energy transfer in open and closed electrical circuits.</p> <p>Observe and describe how mixtures are made while distinguishing between the components in a mixture/solution.</p>	<p>Classify states of matter using physical properties (volume, shape, ability to flow) noting that the mass of matter remains constant as it changes state.</p> <p>Use balances and spring scales to measure mass to the nearest gram.</p> <p>Recognize how light is transferred and reflected to the receiver through space in straight lines.</p>

6	7	8	Physical Science	Physics	Chemistry	Biology	Earth Science
<p>Recognize that matter has mass and volume; and can be identified by physical and chemical properties.</p> <p>Describe how sound travels in waves, requiring a medium.</p> <p>Describe evidence that light travels in straight lines, requiring no medium, that can be affected by various surfaces.</p>	<p>Classify materials as conductors or insulators of electricity.</p> <p>Diagram and identify a complete electrical circuit.</p> <p>Compare parallel and series circuits.</p> <p>Describe how current flow can be transferred by conduction, convection &amp; radiation.</p> <p>Describe how like charges ( magnetic, static, electrical) repel and unlike charges attract.</p> <p>Describe how thermal energy can be transferred by conduction, convection &amp; radiation.</p> <p>Describe the types, and identify examples, of materials that transfer heat by conduction, convection , &amp; radiation.</p> <p>Classify materials as conductors or insulators of thermal energy.</p>	<p>Use appropriate tools and senses to describe physical and chemical processes.</p> <p>Describe, explain and identify physical and chemical changes and the processes that cause them.</p> <p>Describe how mass is conserved during any physical or chemical change.</p> <p>Recognize that each element has characteristic properties</p>	<p>Compare densities of regular and irregular objects.</p> <p>Identify pure substances by their physical and chemical properties.</p> <p>Distinguish between chemical and physical changes.</p> <p>Compare and contrast properties of metals, nonmetals, metalloids, gases and noble gases.</p> <p>Distinguish between elements or compounds.</p> <p>Describe the Law of Conservation of Mass and the Law of conservation of energy.</p> <p>Identify forms of energy and energy transfer.</p> <p>Identify sources of energy.</p> <p>Distinguish between kinetic and potential energy.</p> <p>Understand and identify the parts of the atomic model.</p>	<p>Compare densities of regular and irregular objects.</p> <p>Identify substances by their physical and chemical properties.</p> <p>Classify a substance as an element or compound.</p> <p>Predict the effect of pressure and temperature on solids, liquids and gases.</p> <p>Using the Kinetic Theory model, explain the changes that occur in the distance between atoms/molecules and temperature of a substance as energy is absorbed or released during a phase change.</p> <p>Calculate the number of protons, electrons and neutrons given atomic mass and atomic number.</p>	<p>Interpret a periodic table as substances form into elements and compounds.</p> <p>Compare/contrast properties of metals, metalloids, gases.</p> <p>Compare/contrast properties of solutions as acid, bases.</p> <p>Identify substances by chemical properties (density, hardness, melting point, phases).</p> <p>Predict the effect of temperature and pressure on properties of solids, liquids, gases.</p> <p>Describe effects of frequencies of electromagnetic waves (UV, radioactivity, gamma).</p>	<p>Construct a simple food web using arrows to show energy flow.</p> <p>Label trophic levels on an ecological pyramid.</p> <p>Calculate change of energy (calories); biomass and numbers in eco-pyramid (10% rule for energy and biomass).</p> <p>Relate energy and mass changes to the Law of Conservation of Mass.</p> <p>Explain how nutrients are recycled within the carbon-oxygen cycle (photosynthesis, cellular respiration, decomposition, and combustion).</p> <p>Explain how nutrients are recycled within the nitrogen cycle (nitrogen fixation, denitrification, nitrogen fixation, conversion to nitrates, nitrites, ammonia).</p> <p>Predict how energy flow will be altered when changes are made in food webs and ecosystems.</p> <p>Explain how convection currents from heating of the earth causes climates at various latitudes.</p>	<p>Compare and evaluate various forms of energy (wind, solar, geothermal, fossil fuels) including economics and global impact.</p>

# Matter and Energy - Physical and Chemical Properties

K	1	2	3	4	5
Use senses, simple tools, and standard measures to describe, identify, and sort physical property of objects.	Measure and compare mass using an equal arm balance.	Use simple tools (equal arm balances) to describe and compare physical properties including mass and volume.  Observe, describe, and classify mixtures.	Describe how the addition of heat changes the three forms of matter (by conducting simple investigations).  Identify everyday objects (by using observations including the 5 senses) as solids, liquids and gases and be able to compare their properties (such as mass and volume).	Describe and compare the masses and volume of objects using balances and cylinders while recognizing space and matter properties.  Classify materials as conductors or insulators of electricity while conducting and observing the energy transfer in open and closed electrical circuits.  Observe and describe how mixtures are made while distinguishing between the components in a mixture/solution.	Classify states of matter using physical properties (volume, shape, ability to flow) noting that the mass of matter remains constant as it changes state. Use balances and spring scales to measure mass to the nearest gram.

6	7	8	Physical Science	Physics	Chemistry	Biology	Earth Science
Recognize that matter has mass and volume; and can be identified by physical and chemical properties.		<p>Use appropriate tools and senses to describe physical and chemical processes.</p> <p>Describe, explain and identify physical and chemical changes and the processes that cause them.</p> <p>Describe how mass is conserved during any physical or chemical change.</p> <p>Recognize that each element has characteristic properties.</p>	<p>Compare the densities of regular and irregular objects.</p> <p>Identify physical and chemical properties.</p> <p>Distinguish between chemical and physical changes.</p> <p>Describe properties of metals, nonmetals, metalloids, gases and noble gases.</p> <p>Distinguish between elements or compounds.</p> <p>Understand the law of conservation of mass.</p>	<p>Compare the densities of regular and irregular objects.</p> <p>Identify substances by their physical and chemical properties.</p> <p>Classify a substance as an element or compound.</p> <p>Explain the atomic structure as it relates to changes and properties of solids, liquids, and gases.</p>	<p>Interpret a periodic table as substances form into elements and compounds.</p> <p>Compare/contrast properties of metals, metalloids, gases.</p> <p>Compare/contrast properties of solutions as acid, bases.</p> <p>Identify substances by chemical properties (density, hardness, melting point, phases).</p> <p>Predict the effect of temperature and pressure on properties of solids, liquids, gases.</p>	<p>Calculate change of energy (calories); biomass and numbers in eco-pyramid (10% rule for energy and biomass).</p> <p>Relate energy and mass changes to the Law of Conservation of Mass.</p> <p>Explain how nutrients are recycled within the carbon-oxygen cycle (photosynthesis, cellular respiration, decomposition, and combustion).</p> <p>Explain how nutrients are recycled within the nitrogen cycle (nitrogen fixation, denitrification, nitrogen fixation, conversion to nitrates, nitrites, ammonia).</p>	<p>Identify minerals by their chemical and physical properties (hardness, luster, cleavage, color, pH, solubility, density, fracture).</p> <p>Identify the parts of the electromagnetic spectrum and relate parts to everyday uses.</p> <p>Relate 3 types of heat transfer (radiation, convection, conduction) to earth science processes (plate tectonics, weather, rock cycle) .</p>

# Force and Motion

K	1	2	3	4	5
<p>Describe an object's position relative to another object.</p> <p>Use "push" &amp; "pull" to cause objects to move.</p> <p>Use magnets to move objects.</p>	<p>Compare the position of an object relative to another object. (left/right)</p> <p>Describe an object's motion.</p> <p>Describe ways to change the motion of an object.</p> <p>Compare the speeds of two moving objects.</p> <p>Identify the force (push/pull) required to do work (move object).</p>	<p>Describe and compare the amount of force needed to raise an object to given height with or without levers, incline planes, or differing slopes.</p> <p>Describe and compare how differing amounts of mass and differing amounts of force affect distances traveled by an object.</p> <p>Use inclined planes or levers to raise objects.</p> <p>Describe the direction and amount of force needed to change an object's motion.</p> <p>Describe magnetism as a force and recognize magnets attract and repel each other and certain material.</p> <p>Measure and compare the force required to overcome friction and move an object over different surfaces.</p>		<p>Using a spring scale, describe and compare forces that slow down or stop when encountering friction on different textured surfaces.</p> <p>Introduction to simple machines.</p> <p>Predict how the force and mass of an object will affect the speed, motion, distance, and time that the object travels.</p>	<p>Identify the forces acting on a load and use a spring scale to measure the resistance and effort force needed to lift a load with/without simple machines.</p> <p>Describe how friction affects the amount of force needed to do work over different surfaces.</p> <p>Explain that work is done on an object when force is applied and a distance is moved.</p> <p>Identify the simple machines in common tools and recognize that simple machines change the amount and/or direction of a force.</p>

6	7	8	Physical Science	Physics	Chemistry	Biology	Earth Science
	<p>Classify and describe different types of motion.</p> <p>Calculate the speed of an object in motion.</p> <p>Construct and interpret line graphs representing speed.</p> <p>Identify and describe the types of forces acting on an object.</p> <p>Compare gravitational forces between objects.</p> <p>Compare the effect(s) of balanced and unbalanced forces on an object's motion.</p> <p>Describe how friction affects the motion of an object and ways to increase or decrease friction.</p> <p>Explain that force = mass X acceleration.</p> <p>Measure and compare forces acting on an object using a spring scale.</p> <p>Describe and calculate work being done on an object.</p> <p>Explain how simple machines affect effort, direction and distance while doing work and evaluate simple machine designs.</p>	<p>Review unit- Rocket Launchers</p>	<p>Graph and interpret motion.</p> <p>Measure and analyze an object's motion in terms of speed, velocity, and acceleration.</p> <p>Explain that momentum depends on the mass of the object and the velocity with which it is traveling.</p> <p>Identify and describe the forces acting on an object.</p> <p>Explain that every object exerts a gravitational force on every other object.</p> <p>Identify Newton's 3 laws of motion and how the interaction of mass and forces are used to predict changes in motion.</p> <p>Predict the path of an object when the net force changes.</p> <p>Describe power in terms of work and time.</p> <p>Explain how efficiency can be expressed as a ratio of work input and work output.</p> <p>Explain how work transfers energy into and out of a mechanical system.</p>	<p>Analyze various forces (e.g. gravity, acceleration, momentum, torque, weight) acting on object(s).</p> <p>Calculate various forces using force diagrams and collected data with appropriate units.</p> <p>Identify and describe properties of matter as they relate Newton's 3 Laws of Motion (inertia, acceleration, action/reaction).</p> <p>Predict the effect of electromagnetic forces on objects in motion.</p>			<p>Compare gravitational forces between two objects (tides, moon, planetary motions).</p>

# Earth Systems- Weather/atmosphere/water cycle

K	1	2	3	4	5
<p>Recognize moving air is felt as wind.</p> <p>Observe and describe daily weather-precipitation, wind, cloud cover, temp.</p> <p>Observe and describe each seasons' weather conditions.</p>	<p>Compare weather data observed throughout the year.</p> <p>Recognize patterns between weather relationships (cloudy rain).</p>		<p>Recognize that air takes up space.</p> <p>Identify parts of the water cycle.</p> <p>Describe clouds and precipitation as forms of water.</p>		<p>Recognize the atmosphere is composed of a mixture of gases, water, and minute particles.</p> <p>Trace the path of water as it cycles through the hydrosphere, geosphere, and atmosphere, and identify the forms water takes as it moves through the water cycle.</p> <p>Identify and use appropriate tools (thermometer, anemometer, wind vane, rain gauge, weather maps, satellite images) to collect and summarize relationships between weather data collected over a period of time.</p>

6	7	8	Physical Science	Physics	Chemistry	Biology	Earth Science
	<p>Describe the properties of the atmosphere and their effects of weather.</p> <p>Compare climate and weather.</p> <p>Identify solar radiation as the energy source for weather.</p> <p>Explain and diagram the steps of the water cycle, including the different forms of water (snow, rain, sleet, fog, clouds, dew, and humidity).</p> <p>Explain how thermal energy is transferred through the water cycle.</p> <p>Explain that the differences in the heating of the Earth's surface affect the temperature and movement of air.</p> <p>Identify weather conditions associated with warm fronts and cold fronts.</p> <p>Identify factors that affect weather patterns and climate.</p> <p>Collect and interpret weather data, including temperature, humidity, atmospheric pressure, wind speed and direction.</p>			<p>Explain how global wind and ocean currents are produced on the Earth's surface.</p>	<p>Explain how the composition and temperature of the atmosphere impacts clouds, weather and heat transfer.</p> <p>Explain the impact of ozone layer changes.</p>		<p>Describe composition and temperature of the layers of the atmosphere.</p> <p>Explain how changes in ozone layer impact Earth.</p> <p>Explain cause of weather phenomena and how it affects global climates.</p>

# Earth Systems- Geology, Erosion, and Weathering

K	1	2	3	4	5
		<p>Observe and describe physical properties and different components of soil (odor, color, size, texture, etc.).</p> <p>Observe and describe physical properties of rocks (size, shape, color).</p> <p>Observe and describe examples of slow changes in Earth's surface due to processes like decay, freezing, thawing, erosion.</p>		<p>Compare physical properties of rocks.</p> <p>Identify and describe the components of soil, physical properties, and decomposition process.</p> <p>Identify the major land forms and describe how weathering agents (weathering-erosion) change the Earth's surface.</p> <p>Compare fossils of MO to present day organisms.</p>	<p>Classify major bodies of water as fresh or salt, solid or liquid, flowing or stationary surface or groundwater.</p>

6	7	8	Physical Science	Physics	Chemistry	Biology	Earth Science
		<p>Describe the properties of minerals and how to perform tests to determine the properties.</p> <p>Describe steps of the rock cycle and how rocks change from one type of rock to another type.</p> <p>Describe processes of weathering and erosion, their agents and how they cause surface changes, and change land forms.</p> <p>Describe the components of soil, factors that influence soil texture, soil fertility, and resistance to erosion.</p> <p>Describe how plate motion and internal forces create earthquakes, volcanoes and mountains.</p> <p>Explain how fossils are formed and what information they provide scientists.</p>		<p>Describe the effects of movement of crustal plates.</p> <p>Describe and understand the theory of plate tectonics.</p> <p>Use evidence from real and relative dating techniques to infer geological history.</p> <p>Illustrate and explain the convection currents that result from the uneven heating inside the mantle and how it moves the crustal plates.</p>	<p>Explain how the composition and temperature of the atmosphere impacts clouds, weather and heat transfer.</p> <p>Explain the impact of changes in the ozone layer.</p>	<p>Relate Missouri's geomorphology (karst, topography, streams, plains) to the various biomes and ecosystems.</p>	<p>Identify composition of various soils, minerals and rock.</p> <p>Discuss factors that cause weathering, erosion, and formation of land forms.</p> <p>Relate how heat transfers in the Earth's mantle and core affects the movement of various earth plates (transform, diverging, converging).</p> <p>Explain processes of plate tectonics (including sea floor spreading, fossils, land formations, core drilling, magnetic alignment).</p> <p>Predict location of earthquakes, plate boundaries, epicenters.</p> <p>Explain the rock cycle process.</p> <p>Relate Missouri's geomorphology (karst, topography, plains, flood plains) to economic and environmental impact.</p>

# Living Organisms

K	1	2	3	4	5
<p>Recognize that living things have offspring with physical similarities and differences.</p> <p>Observe and compare structures and behaviors of a different plants and animals.</p>	<p>Identify basic needs of most animals and plants.</p> <p>Predict changes in plant growth when growing conditions are altered.</p> <p>Identify/compare the physical structures of a variety of plants (stems, leaves, seeds, roots, flowers) and animals (beaks, body covering etc.).</p> <p>Identify the parts of a plant and their functions.</p> <p>Identify basic physical structures of animals and their functions.</p> <p>Distinguish between plants and animals based on observable structures and behaviors.</p>	<p>Recognize that animals progress through life cycles of birth, growth, development, reproduction, and death.</p> <p>Record observations on life cycles of different animals. (butterfly, dog, frog, chicken, snake).</p> <p>Identify and relate the similarities and differences among animal parents and their offspring.</p>	<p>Describe the basic needs and life cycles of plants.</p> <p>Illustrate and trace the path of water and nutrients as they move through the transport systems of a plant.</p> <p>Identify the major organs and their functions in plants.</p> <p>Identify and relate the similarities and differences between plants and their offspring.</p> <p>Describe and recognize a plants progress through life cycles of seed germination, growth, and reproduction.</p>		<p>Explain how similarities are the basis for classification while distinguishing between plants (producers) and invertebrate and vertebrate consumers.</p> <p>Classify vertebrate animals into classes (amphibians, birds, reptiles, mammals, fish) based on their characteristics.</p> <p>Identify plants or animals using simple dichotomous keys.</p> <p>Recognize the major life processes carried out by the major systems of plants and animals. (do not name organs within each system or explain processes).</p>

<b>6</b>	<b>7</b>	<b>8</b>	<b>Physical Science</b>	<b>Physics</b>	<b>Chemistry</b>	<b>Biology</b>	<b>Earth Science</b>

*Approved, Mexico Board of Education, June 16, 2009*

<p>Describe the common life processes necessary to survival of organisms.</p> <p>Compare/contrast plant and animal cell structures in unicellular and multi-cellular organisms.</p> <p>Recognize that plants use energy from the sun to produce food and oxygen through photosynthesis.</p>		<p>Identify and contrast structures of plants and animals and their function.</p> <p>Describe common life processes. (review of)</p> <p>Describe the functions of cell organelles in plants and animals.</p> <p>Describe the process of photosynthesis.</p> <p>Describe the functions and interactions of human organ systems.</p> <p>Explain the cause, effect, prevention and treatment of disease.</p> <p>Compare and contrast asexual and sexual reproduction</p>				<p>Identify cell structure and their functions within organisms.</p> <p>Explain how organisms are classified according to taxa (DKPCOFGS) based on structures, DNA and development.</p> <p>Explain the interrelationships between the processes of photosynthesis and cellular respiration including energy transfer.</p> <p>Relate the 4 major organic macromolecules (protein, lipids, carbohydrates, nucleic acids) to their functions in life processes.</p> <p>Explain how enzymes (protein) affect chemical reactions.</p> <p>Predict the movement of molecules across a semi-permeable membrane to maintain homeostasis.</p> <p>Describe the structure of DNA and explain how proteins are synthesized.</p> <p>Predict the probability of genotypic and phenotypic traits within a species, including sex-linked traits.</p> <p>Explain how genetic variations can occur in species (e.g.- mutation, meiosis, gene recombination)</p> <p>Compare mitosis (forming somatic diploid cells) to meiosis (forming gamete haploid cells).</p> <p>Compare asexual &amp; sexual reproduction.</p>	
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# Ecology

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K	1	2	3	4	5
Describe how the seasons affect the behavior of plants and animals.	Identify ways man depends on plants and animals for food, clothing & shelter.	Observe and describe ways humans use Earth's material in everyday life.		Identify the ways humans effect the environment and propose ways they can solve our environmental problems.	Describe the effects human activity has upon the quality and quantity of fresh water resources, and propose solutions to problems resulting from that activity.
Describe how the seasons affect the everyday life of humans.	Describe ways water is used in everyday activities at different times of the year.			Classify populations of organisms (predators, prey, consumers, decomposers) by the role they serve in the ecosystem.	
				Recognize different environments (pond, forest, prairie) and how different organisms interact with other organisms or with the environment.	
				Identify internal and external adaptations that living organisms have and relate how that plant or animal will be able to survive in a specific environment.	

6	7	8	Physical Science	Physics	Chemistry	Biology	Earth Science
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Describe the properties of water that make it important to Earth.					Relate various geological features to ecosystems, biomes and climate with emphasis on Missouri's features (karst, streams, prairies, soils)	Explain the recycling involved in the carbon/oxygen and nitrogen cycles
Describe how much fresh water is available as compared to salt water.					Identify symbiotic relationships among organisms	Identify symbiotic relationships among organisms
Describe how human activities affect water quality.					Explain the importance of niche to ecological relationships	Explain the importance of niche to ecological relationships
Describe how human activity affects soil quality.					Explain how abiotic and biotic factors affect carrying capacities of populations	Explain how abiotic and biotic factors affect carrying capacities of populations
Explain how the sun is the source of energy for food.					Predict the impact of various environmental changes to biodiversity	Predict the impact of various environmental changes to biodiversity
Identify biotic/abiotic factors					Calculate biomass and energy flow with food pyramids and food webs	Calculate biomass and energy flow with food pyramids and food webs
Describe competition within communities					Explain processes of nitrogen and carbon/oxygen nutrient cycles	Explain processes of nitrogen and carbon/oxygen nutrient cycles
Describe limiting factors					Discuss evidences used to support biological evolution	Discuss evidences used to support biological evolution
Describe positive and negative effects of human activity on water, soil, and quality of life					Explain factors that contribute to the survival (or extinction) of a population	Explain factors that contribute to the survival (or extinction) of a population
Diagram aquatic and land food webs.					Explain how Earth's position in the universe supports life.	Explain how Earth's position in the universe supports life.
Classify producers, consumer, and decomposers						

# The Universe

K	1	2	3	4	5
<p>Observe and describe the presence of the sun, moon, and stars in the sky.</p> <p>Recognize there are more stars in the sky than anyone can easily count, but they are not scattered evenly and vary in brightness.</p> <p>Describe the sun as only seen in the daytime.</p> <p>Recognize the sun appears to move across the sky from morning to night.</p> <p>Observe the moon can be seen sometimes at night and sometimes during the daytime.</p> <p>Recognize the moon appears to change over the course of a month.</p> <p>Observe and describe the characteristics of the four seasons as they cycle through the year.</p>			<p>Describe our sun as a star.</p> <p>Identify the moon as a reflector.</p> <p>Identify/illustrate how the sun/moon appears to move E/W.</p> <p>Observe the change in the moon's appearance and note pattern.</p> <p>Identify the cycle of day/night.</p> <p>Describe changes in length &amp; position of shadows depending on the position of the sun.</p>		<p>Recognize Earth is one of several planets within a solar system that orbits the sun.</p> <p>Relate changes in the length and position of a shadow to the time of day and apparent position of the sun as determined by Earth's 24 hour rotation. Relate the apparent motion of the sun, moon, and stars to Earth's rotation.</p> <p>Recognize the moon orbits Earth in approximately 1 month and sequence the phases of the moon as seen from Earth as it completes its cycle.</p> <p>Describe physical features of Earth that allow life to exist, and compare these to the physical features of the sun, moon, and other planets.</p> <p>Recognize planets look like stars and appear to move across the sky among the stars.</p>

6	7	8	Physical Science	Physics	Chemistry	Biology	Earth Science
	<p>Classify and describe the properties of celestial bodies.</p> <p>Describe and explain how the Earth's composition and its location in the solar system allow it to sustain life.</p> <p>Label and explain the phases of the moon.</p> <p>Explain how gravity affects all objects and their motion in the solar system.</p> <p>Explain how the length of daylight and seasons are affected by the Earth's tilt, rotation &amp; revolution.</p> <p>Describe &amp; explain how the position and motion of the sun, earth and moon affect the apparent positions of each other as viewed from Earth.</p>	<p>Explain how Earth's characteristics and location in the universe, provide a life supporting environment.</p> <p>Identify information that the electromagnetic spectrum provides about the stars and the universe.</p> <p>Explain how gravitational forces determine the height and frequency of tides.</p> <p>Explain orbital motions of moons around planets, planets around the sun, as a result of gravitational forces.</p>	<p>Describe and relate the positions and motions of the sun/earth solar system, the milky way and other galaxies within the universe.</p> <p>Compare the environmental characteristics and location in the universe, of Earth and other celestial bodies to determine their ability to support life.</p> <p>Understand the information that the electromagnetic spectrum provides about the stars and the universe.</p> <p>Explain seasons and time as a consequence of a planet's tilt and its orbital position as it revolves around the sun.</p> <p>Predict moon rise/set, phases and eclipses given the position of the moon, planets and sun.</p> <p>Explain how gravitational forces determine the height and frequency of tides.</p> <p>Explain orbital motions of moons around planets and planets around the sun as a result of gravitational forces</p>		<p>Explain how Earth's position in the universe supports life.</p>	<p>Describe positions and motions of planets, stars and moons in the solar system, milky way galaxies and other galaxies.</p> <p>Compare environmental characteristics of planets and moons in universe.</p> <p>Evaluate various tools used to study the universe.</p> <p>Relate times to motions of planets and moon in solar system including earth.</p> <p>Explain positions of moon, sun, earth to tide height &amp; frequency (relating to gravitational forces of sun, earth, moon).</p> <p>Explain moon phases, rotation and positions as relating to relative positions to sun and Eart</p>	