

LEE'S SUMMIT R - 7 SCIENCE SCOPE AND SEQUENCE (K – 6)

	Kindergarten	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	9, 10, 11
Strand 1 Matter & Energy	Properties of Matter	Properties of Matter: Mass and Temperature	Properties of Rocks & Soil Forms of Energy: Sound	Investigating States of Matter (Earth/Sun/ and Moon)	Forms of Energy: Electrical Circuits	Mixtures and Solutions	Properties of and Changes in Matter Forms of Energy: Light and Sound Electricity			
Strand 2 Force & Motion	Change in Position	Investigating Motion	Forces and Motion		Work and Simple Machines	Laws of Motion	Force and Motion/Gravity			
Strand 3 Living Organisms	Life Cycles of Animals (Chicks)	Characteristics of Plants and Animals Life Cycles of Animals (butterfly)	Life Cycles of Animals (Mammals, Reptiles, Amphibians, Birds, Fish)	Plants	Classification of Plants and Animals	Body Systems Immune – AIDS, Circulatory, Respiratory (after MAP testing)	Characteristics of Living Organisms			
Strand 4 Ecology	Weather & Seasons			Food Chains	Interactions among Organisms and Their Environments (Animal Adaptations)	Interactions among Organisms and Their Environments (Biomes)	Ecosystems and Populations			
Strand 5 Earth Systems	Weather and Seasons	Observing Water & Weather	Earth Materials: Rocks & Soil	Investigating States of Matter	Changes in the Earth's Surface (Rocks and Soil)	Water Cycle and Weather	Internal Processes and External Events Earth's Resources			
Strand 6 Universe	Objects in the Sky			Earth, Sun, and Moon	Solar System & Moon Phases		Objects in Motion & Solar System			
Strand 7 Scientific Inquiry	Inquiry	Inquiry	Inquiry	Inquiry	Inquiry	Inquiry	Inquiry			
Strand 8 Science/ Technology/ & Human Activity	Sci/Tech/ Human Activity	Sci/Tech/ Human Activity	Sci/Tech/ Human Activity	Sci/Tech/ Human Activity	Sci/Tech/ Human Activity	Sci/Tech/ Human Activity	Sci/Tech/ Human Activity			

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. Objects, and the materials they are made of, have properties that can be used to describe and classify them</p>	<p><i>Scope and Sequence – Properties of Matter</i></p> <p>a. Describe physical properties of objects (i.e., size, shape, color, and mass) by using the senses, simple tools (e.g., magnifiers, equal arm balances), and/or nonstandard measures (e.g., bigger/smaller; more/less)</p> <p>b. Identify materials (i.e., cloth, paper, wood, rock, metal) that make up an object, and some of the physical properties of the materials (e.g., color, texture, shiny/dull, odor, sound, taste, flexibility)</p> <p>c. Sort objects based on observable physical properties (e.g., size, material, color, shape, and mass)</p>	<p><i>Scope and Sequence – Properties of Matter: Mass & Temperature</i></p> <p>a. Given an equal-arm balance and various objects, illustrate arrangements in which the beam is balanced</p> <p>b. Measure and compare the mass of objects (more/less)</p> <p>c. Order objects according to mass</p>	<p><i>Scope and Sequence – Properties of Rocks and Soil</i></p> <p>a. Describe and compare the physical properties of objects by using simple tools (i.e. thermometer, magnifier, centimeter ruler, balance, magnet)</p> <p>b. Classify objects as “one kind of material” or a mixture</p>
ST			
<p>B. Properties of mixtures depend upon the concentrations, properties and interactions of particles</p>			<p><i>Scope and Sequence – Properties of Rocks and Soil</i></p> <p>a. Observe and describe how mixtures are made by combining solids</p> <p>b. Describe ways to separate the components of a mixture by their physical properties (i.e., sorting, magnets or screening)</p>
ST			
<p>C. Properties of matter can be explained in terms of moving particles too small to be seen without tremendous magnification</p>	Not assessed at this level		
<p>D. Physical changes in the state of matter that result from thermal changes can be explained by moving particles (The kinetic theory of matter)</p>	Not assessed at this level		
<p>E. The atomic model describes the electrically neutral atom</p>	Not assessed at this level		

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Kindergarten	Grade 1	Grade 2
F. The periodic table organizes the elements according to their atomic structure and chemical reactivity		Not assessed at this level	
G. Properties of objects and states of matter can change chemically and/or physically		Not assessed at this level	
H. Chemical bonding is the combining of different pure substances (elements, compounds) to form new substances with different properties		Not assessed at this level	
I. Mass is conserved during any physical or chemical change		Not assessed at this level	

Standard 1: Properties and Principles of Matter and Energy

2. Energy has a source, can be transferred, and transformed into various forms but is conserved between and within systems			
Concept	Kindergarten	Grade 1	Grade 2
A. Forms of energy have a source, a means of transfer (work and heat) and a receiver		<i>Scope and Sequence – Properties of Matter: Mass & Temperature</i> a. Identify the source of energy that causes an increase in the temperature of an object (e.g. sun, stove, flame, light bulb) b. Compare the temperature of how hot or cold an object is using a simple thermometer c. Describe the change in temperature of an object as warmer or cooler	<i>Scope and Sequence – Forms of Energy: Sound</i> a. Recognize that sound travels through different mediums (i.e., air, water, solids) b. Describe different ways to change the pitch of a sound (i.e., changes in size such as length or thickness and in tightness/tension of the source) c. Describe how the ear serves as a receiver of sound (i.e., sound vibrates eardrum)
ST			
B. Mechanical energy comes from the motion (kinetic energy) and/or position (potential energy) of an object	Not assessed at this level		
C. Electromagnetic energy from the sun (solar radiation) is a major source of energy on Earth		<i>Scope and Sequence – Characteristics of Plants and Animals</i> a. Identify light from the sun as a basic need of most plants	
ST			
D. Chemical reactions involve changes in the bonding of atoms with the release or absorption of energy	Not assessed at this level		

Standard 1: Properties and Principles of Matter and Energy

2. Energy has a source, can be transferred, and transformed into various forms but is conserved between and within systems			
Concept	Kindergarten	Grade 1	Grade 2
<p style="text-align: center;">E.</p> <p>Nuclear energy is a major source of energy throughout the universe</p>	Not assessed at this level		
<p style="text-align: center;">F.</p> <p>Energy can change from one form to another within systems but the total amount remains the same</p>	Not assessed at this level		

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Grade 3	Grade 4	Grade 5
A. Objects, and the materials they are made of, have properties that can be used to describe and classify them			<i>Scope and Sequence – Mixtures and Solutions</i> a. Describe and compare the masses of objects to the nearest gram by using balances b. Describe and compare the volumes (the amount of space an object takes up) of objects using a graduated cylinder c. Recognize that no two objects can occupy the same space at the same time (e.g., water level rises when an object or substance such as a rock is placed in a quantity of water) d. Classify types of materials (e.g., water, salt, sugar, iron filings, salt water) into substances (materials that have specific physical properties) or mixtures of substances by using their characteristic properties
ST			
B. Properties of mixtures depend upon the concentrations, properties and interactions of particles			<i>Scope and Sequence – Mixtures and Solutions/ Changes on the Earth's Surface</i> a. Identify water as a solvent that dissolves materials (Do NOT assess the term solvent) b. Observe and describe how mixtures are made by combining solids or liquids, or a combination of these c. Distinguish between the components in a mixture (e.g. trail mix, conglomerate rock, salad) d. Describe ways to separate the components of a mixture by their properties (i.e., sorting, filtration, magnets, or screening)
ST			
C. Properties of matter can be explained in terms of moving particles too small to be seen without tremendous magnification			<i>Scope and Sequence – Water Cycle & Weather</i> a. Recognize how changes in state (i.e., freezing/melting, condensation/evaporation) provide evidence that matter is made of particles too small to be seen
ST			

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Grade 3	Grade 4	Grade 5
<p>D. Physical changes in states of matter due to thermal changes in materials can be explained by moving particles too small to be seen (The kinetic theory of matter)</p>	<p><i>Scope and Sequence – Investigating States of Matter</i></p> <ul style="list-style-type: none"> a. Compare the observable physical properties of solids, liquids, or gases (air) (i.e. visible vs. invisible, changes in shape, and changes in the amount of space occupied) b. Identify everyday objects/substances as solid, liquid or gas (e.g., air, water) c. Recognize that water evaporates (liquid water changes into a gas as it moves into the air) d. Measure and compare the temperature of water when it exists as a solid to its temperature when it exists as a liquid (cold vs. warmer) e. Investigate and recognize that water can change from a liquid to a solid (freeze) and back again to a liquid (melt) as the result of temperature changes f. Describe the changes in the physical properties of water (i.e., shape, volume) when frozen or melted g. Predict and investigate the effect of heat energy (i.e., change in temperature, melting, evaporation) on objects and materials 		<p><i>Scope and Sequence – Water Cycle & Weather</i></p> <ul style="list-style-type: none"> a. Classify matter as a solid, a liquid, or a gas as it exists at room temperature using physical properties (i.e., volume, shape, ability to flow) b. Predict the effect of heat energy on the physical properties of water as it changes to and from a solid, liquid, or gas (i.e., freezing/melting, evaporation/condensation)
ST			
<p>E. The atomic model describes the electrically neutral atom</p>	Not assessed at this level		
<p>F. The periodic table organizes the elements according to their atomic structure and chemical reactivity</p>	Not assessed at this level		
<p>G. Properties of objects and states of matter can change chemically and/or physically</p>	Not assessed at this level		

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Grade 3	Grade 4	Grade 5
<p>H. Chemical bonding is the combining of different pure substances (elements, compounds) to form new substances with different properties.</p>	Not assessed at this level		
<p>I. Mass is conserved during any physical or chemical change</p>			<p><i>Scope and Sequence – Water Cycle and Weather</i></p> <p>a. Recognize that the mass of water remains constant as it changes state (as evidenced in a closed container)</p> <p><i>Scope and Sequence – Mixtures and Solutions</i></p> <p>a. Recognize that the total mass of a material remains constant whether it is together, in parts, or in a different state.</p>
ST			

Standard 1: Properties and Principles of Matter and Energy

2. Energy has a source, can be transferred, and transformed into various forms but is conserved between and within systems			
Concept	Grade 3	Grade 4	Grade 5
A. Forms of energy have a source, a means of transfer (work and heat) and a receiver	<p><i>Scope and Sequence – Investigating States of Matter</i></p> <p>a. Identify sources of thermal energy (e.g., sun, stove, fire, body) that can cause solids to change to liquids and liquids to change to gas</p> <p><i>Scope and Sequence – Earth/Sun/and Moon</i></p> <p>a. Identify sources of light energy (e.g., sun, bulbs, flames)</p> <p>b. Recognize that light can be transferred from the source to the receiver (eye) through space</p> <p>c. Identify the three things (light source, object, and surface) necessary to produce a shadow</p>	<p><i>Scope and Sequence – Forms of Energy: Electrical Circuits</i></p> <p>a. Construct and diagram a complete electric circuit by using a source (e.g., battery), a means of transfer (e.g., wires), and a receiver (e.g., resistance bulbs, motors, fans)</p> <p>b. Observe and describe the evidence of energy transfer in a closed series circuit (e.g., lit bulb, moving motor or fan)</p> <p>c. Classify materials as conductors or insulators of electricity when placed within a circuit (e.g. wood, pencil lead, plastic, glass, aluminum foil, lemon juice, air, water)</p>	<p><i>Scope and Sequence – Solar System</i></p> <p>a. Recognize that light can be transferred from the source to the receiver (eye) through space in straight lines</p> <p>b. Recognize how an object (e.g., moon, mirror, objects in a room) can only be seen when light is reflected from that object to the receiver (eye)</p>
ST			
B. Mechanical energy comes from the motion (kinetic energy) and/or position (potential energy) of an object	Not assessed at this level		
C. Electromagnetic energy from the sun (solar radiation) is a major source of energy on Earth	<p><i>Scope and Sequence – Earth, Sun, and Moon/Food Chains</i></p> <p>a. Recognize that the sun is the primary source of light and food energy on Earth</p>		<p><i>Scope and Sequence – Water Cycle and Weather</i></p> <p>a. Recognize the sun as the primary source of energy for temperature change on Earth</p>
ST			
D. Chemical reactions involve changes in the bonding of atoms with the release or absorption of energy	Not assessed at this level		

Standard 1: Properties and Principles of Matter and Energy

2. Energy has a source, can be transferred, and transformed into various forms but is conserved between and within systems			
Concept	Grade 3	Grade 4	Grade 5
E. Nuclear energy is a major source of energy throughout the universe	Not assessed at this level		
F. Energy can change from one form to another within systems but the total amount remains the same		<i>Scope and Sequence – Forms of Energy: Electrical Circuits</i> a. Identify the evidence of energy transformations (temperature change, light, sound, motion, and magnetic effects) that occur in electrical circuits	
ST			

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>Objects, and the materials they are made of, have properties that can be used to describe and classify them</p>	<p><i>Scope and Sequence – Properties of and Changes in Matter</i></p> <ol style="list-style-type: none"> a. Recognize that matter is anything that has mass and volume b. Describe and compare the volumes (the amount of space an object takes up) of objects or substances directly using a graduated cylinder and/or indirectly using displacement methods c. Describe and compare the masses (amount of matter) of objects to the nearest gram using a balance d. Classify the types of matter in an object into pure substances or mixtures using their specific physical properties 		
ST			
<p style="text-align: center;">B.</p> <p>Properties of mixtures depend upon the concentrations, properties and interactions of particles</p>	<p><i>Scope & Sequence - Properties of and Changes in Matter</i></p> <ol style="list-style-type: none"> a. Describe the properties of each component in a mixture/solution and their distinguishing properties (e.g. salt water, oil & vinegar, pond water, Kool-Aid) b. Describe appropriate ways to separate the components of different types of mixtures, (sorting, evaporation, filtration, magnets, boiling, chromatography, or screening) c. Predict how various solids (soluble /insoluble) behave (e.g. dissolve, settle, float) when mixed with water 		
ST			
<p style="text-align: center;">C.</p> <p>Properties of matter can be explained in terms of moving particles too small to be seen without tremendous magnification</p>	<p><i>Scope and Sequence – Physical and Chemical Properties and Changes of Matter</i></p> <ol style="list-style-type: none"> a. Recognize evidence (e.g., diffusion of food coloring in water, light reflecting off of dust particles in the air, condensation of water vapor by increased pressure or decreased temperature) that supports the theory that matter is composed of small particles (atoms, molecules) that are in constant, random motion 		
ST			

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Grade 6		
D. Physical changes in the state of matter that result from thermal changes can be explained by moving particles (The kinetic theory of matter)	<i>Scope and Sequence – Earth's Resources</i> a. Describe the relationship between the change in the volume of water and changes in temperature as it relates to the properties of water (i.e. water expands and becomes less dense when frozen)		
ST			
E. The atomic model describes the electrically neutral atom	Local Objective Scope & Sequence – Forms of Energy: Electricity & Magnetism a. Recognize the subatomic particles, protons, electrons and neutrons, in relationship to the location and charge within an atom		
F. The periodic table organizes the elements according to their atomic structure and chemical reactivity	Local Objective a. The periodic table organizes elements according to their properties		
ST			

Standard 1: Properties and Principles of Matter and Energy

1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
Concept	Grade 6		
G. Properties of objects and states of matter can change chemically and/or physically	Local Objective a. Distinguish between physical and chemical changes in matter		
ST			
H. Chemical bonding is the combining of different pure substances (elements, compounds) to form new substances with different properties.	Not assessed at this level		
I. Mass is conserved during any physical or chemical change	<i>Scope and Sequence – Weather and Climate</i> a. Explain that the amount of matter remains constant while being recycled through the water cycle <i>Scope and Sequence – Cells and Body Systems</i> b. Explain that the amount of matter remains constant while being recycled through food chains and food webs (Law of Conservation Of Matter)		
ST			

Standard 1: Properties and Principles of Matter and Energy

2. Energy has a source, can be transferred, and transformed into various forms but is conserved between and within systems.			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>Forms of energy have a source, a means of transfer (work and heat) and a receiver</p>	<p><i>Scope and Sequence -- Forms of Energy: Light</i></p> <ul style="list-style-type: none"> a. Identify sources of visible light (e.g., the sun and other stars, flint, bulb, flames, lightning) b. Describe evidence (i.e., cannot bend around walls) that visible light travels in a straight line using the appropriate tools (i.e., pinhole viewer, ray box and/or laser pointer) c. Compare the reflection of visible light by various surfaces (i.e. mirror, smooth and rough surfaces, shiny and dull surfaces, moon) d. Compare the refraction of visible light passing through different transparent and translucent materials (e.g. prisms, water, a lens) e. LS - Predict how lenses (convex, concave, affect the behavior of visible light rays and the resulting image of an object f. Predict how visible light behaves (reflects, refracts, absorbs, transmits) when it interacts with different surfaces (transparent, translucent, opaque) g. Identify receivers of visible light energy (e.g., eye, photocell) h. Recognize that an object is "seen" only when the object emits or reflects light to the eye i. Recognize that differences in wavelength and energy levels within that range of visible light that can be seen by the human eye are perceived as differences in color <p><i>Scope and Sequence – Forms of Energy: Sound</i></p> <ul style="list-style-type: none"> j. Describe how sound energy is transferred by wave-like disturbances that spread away from the source through a medium k. Predict how the properties of the medium (e.g., air, water, empty space, rock) affect the speed of different types of mechanical waves (i.e., earthquake, sound) <p style="text-align: center;">(continued)</p>		

Standard 1: Properties and Principles of Matter and Energy

2. Energy has a source, can be transferred, and transformed into various forms but is conserved between and within systems.			
Concept	Grade 6		
	<p><i>Scope & Sequence – Forms of Energy – Electricity and Magnetism</i></p> <ul style="list-style-type: none"> i. Describe the interactions (i.e. – repel, attract) of like and unlike charges (i.e. – magnetic, static electricity, electrical) m. Illustrate and identify a complete electrical circuit using a source (battery), a means of transfer (wire), and a receiver (appliance) – using both realistic and schematic drawings n. Observe and describe the evidence of energy transfer in a closed series circuit o. Classify materials as conductors or insulators of electricity when placed within a circuit (e.g. – wood, pencil lead, plastic, glass, aluminum foil, lemon juice, air, water) p. Diagram and distinguish between complete series and parallel circuits q. Identify advantages and disadvantages of series and parallel circuits 		

Standard 1: Properties and Principles of Matter and Energy

2. Energy has a source, can be transferred, and transformed into various forms but is conserved between and within systems			
Concept	Grade 6		
<p>B. Mechanical energy comes from the motion (kinetic energy) and/or position (potential energy) of an object</p>	Not assessed at this level		
<p>C. Electromagnetic energy from the sun (solar radiation) is a major source of energy on Earth</p>	<p><i>Scope and Sequence -- Forms of Energy: Light</i> a. Recognize that the energy from the Sun is transferred to Earth in a range of wavelengths and energy levels including visible light, infrared radiation, and ultraviolet radiation</p> <p><i>Scope and Sequence – Characteristics of Living Organisms</i> b. Recognize that the sun is the source of almost all energy used to produce the food for living organisms</p>		
ST			
<p>D. Chemical reactions involve changes in the bonding of atoms with the release or absorption of energy</p>	Not assessed at this level		
<p>E. Nuclear energy is a major source of energy throughout the universe</p>	Not assessed at this level		
<p>F. Energy can change from one form to another within systems but the total amount remains the same</p>	<p><i>Scope and Sequence - Energy Transformations</i> a. Identify the different energy transformations that occur between different system (chemical energy in battery converted to electricity in circuit converted to light and heat from a bulb) b. Recognize that energy is not lost, but conserved as it is transferred and transformed</p>		
T			

Standard 2: Properties and Principles of Force and Motion

1. The motion of an object is described by its change in position relative to another object or point			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. The motion of an object is described as a change in position, direction, and speed relative to another object (frame of reference)</p>	<p><i>Scope and Sequence – Changes in Position</i> a. Describe an object's position relative to another object (e.g., above, below, in front of, behind)</p>	<p><i>Scope and Sequence – Investigating Motion</i> a. Compare the position of an object relative to another object (e.g., left of or right of) b. Describe an object's motion as straight, circular, vibrational (back and forth), zigzag, stopping, starting, or falling c. Compare the speeds (faster vs. slower) of two moving objects</p>	
ST			
<p>B. An object that is accelerating is speeding up, slowing down, or changing direction</p>	Not assessed at this level		
<p>C. Momentum depends on the mass of the object and the velocity with which it is traveling</p>	Not assessed at this level		

Standard 2: Properties and Principles of Force and Motion

2. Forces affect motion			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. Forces are classified as either contact forces (pushes, pulls, friction, buoyancy) or non-contact (gravity, magnetism) that can be described in terms of direction and magnitude</p>	<p><i>Scope and Sequence – Changes in Position</i> a. Recognize that magnets cause some objects to move without touching them</p>	<p><i>Scope and Sequence – Investigating Motion</i> a. Identify the force (i.e., push or pull) required to do work (move an object)</p>	<p><i>Scope and Sequence – Forces and Motion</i> a. Recognize that magnets attract and repel each other and certain materials b. Describe magnetism as a force that can push or pull other objects without touching them c. Measure (using nonstandard units) and compare the force (i.e., push or pull) required to overcome friction and move an object over different surfaces (i.e. rough, smooth)</p>
ST			
<p>B. Every object exerts a gravitational force on every other object</p>			<p><i>Scope and Sequence – Forces and Motion</i> a. Describe Earth's gravity as a force that pulls objects on or near the Earth toward the Earth without touching the object</p>
ST			
<p>C Magnetic forces are related to electrical forces as different aspects of a single electromagnetic force</p>	Not assessed at this level		
<p>D. The interaction of mass and forces can be explained by Newton's Laws of Motion that are used to predict changes in motion</p>		<p><i>Scope and Sequence – Investigating Motion</i> a. Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, or stop)</p>	<p><i>Scope and Sequence– Forces and Motion</i> a. Describe the direction and amount of force (i.e., direction of push or pull, stronger/weaker push or pull) needed to change an object's motion (i.e., faster/slower, change in direction) b. Describe and compare the distances traveled by heavier/lighter objects after applying the same amount of force (i.e., push or pull) in the same direction c. Describe and compare the distances traveled by objects with the same mass after applying different amounts of force (i.e., push or pull) in the same direction</p>
ST			

Standard 2: Properties and Principles of Force and Motion

2. Forces affect motion			
Concept	Kindergarten	Grade 1	Grade 2
E. Perpendicular forces act independently of each other	Not assessed at this level		
F. Simple machines (levers, inclined planes, wheel and axle, and pulleys) can be used to affect the force applied to an object and/or direction of movement as work is done			<i>Scope and Sequence – Forces and Motion</i> a. Compare and describe the amount of force (i.e., more, less, or same push or pull) needed to raise an object to a given height with or without using inclined planes (ramps) of different slopes b. Compare and describe the amount of force (i.e., more, less, or same push or pull) needed to raise an object to a given height with or without using levers c. Apply the use of an inclined plane (ramp) and/or lever to different real life situations in which objects are being raised
ST			

Standard 2: Properties and Principles of Force and Motion

1. The motion of an object is described by its change in position relative to another object or point			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">A.</p> <p>The motion of an object is described as a change in position, direction, and speed relative to another object (frame of reference)</p>			<p><i>Scope and Sequence – Laws of Motion</i></p> <p>a. Classify different types of motion (straight line, curved, back and forth)</p> <p>b. Describe an object's motion in terms of distance and time</p> <p>c. Measure and record in words, tables, and graphs the motion of an object</p>
ST			
<p style="text-align: center;">B.</p> <p>An object that is accelerating is speeding up, slowing down, or changing direction</p>	Not assessed at this level		
<p style="text-align: center;">C.</p> <p>Momentum depends on the mass of the object and the velocity with which it is traveling</p>	Not assessed at this level		

Standard 2: Properties and Principles of Force and Motion

2. Forces affect motion			
Concept	Grade 3	Grade 4	Grade 5
A. Forces are classified as either contact forces (pushes, pulls, friction, buoyancy) or non-contact forces (gravity, magnetism) that can be described in terms of direction and magnitude		<i>Scope and Sequence – Work and Simple Machines</i> a. Identify the forces acting on a load and use a spring scale to measure the weight (resistance force) of the load	<i>Scope and Sequence – Laws of Motion</i> a. Identify the forces acting on the motion of objects traveling in a straight line b. Recognize friction as a force that slows down or stops a moving object that is touching another object or surface c. Compare the forces (measured by a spring scale in Newtons) required to overcome friction when an object moves over different surfaces (i.e., rough/smooth)
ST B. Every object exerts a gravitational force on every other object			<i>Scope and Sequence – Laws of Motion</i> a. Determine the gravitational pull of the Earth on an object (weight) using a spring scale
ST C. Magnetic forces are related to electrical forces as different aspects of a single electromagnetic force		Not assessed at this level	

Standard 2: Properties and Principles of Force and Motion

2. Forces affect motion			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">D.</p> <p>The interaction of mass and forces can be explained by Newton's Laws of Motion that are used to predict changes in motion</p>		<p><i>Scope and Sequence – Work and Simple Machines</i></p> <ul style="list-style-type: none"> a. Compare the effect of simple machines on the effort force (measured using a spring scale to the nearest Newton) needed to lift a load b. Describe how friction affects the amount of force needed to do work over different surfaces or through different media <p><i>Scope and Sequence – Forms of Energy: Electrical Circuits</i></p> <ul style="list-style-type: none"> a. Predict the effects of an electrostatic force (static electricity) on the motion of objects (attract or repel) 	<p><i>Scope and Sequence – Laws of Motion</i></p> <ul style="list-style-type: none"> a. Recognize that balanced forces do not affect an object's motion b. Describe how unbalanced forces acting on an object changes its speed (faster/slower), direction of motion or both c. Explain how increasing or decreasing the amount of force on an object affects the motion of that object d. Explain how the mass of an object (e.g., cars, marbles, rocks, boulders) affects the force required to move it e. Predict how the change in speed of an object (i.e., faster/slower/remains the same) is affected by the amount of force applied to an object and the mass of the object
ST			
<p style="text-align: center;">E.</p> <p>Perpendicular forces act independently of each other</p>	Not assessed at this level		
<p style="text-align: center;">F.</p> <p>Simple machines (levers, inclined planes, wheels and axles, and pulleys) can be used to affect the force applied to an object and/or direction of movement as work is done</p>		<p><i>Scope and Sequence – Work and Simple Machines</i></p> <ul style="list-style-type: none"> a. Explain how work can be done on an object (force applied and distance moved) (No formula calculations at this level) b. Recognize that simple machines change the amount of effort force and/or direction of force c. Identify the simple machines in common tools and household items 	
ST			

Standard 2: Properties and Principles of Force and Motion

1. The motion of an object is described by its change in position relative to another object or point			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>The motion of an object is described as a change in position, direction, and speed relative to another object (frame of reference)</p>			
<p>ST</p> <p style="text-align: center;">B.</p> <p>An object that is accelerating is speeding up, slowing down, or changing direction</p>	Not assessed at this level		
<p style="text-align: center;">C.</p> <p>Momentum depends on the mass of the object and the velocity with which it is traveling</p>	Not assessed at this level		

Standard 2: Properties and Principles of Force and Motion

2. Forces affect motion			
Concept	Grade 6		
<p>A. Forces are classified as either contact forces (pushes, pulls, friction, buoyancy) or non-contact forces (gravity, magnetism) that can be described in terms of direction and magnitude</p>			
ST			
<p>B. Every object exerts a gravitational force on every other object</p>	<p><i>Scope and sequence – Force, Motion, & Work</i></p> <ul style="list-style-type: none"> a. Recognize that every object exerts a gravitational force of attraction on every other object b. Recognize that an object's weight is a measure of the gravitational force of a planet/ moon acting on that object c. Compare the amount of gravitational force acting between objects (which is dependent upon their masses and the distance between them) 		
ST			
<p>C. Magnetic forces are related to electrical forces as different aspects of a single electromagnetic force</p>	<p>Not assessed at this level</p>		

Standard 2: Properties and Principles of Force and Motion

2. Forces affect motion			
Concept	Grade 6		
D. The interaction of mass and forces can be explained by Newton's Laws of Motion that are used to predict changes in motion			
ST			
E. Perpendicular forces act independently of each other	Not assessed at this level		
F. Simple machines (levers, inclined planes, wheels & axles, and pulleys) affect the forces applied to an object and/or direction of movement as work is done			
ST			

Standard 3: Characteristics and Interactions of Living Organisms

1. There is a fundamental unity underlying the diversity of all living organisms			
Concept	Kindergarten	Grade 1	Grade 2
A. Organisms have basic needs for survival		<i>Scope and Sequence – Characteristics of Plants and Animals</i> a. Identify the basic needs of most animals (i.e., air, water, food, and shelter) b. Identify the basic needs of most plants (i.e., air, water, light) c. Predict and investigate the growth of plants when growing conditions are altered (e.g. dark vs. light, water vs. no water) d. Distinguish between living and nonliving things.	
ST			
B. Organisms progress through life cycles that are unique to different types of organisms	<i>Scope and Sequence – Life Cycles of Animals</i> a. Recognize that animals progress through life cycles of birth, growth and development, reproduction, and death. b. Sequence the stages in the life cycle of animals (i.e. chicken)	<i>Scope and Sequence – Life Cycles of Animals</i> a. Recognize that animals progress through life cycles of birth, growth and development, reproduction, and death b. Sequence the stages in the life cycle of animals (i.e. butterfly)	<i>Scope and Sequence – Life Cycles of Animals</i> a. Recognize that animals progress through life cycles of birth, growth and development, reproduction, and death b. Record observations on the life cycle of different animals (e.g. insects, amphibians, birds, fish, reptiles, mammals.) c. Sequence the stages in the life cycle of animals (i.e. frog)
ST			
C. Cells are the fundamental units of structure and function of all living things	Not assessed at this level		
D. Plants and animals have different structures that serve similar functions necessary for the survival of the organism		<i>Scope and Sequence – Characteristics of Plants and Animals</i> a. Identify and compare the physical structures of a variety of plants (e.g. stem, leaves, flowers, seeds, and roots) b. Identify and compare the physical structures of a variety of animals (e.g. sensory organs – eyes, beaks, appendages, body covering) (Do NOT assess terms: sensory organs, appendages) c. Identify the relationships between the physical structures of plants and the function of those structures (e.g., absorption of water, support, absorbing light energy, reproduction) d. Identify the relationships between the physical structures of animals and the function of those structures (e.g., taking in water, support, movement, obtaining food)	
ST			

Standard 3: Characteristics and Interactions of Living Organisms

1. There is a fundamental unity underlying the diversity of all living organisms			
Concept	Kindergarten	Grade 1	Grade 2
E. Biological classifications are based on how organisms are related		<i>Scope and Sequence – Characteristics of Plants and Animals</i> a. Distinguish between plants and animals based on observable structures and behaviors	
ST			

Standard 3: Characteristics and Interactions of Living Organisms

2. Living organisms carry out life processes in order to survive			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. The cell contains a set of structures called organelles that interact to carry out life processes through physical and chemical means</p>		Not assessed at this level	
<p>B. Photosynthesis and cellular respiration are complementary processes necessary to the survival of most organisms on Earth</p>		Not assessed at this level	
<p>C. Complex multicellular organisms have systems that interact to carry out life processes through physical and chemical means</p>		Not assessed at this level	
<p>D. Cells carry out chemical transformations that use energy for the synthesis or breakdown of organic compounds</p>		Not assessed at this level	
<p>E. Protein structure and function are coded by the DNA (Deoxyribonucleic acid) molecule</p>		Not assessed at this level	

Standard 3: Characteristic and Interactions of Living Organisms

2. Living organisms carry out life processes in order to survive			
Concept	Kindergarten	Grade 1	Grade 2
<p style="text-align: center;">F.</p> <p>Cellular activities and responses can maintain stability internally while external conditions are changing (homeostasis)</p>	Not assessed at this level		
<p style="text-align: center;">G.</p> <p>Life processes can be disrupted by disease (intrinsic failures of the organ systems or by infection due to other organisms)</p>	Not assessed at this level		

Standard 3: Characteristics and Interactions of Living Organisms

3. There is a genetic basis for the transfer of biological characteristics from one generation to the next through reproductive processes			
Concept	Kindergarten	Grade 1	Grade 2
A. Reproduction can occur asexually or sexually	Not assessed at this level		
B. All living organisms have genetic material (DNA) that carries hereditary information	Not assessed at this level		
C. Chromosomes are components of cells that occur in pairs and carry hereditary information from one cell to daughter cells and from parent to offspring during reproduction	Not assessed at this level		
D. There is heritable variation within every species of organism			<i>Scope and Sequence – Life Cycles of Animals</i> a. Identify and relate the similarities and differences between animal parents and their offspring b. Observe similarities and differences among multiple offspring of an animal parent
ST E. The pattern of inheritance for many traits can be predicted by using the principles of Mendelian genetics	Not assessed at this level		

Standard 3: Characteristics and Interactions of Living Organisms

1. There is a fundamental unity underlying the diversity of all living organisms			
Concept	Grade 3	Grade 4	Grade 5
A. Organisms have basic needs for survival	<i>Scope and Sequence – Plants</i> a. Describe the basic needs of most plants (i.e., air, water, light, nutrients and temperature)		
ST			
B. Organisms progress through life cycles that are unique to different types of organisms	<i>Scope and Sequence – Life Cycles of Plants</i> a. Recognize that plants progress through life cycles of seed germination, growth and development, reproduction, and death b. Observe and describe the life cycle of a flowering plant c. Sequence and describe the stages in the life cycle of a flowering plant		
ST			
C. Cells are the fundamental units of structure and function of all living things	Not assessed at this level		
D. Plants and animals have different structures that serve similar functions necessary for the survival of the organism	<i>Scope and Sequence – Plants</i> a. Identify the major organs (roots, stems, flowers and leaves) and their functions in vascular plants (e.g., absorption, transport, reproduction) (Do NOT assess the term vascular) b. Introduce the process of photosynthesis	<i>Scope and Sequence – Plant and Animal Classification</i> a. Compare structures (e.g. wings vs. fins vs. legs; gills vs. lungs; feathers vs. hair vs. scales) that serve similar functions for animals belonging to different vertebrate classes	
ST			

Standard 3: Characteristics and Interactions of Living Organisms

1. There is a fundamental unity underlying the diversity of all living organisms			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">E.</p> <p>Biological classifications are based on how organisms are related</p>		<p><i>Scope and Sequence – Plant and Animal Classification</i></p> <ul style="list-style-type: none"> a. Explain how similarities are the basis for classification b. Distinguish between plants (which use sunlight to make their own food) and animals (which must consume energy-rich food) c. Classify animals as vertebrates or invertebrates d. Classify vertebrate animals into classes (amphibians, birds, reptiles, mammals, and fish) based on their characteristics e. Identify plants or animals using simple dichotomous keys 	
ST			

Standard 3: Characteristics and Interactions of Living Organisms

2. Living organisms carry out life processes in order to survive			
Concept	Grade 3	Grade 4	Grade 5
<p>A. The cell contains a set of structures called organelles that interact to carry out life processes through physical and chemical means</p>	Not assessed at this level		
<p>B. Photosynthesis and cellular respiration are complementary processes necessary to the survival of most organisms on Earth</p>	Not assessed at this level		
<p>C. Complex multicellular organisms have systems that interact to carry out life processes through physical and chemical means</p>	<p><i>Scope and Sequence – Plants</i> a. Illustrate and trace the path water and nutrients take as they move through the transport system of a plant</p>	<p><i>Scope and Sequence – Plant and Animal Classification</i> a. Recognize the major life processes carried out by the major systems of plants and animals (e.g., digestive/nutrition, support, muscular) (MAP does not assess naming of organs within each system or explanation of the processes carried out by those systems)</p>	<p><i>Scope and Sequence – Interactions among Organisms</i> b. Recognize the major life processes carried out by the major systems of plants and animals (e.g., Respiratory, reproductive, transport/circulatory, excretory, response/nervous) (MAP does not assess naming of organs within each system or explanation of the processes carried out by those systems)</p> <p><u>Health</u> Note: Body systems (circulatory, respiratory, and immune) will be taught in depth along with the AIDS curriculum after MAP testing</p>
<p>ST</p>			
<p>D. Cells carry out chemical transformations that use energy for the synthesis or breakdown of organic compounds</p>	Not assessed at this level		

Standard 3: Characteristic and Interactions of Living Organisms

2. Living organisms carry out life processes in order to survive			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">E.</p> <p>Protein structure and function are coded by the DNA (Deoxyribonucleic acid) molecule</p>		Not assessed at this level	
<p style="text-align: center;">F.</p> <p>Cellular activities and responses can maintain stability internally while external conditions are changing (homeostasis)</p>		Not assessed at this level	
<p style="text-align: center;">G.</p> <p>Life processes can be disrupted by disease (intrinsic failures of the organ systems or by infection due to other organisms)</p>		Not assessed at this level	

Standard 3: Characteristic and Interactions of Living Organisms

3. There is a genetic basis for the transfer of biological characteristics from one generation to the next through reproductive processes			
Concept	Grade 3	Grade 4	Grade 5
A. Reproduction can occur asexually or sexually	Not assessed at this level		
B. All living organisms have genetic material (DNA) that carries hereditary information	Not assessed at this level		
C. Chromosomes are components of cells that occur in pairs and carry hereditary information from one cell to daughter cells and from parent to offspring during reproduction	Not assessed at this level		
D. There is heritable variation within every species of organism	<i>Scope and Sequence – Life Cycles of Plants</i> a. Identify and relate the similarities and differences between plants and their offspring (i.e., plants)		
ST			
E. The pattern of inheritance for many traits can be predicted by using the principles of Mendelian genetics	Not assessed at this level		

Standard 3: Characteristic and Interactions of Living Organisms

1. There is a fundamental unity underlying the diversity of all living organisms			
Concept	Grade 6		
<p>A. Organisms have basic needs for survival</p>	<p><i>Scope & Sequence – Characteristics of Living Organisms</i> a. Describe the common life processes necessary to survival of organisms (i.e., growth, reproduction, life span, response to stimuli, energy use, exchange of gases, use of water, elimination of waste)</p> <p><i>Scope & Sequence – Cells and Body Systems</i> a. Recognize that most plants and animals require food and oxygen (needed to release the energy from that food)</p> <p style="text-align: center;">Local Objectives</p> <p>a. Describe the basic needs of living things (air, water, habitat, food) b. Classify example organisms as consumers, producers and decomposers</p>		
ST			
<p>B. Organisms progress through life cycles that are unique to different types of organisms</p>	Not assessed at this level		
<p>C. Cells are the fundamental units of structure and function of all living things</p>	<p><i>Scope and Sequence – Characteristics of Living Organisms</i> a. Recognize that all organisms are composed of cells, the fundamental units of life, which carry on all life processes</p>		
ST			
<p>D. Plants and animals have different structures that serve similar functions necessary for the survival of the organism</p>	<p><i>Scope and Sequence – Characteristics of Living Organisms</i> a. Describe the function of specific plant and animal organelles</p> <p><i>Scope and Sequence – Cells and Body Systems</i> a. Identify and contrast the structures of plants and animals that serve similar functions (e.g. taking in water and oxygen, support, response to stimuli, obtaining energy, circulation, digestion, excretion, reproduction)</p>	<p style="text-align: center;">Sixth Grade Local Objectives</p> <p>a. Compare & contrast the cell structure of unicellular and multicellular organisms b. Identify major characteristics of plants c. Explain how plants are classified (vascular/ nonvascular, vascular into seedless/ seed, seed into angiosperm/ gymnosperm) d. Describe the structure and function of the primary organ systems of a plant (roots, stems, leaves) e. Identify the parts of a flower and specify the function of each part</p>	
ST			
<p>E. Biological classifications are based on how organisms are related</p>			
ST			

Standard 3: Characteristic and Interactions of Living Organisms

2. Living organisms carry out life processes in order to survive			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>The cell contains a set of structures called organelles that interact to carry out life processes through physical and chemical means</p>	<p><i>Scope and Sequence – Characteristics of Living Organisms</i></p> <ul style="list-style-type: none"> a. Compare and contrast the following plant and animal cell structures: cell membrane, nucleus, cell wall, chloroplast and cytoplasm b. Recognize the chloroplast as the cell structure where food is produced in plants and some unicellular organisms (e.g., algae, some protists) <p><i>Scope and Sequence – Cell and Body Systems</i></p> <ul style="list-style-type: none"> c. Recognize that the cell membrane helps regulate the transfer of materials in and out of the cell d. Recognize that the function of the chloroplast is photosynthesis 		
ST			
<p style="text-align: center;">B.</p> <p>Photosynthesis and cellular respiration are complementary processes necessary to the survival of most organisms on Earth</p>	<p><i>Scope and Sequence – Characteristics of Living Organisms</i></p> <ul style="list-style-type: none"> a. Recognize that plants use energy from the sun to produce food and oxygen through the process of photosynthesis 		
ST			

Standard 3: Characteristic and Interactions of Living Organisms

2. Living organisms carry out life processes in order to survive			
Concept	Grade 6		
<p style="text-align: center;">C.</p> <p>Complex multicellular organisms have systems that interact to carry out life processes through physical and chemical means.</p>			
<p>ST</p> <p style="text-align: center;">D.</p> <p>Cells carry out chemical transformations that use energy for the synthesis or breakdown of organic compounds</p>		Not assessed at this level	
<p style="text-align: center;">E.</p> <p>Protein structure and function are coded by the DNA (Deoxyribonucleic acid) molecule</p>		Not assessed at this level	

Standard 3: Characteristic and Interactions of Living Organisms

2. Living organisms carry out life processes in order to survive			
Concept	Grade 6		
<p style="text-align: center;">F.</p> <p>Cellular activities and responses can maintain stability internally while external conditions are changing (homeostasis)</p>			
ST			
<p style="text-align: center;">G.</p> <p>Life processes can be disrupted by disease (intrinsic failures of the organ systems or by infection due to other organisms)</p>			
ST			

Standard 3: Characteristic and Interactions of Living Organisms

3. There is a genetic basis for the transfer of biological characteristics from one generation to the next through reproductive processes			
Concept	Grade 6		
A. Reproduction can occur asexually or sexually			
ST			
B. All living organisms have genetic material (DNA) that carries hereditary information	Not assessed at this level		
C. Chromosomes are components of cells that occur in pairs and carry hereditary information from one cell to daughter cells and from parent to offspring during reproduction			
ST			

Standard 3: Characteristic and Interactions of Living Organisms

3. There is a genetic basis for the transfer of biological characteristics from one generation to the next through reproductive processes			
Concept	Grade 6		
D. There is heritable variation within every species of organism			
ST			
E. The pattern of inheritance for many traits can be predicted by using the principles of Mendelian genetics	Not assessed at this level		

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

1. Organisms are interdependent with one another and with their environment			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. All populations living together within a community interact with one another and with their environment in order to survive and maintain a balanced ecosystem</p>	<p><i>Scope and Sequence – Weather & Seasons</i></p> <p>a. Describe how the seasons affect the behavior of plants and animals.</p> <p>b. Describe how the seasons affect the everyday life of humans (e.g., clothing, activities)</p>	<p><i>Scope and Sequence – Characteristics of Plants and Animals</i></p> <p>a. Identify ways man depends on plants and animals for food, clothing, and shelter</p>	
ST			
<p>B. Living organisms have the capacity to produce populations of infinite size but environments and resources are finite</p>	Not assessed at this level		
<p>C. All organisms, including humans, and their activities cause changes in their environment that affects the ecosystem</p>	Not assessed at this level		
<p>D. The diversity of species within an ecosystem is affected by changes in the environment which can be caused by other organisms or outside processes</p>	Not assessed at this level		

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

2. Matter and energy flow through an ecosystem			
Concept	Kindergarten	Grade 1	Grade 2
A. As energy flows through the ecosystem, all organisms capture a portion of that energy and transform it to a form they can use		Not assessed at this level	
B. Matter is recycled through an ecosystem		Not assessed at this level	

3. Genetic variation sorted by the natural selection process explains evidence of biological evolution			
Concept	Kindergarten	Grade 1	Grade 2
A. Evidence for the nature and rates of evolution can be found in anatomical and molecular characteristics of organisms and in the fossil record		Not assessed at this level	
B. Reproduction is essential to the continuation of every species		Not assessed at this level	
C. Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem		Not assessed at this level	

Standard 4: Changes in Ecosystems and Interactions of Organisms with Their Environments

1. Organisms are interdependent with one another and with their environment			
Concept	Grade 3	Grade 4	Grade 5
<p>A. All populations living together within a community interact with one another and with their environment in order to survive and maintain a balanced ecosystem</p>			<p><i>Scope and Sequence – Interactions among Organisms and their Environment</i></p> <p>a. Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism)</p> <p>b. Recognize that different environments (i.e., pond, forest, prairie) support the life of different types of plants and animals.</p>
ST			
<p>B. Living organisms have the capacity to produce populations of infinite size but environments and resources are finite</p>	Not assessed at this level		
<p>C. All organisms, including humans, and their activities cause changes in their environment that affects the ecosystem</p>	Not assessed at this level		
<p>D. The diversity of species within an ecosystem is affected by changes in the environment which can be caused by other organisms or outside processes</p>			<p><i>Scope and Sequence – Interactions among Organisms and their Environment</i></p> <p>a. Identify examples in Missouri where human activity has had a beneficial or harmful effect on other organisms (e.g., feeding wild animals, trash disposal, hunting, conservation of species, paving, restoring greenspace)</p> <p>b. Observe and describe changes in populations of organisms due to environmental conditions (eg: global warming, oil spills, pollution, hurricanes, human activities)</p>
ST			

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

2. Matter and energy flow through an ecosystem			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">A.</p> <p>As energy flows through the ecosystem, all organisms capture a portion of that energy and transform it to a form they can use</p>	<p><i>Scope and Sequence – Food Chains</i></p> <ul style="list-style-type: none"> a. Identify sunlight as the primary source of energy plants use to produce their own food b. Classify populations of organisms as producers or consumers by the role they serve in the ecosystem c. Sequence the flow of energy through a food chain beginning with the sun d. Predict the possible effects of removing an organism from a food chain 		<p><i>Scope and Sequence – Interactions among Organisms and their Environment</i></p> <ul style="list-style-type: none"> a. Classify populations of organisms as producers, consumers, decomposers by the role they serve in the ecosystem b. Differentiate between the three types of consumers (herbivore, carnivore, omnivore) c. Categorize organisms as predator or prey in a given ecosystem
<p>ST</p> <p style="text-align: center;">B.</p> <p>Matter is recycled through an ecosystem</p>	Not assessed at this level		

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

3. Genetic variation sorted by the natural selection process explains evidence of biological evolution			
Concept	Grade 3	Grade 4	Grade 5
A. Evidence for the nature and rates of evolution can be found in anatomical and molecular characteristics of organisms and in the fossil record		<i>Scope and Sequence – Changes on the Earth's Surface</i> a. Compare and contrast common fossils (i.e., trilobites, ferns, crinoids, gastropods, bivalves, fish, mastodons) found in Missouri to organisms that are present on Earth today	
ST			
B. Reproduction is essential to the continuation of every species	Not assessed at this level		
C. Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem		<i>Scope and Sequence – Interactions among Organisms and their Environment</i> a. Identify specialized structures and describe how they help plants survive in their environment (e.g., root, cactus needles, thorns, winged seed, waxy leaves) b. Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages) c. Recognize internal cues (e.g., hunger) and external cues (e.g. changes in the environment) that cause organisms to behave in certain ways (e.g., hunting, migration, hibernation) d. Predict which plant or animal will be able to survive in a specific environment based on its special structures or behaviors	
ST			

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

1. Organisms are interdependent with one another and with their environment			
Concept	Grade 6		
<p>A. All populations living together within communities interact with one another and with their environment in order to survive and maintain a balanced ecosystem</p>	<p><i>Scope and Sequence – Ecosystems and Populations</i></p> <p>a. Identify the biotic factors (populations of organisms) and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition) that make up an ecosystem</p>		
ST			
<p>B. Living organisms have the capacity to produce populations of infinite size but environments and resources are finite</p>	<p><i>Scope and Sequence – Ecosystems and Populations</i></p> <p>a. Identify populations within a community that are in competition with one another for resources</p> <p>b. Recognize the factors that affect the number and types of organisms an ecosystem can support (e.g. food availability, abiotic factors such as quantity of light and water, temperature and temperature range, soil composition, disease, competition from other organisms, predation)</p> <p>c. Predict the effects of changes in the number and types of organisms in an ecosystem on the populations of other organisms within that ecosystem</p>		
ST			
<p>C. All organisms, including humans, and their activities cause changes in their environment that affects the ecosystem</p>	Not assessed at this level		

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

1. Organisms are interdependent with one another and with their environment			
Concept	Grade 6		
<p style="text-align: center;">D.</p> <p>The diversity of species within an ecosystem is affected by changes in the environment which can be caused by other organisms or outside processes</p>	<p><i>Scope and Sequence – Ecosystems and Populations</i></p> <p>a. Describe beneficial and harmful activities of organisms, including humans, (e.g., deforestation, overpopulation, water and air pollution, global warming, restoration of natural environments, river bank/coastal stabilization, recycling, channelization, reintroduction of species, depletion of resources) and explain how these activities affect organisms within an ecosystem</p> <p>b. Predict the impact (beneficial or harmful) of a natural environmental change (e.g., forest fire, flood, volcanic eruption, avalanche, tsunami) on the organisms in an ecosystem</p> <p>c. Describe possible solutions to potentially harmful environmental changes within an ecosystem</p>		
ST			

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

2. Matter and energy flow through an ecosystem			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>As energy flows through the ecosystem, all organisms capture a portion of that energy and transform it to a form they can use</p>	<p><i>Scope and Sequence –Ecosystems and Populations</i></p> <p>a. Diagram and describe the transfer of energy in an aquatic food web and a land food web with reference to producers, consumers, decomposers, scavengers, and predator/prey relationships</p> <p>b. Classify populations of unicellular and multi-cellular organisms as producers, consumers, decomposers by the role they serve in the ecosystem</p> <p>c. Describe photosynthesis as the first step in the transfer of energy through any food chain or web</p>		
ST			
<p style="text-align: center;">B.</p> <p>Matter is recycled through an ecosystem</p>			
ST			

Standard 4: Changes in Ecosystems and Interactions of Organisms With Their Environments

3. Genetic variation sorted by the natural selection process explains evidence of biological evolution			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>Evidence for the nature and rates of evolution can be found in anatomical and molecular characteristics of organisms and in the fossil record</p>			
ST			
<p style="text-align: center;">B.</p> <p>Reproduction is essential to the continuation of every species</p>	Not assessed at this level		
<p style="text-align: center;">C.</p> <p>Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem</p>	<p><i>Scope and Sequence – Ecosystems and Populations</i></p> <p>a. Relate examples of adaptations (specialized structures or behaviors) within a species to its ability to survive in a specific environment (e.g., hollow bones/flight, hollow hair/insulation, dense root structure/compact soil, seeds/food and protection for plant embryo vs. spores, fins/movement in water)</p> <p>b. Predict how certain adaptations, such as behavior, body structure, or coloration, may offer a survival advantage to an organism in a particular environment</p>		
ST			

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

1. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) have common components and unique structures			
Concept	Kindergarten	Grade 1	Grade 2
<p style="text-align: center;">A.</p> <p>The Earth's crust is composed of various materials including soil, minerals, and rocks with characteristic properties</p>			<p><i>Scope and Sequence – Earth Materials: Rocks and Soils</i></p> <p>a. Observe and describe the physical properties (e.g., odor, color, appearance, relative grain size, texture and absorption of water) and different types of soil components (i.e., sand, clay and humus) of soils</p> <p>b. Observe and describe the physical properties of rocks (e.g., size, shape, color, presence of fossils)</p>
ST			
<p style="text-align: center;">B.</p> <p>The hydrosphere is composed of water (a material with unique properties) and other materials</p>	Not assessed at this level		
<p style="text-align: center;">C.</p> <p>The atmosphere (air) is composed of a mixture of gases, including water vapor, and minute particles</p>	<p><i>Scope and Sequence – Weather & Seasons</i></p> <p>a. Recognize that air is felt as wind</p>		
ST			
<p style="text-align: center;">D.</p> <p>Climate is a description of average weather conditions in a given area over time</p>	Not assessed at this level		

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

2. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) interact with one another as they undergo change by common processes			
Concept	Kindergarten	Grade 1	Grade 2
<p style="text-align: center;">A.</p> <p>The Earth's materials and surface features are changed through a variety of external processes</p>			<p><i>Scope and Sequence – Earth Materials: Rocks and Soils</i></p> <p>a. Observe and recognize examples of slow changes in the Earth's surface and surface materials (e.g., rock, soil layers) due to processes such as decay (rotting), freezing, thawing, breaking, or wearing away by running water or wind</p>
<p>ST</p> <p style="text-align: center;">B.</p> <p>There are internal processes and sources of energy within the geosphere that cause changes in Earth's crustal plates</p>	Not assessed at this level		
<p style="text-align: center;">C.</p> <p>Continual changes in the Earth's materials and surface that result from internal and external processes is described by the rock cycle</p>	Not assessed at this level		
<p style="text-align: center;">D.</p> <p>Changes in the Earth over time can be inferred through rock and fossil evidence</p>	Not assessed at this level		

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

2. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) interact with one another as they undergo change by common processes			
Concept	Kindergarten	Grade 1	Grade 2
E. Changes in the form of water as it moves through Earth's systems are described as the water cycle	Not assessed at this level		
F. Constantly changing properties of the atmosphere occur in patterns which are described as weather	<i>Scope and Sequence – Weather & Seasons</i> a. Observe and describe daily weather: precipitation (e.g., snow, rain, sleet, fog), wind (i.e., light breezes to strong wind), cloud cover and temperature b. Observe and describe the general weather conditions that occur during each season	<i>Scope and Sequence – Observing Water & Weather</i> a. Observe, measure and record weather data throughout the year (i.e., cloud cover, temperature, precipitation, wind speed) by using thermometers, rain gauges and wind socks b. Compare temperatures in different locations (e.g., inside, outside, in the sun, in the shade) c. Compare weather data observed at different times throughout the year (e.g., hot vs. cold, cloudy vs. clear, types of precipitation, windy vs. calm) d. Recognize patterns indicating relationships between observed weather data and weather phenomena (e.g., temperature and types of precipitation, clouds and amounts of precipitation)	
ST			
G. The geosphere, hydrosphere and atmosphere are continually interacting through processes that transfer energy and Earth materials	Not assessed at this level		

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

3. Human activity is dependent upon and affects Earth's resources and systems			
Concept	Kindergarten	Grade 1	Grade 2
A. Earth's materials are limited natural resources that are affected by human activity		<i>Scope and Sequence – Observing Water & Weather</i> a. Observe and describe ways that water, both as a solid and liquid, is used in every day activities at different times of the year (e.g., bathe, drink, make ice cubes, build snowmen, cook, swim)	<i>Scope and Sequence – Earth Materials: Rocks and Soils</i> a. Observe and describe ways that humans use Earth materials like soil and rocks in daily life
ST			

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

1. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) have common components and unique structures			
Concept	Grade 3	Grade 4	Grade 5
A. The Earth's crust is composed of various materials including soil, minerals, and rocks with characteristic properties		<i>Scope and Sequence – Changes on the Earth's Surface</i> a. Identify the components of soil (e.g. plant roots and debris, bacteria, fungi, worms, types of rock) and its properties (e.g., odor, color, resistance to erosion, texture, fertility relative grain size, absorption rate) b. Compare the physical properties (i.e. size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties)	
ST			
B. The hydrosphere is composed of water (a material with unique properties) and other materials			<i>Scope and Sequence – Water Cycle and Weather</i> a. Classify major bodies of surface water (e.g., rivers, lakes, oceans, glaciers) as fresh or salt water, flowing or stationary, large or small, solid or liquid, surface or groundwater b. Relate the type of water body to the process by which it was formed
ST			
C. The atmosphere (air) is composed of a mixture of gases, including water vapor, and minute particles	<i>Scope and Sequence – Investigating States of Matter</i> a. Recognize that liquid water can change into a gas (vapor) in the air b. Recognizes that clouds and fog are made of tiny droplets of water c. Recognizes that air is a substance that surrounds us, takes up space, and moves around us as wind		<i>Scope and Sequence – Water Cycle and Weather</i> a. Recognize the atmosphere is composed of a mixture of gases, water and minute particles
ST			
D. Climate is a description of average weather conditions in a given area over time	Not assessed at this level		

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

2. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) interact with one another as they undergo change by common processes			
Concept	Grade 3	Grade 4	Grade 5
A The Earth's materials and surface features are changed through a variety of external processes		<i>Scope and Sequence – Changes on the Earth's Surface</i> a. Observe and describe the breakdown of plant and animal material into soil through decomposition processes (i.e., decay, rotting, composting, digestion) b. Identify the major landforms on Earth (i.e., mountains, plains, oceans, river valleys, coastlines, and canyons) c. Describe how weathering agents (e.g., water, temperature, wind, and plants) cause surface changes that create and/or change earth's surface materials and/or landforms d. Describe how erosional processes (i.e., action of gravity, waves, wind, rivers, and glaciers) cause surface changes that create and/or change earth's surface materials and/or landforms	
ST			
B. There are internal processes and sources of energy within the geosphere that cause changes in Earth's crustal plates	Not assessed at this level		
C. Continual changes in the Earth's materials and surface that result from internal and external processes is described by the rock cycle	Not assessed at this level		
D. Changes in the Earth over time can be inferred through rock and fossil evidence	Not assessed at this level		

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

2. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) interact with one another as they undergo change by common processes			
Concept	Grade 3	Grade 4	Grade 5
E. Changes in the form of water as it moves through Earth's systems are described as the water cycle	<i>Scope and Sequence – Investigating States of Matter</i> a. Describe clouds and precipitation as forms of water		<i>Scope and Sequence – – Water Cycle and Weather</i> a. Describe and trace the path of water as it cycles through the hydrosphere, geosphere and atmosphere (i.e., the water cycle: evaporation, condensation, precipitation, groundwater/ surface run-off) b. Identify the different forms water can take (e.g., snow, rain, sleet, fog, clouds, dew) as it moves through the water cycle
ST			
F. Constantly changing properties of the atmosphere occur in patterns which are described as weather			<i>Scope and Sequence – Water Cycle and Weather</i> a. Identify and use appropriate tools (i.e., thermometer, anemometer, wind vane, hygrometer, barometer, rain gauge, satellite images, weather maps) to collect weather data (i.e., temperature, wind speed and direction, relative humidity, air pressure, precipitation, cloud type and cover) b. Recognize and summarize patterns represented by the weather data (e.g., temperature and time of day, cloud cover and temperature, wind direction and temperature) collected over a period of time
ST			
G. The geosphere, hydrosphere and atmosphere are continually interacting through processes that transfer energy and Earth materials	Not assessed at this level		

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

3. Human activity is dependent upon and affects Earth's resources and systems			
Concept	Grade 3	Grade 4	Grade 5
A. Earth's materials are limited natural resources that are affected by human activity		<i>Scope and Sequence – Changes on the Earth's Surface</i> a. Identify the ways humans affect the erosion and deposition of earth materials (e.g., clearing of land, planting vegetation, paving land, construction of new buildings) b. Propose ways to solve simple environmental problems (e.g., recycling, composting, ways to decrease soil erosion) that result from human activity	<i>Scope and Sequence – Water Cycle and Weather</i> a. Explain how major bodies of water are important natural resources for human activity (e.g., food, recreation, habitat, irrigation, solvent, transportation) b. Describe how human needs and activities (e.g., irrigation, damming of rivers, waste treatment, sources of drinking water) have affected the quantity and quality of major bodies of fresh water c. Propose solutions to problems related to water quality and availability that result from human activity
ST			

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

1. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) have common components and unique structures			
Concept	Grade 6		
<p>A. The Earth's crust is composed of various materials including soil, minerals, and rocks with characteristic properties</p>	<p><i>Scope and Sequence – Earth's Resources</i> a. Describe the components of soil and other factors that influence soil texture, fertility, and resistance to erosion (e.g., plant roots and debris, bacteria, fungi, worms, rodents)</p>		
ST			
<p>B. The hydrosphere is composed of water (a material with unique properties), gases, and other materials</p>	<p><i>Scope and Sequence – Earth's Resources</i> a. Recognize the properties of water that make it an essential component of the Earth system (e.g., its ability to act as a solvent, its ability to remain as a liquid at most Earth temperatures)</p>		
ST			
<p>C. The atmosphere (air) is composed of a mixture of gases, including water vapor, and minute particles</p>			
ST			
<p>D. Climate is a description of average weather conditions in a given area over time</p>			
ST			

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

2. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) interact with one another as they undergo change by common processes			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>The Earth's materials and surface features are changed through a variety of external processes</p>			
<p>ST</p> <p style="text-align: center;">B.</p> <p>There are internal processes and sources of energy within the geosphere that cause changes in Earth's crustal plates</p>			
<p>ST</p>			

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

2. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) interact with one another as they undergo change by common processes			
Concept	Grade 6		
<p style="text-align: center;">C.</p> <p>Continual changes in the Earth's materials and surface that result from internal and external processes is described by the rock cycle</p>			
ST			
<p style="text-align: center;">D.</p> <p>Changes in the Earth over time can be inferred through rock and fossil evidence</p>			
<p style="text-align: center;">E.</p> <p>Changes in the form of water as it moves through Earth's systems are described as the water cycle</p>			
ST			

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

2. Earth's Systems (Geosphere, Atmosphere and Hydrosphere) interact with one another as they undergo change by common processes			
Concept	Grade 6		
<p style="text-align: center;">F.</p> <p>Constantly changing properties of the atmosphere occur in patterns which are described as weather</p>			
<p>ST</p> <p style="text-align: center;">G.</p> <p>The geosphere, hydrosphere and atmosphere are continually interacting through processes that transfer energy and Earth materials</p>	Not assessed at this level		

Standard 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere and Hydrosphere)

3. Human activity is dependent upon and affects Earth's resources and systems			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>Earth's materials are limited natural resources that are affected by human activity</p>	<p><i>Scope and Sequence – Earth's Resources</i></p> <p>a. Relate the comparative amounts of fresh water and salt water on the Earth to the availability of water as a resource for living organisms and human activity</p> <p>b. Describe the affect of human activities (e.g., landfills, use of fertilizers and herbicides, farming, septic systems) on the quality of water</p> <p><i>Scope and Sequence – Internal Processes and External Events</i></p> <p>c. Analyze the ways humans affect the erosion and deposition of soil and rock materials (e.g., clearing of land, planting vegetation, paving land, construction of new buildings, building or removal of dams)</p> <p><i>Scope and Sequence –Weather and Climate</i></p> <p>d. Provide examples of how availability of fresh water for humans and other living organisms is dependent upon the water cycle</p>		
ST			

Standard 6: Composition and Structure of the Universe and the Motion of the Objects Within It

1. The universe has observable properties and structure			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. The Earth, sun, and moon are part of a larger system that includes other planets and smaller celestial bodies</p>	<p><i>Scope and Sequence – Objects in the Sky</i></p> <p>a. Observe and describe the presence of the sun, moon and stars in the sky</p> <p>b. Recognize that there are more stars in the sky than anyone can easily count, but they are not scattered evenly and vary in brightness</p>		
ST			
<p>B. The Earth has a composition and location that is suitable to sustain life</p>	Not assessed at this level		
<p>C. Most of the information we know about the universe comes from the electromagnetic spectrum</p>	Not assessed at this level		

Standard 6: Composition and Structure of the Universe and the Motion of the Objects Within It

2. Regular and predictable motions of objects in the universe can be described and explained as the result of gravitational forces			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. The apparent position of the Sun and other stars, as seen from Earth, changes in observable patterns</p>	<p><i>Scope and Sequence – Objects in the Sky</i></p> <p>a. Describe the sun as only being seen in the daytime</p> <p>b. Recognize that the sun appears to move across the sky from morning to night</p>		
ST			
<p>B. The positions of the Sun and other stars, as seen from Earth, appear to change in observable patterns</p>	<p><i>Scope and Sequence – Objects in the Sky</i></p> <p>a. Observe that the moon can be seen sometimes at night and sometimes during the daytime</p> <p>b. Recognize that the moon appears to change shape over the course of a month</p>		
ST			
<p>C. The regular and predictable motions of the Earth and moon relative to the sun explain natural phenomena on Earth such as the day, the month, the year, shadows, moon phases, eclipses, tides, and seasons</p>	<p><i>Scope and Sequence – Weather & Seasons</i></p> <p>a. Observe and describe the characteristics of the four seasons as they cycle through the year (summer, fall, winter, spring)</p>		
ST			
<p>D. Gravity is a force of attraction between objects in the solar system that governs their motion</p>	Not assessed at this level		

Standard 6: Composition and Structure of the Universe and the Motion of the Objects within It

1. The universe has observable properties and structure			
Concept	Grade 3	Grade 4	Grade 5
<p>A. The Earth, sun, and moon are part of a larger system that includes other planets and smaller celestial bodies</p>	<p><i>Scope and Sequence – Earth, Sun, and Moon</i> a. Describe our sun as a star because it provides light energy to the solar system b. Recognize that the moon is a reflector of light</p>	<p><i>Scope and Sequence – Solar System</i> a. Recognize that the Earth is one of several planets within a solar system that orbits the sun b. Recognize that the moon orbits the Earth c. Recognize that planets look like stars and appear to move across the sky among the stars</p>	
ST			
<p>B. The Earth has a composition and location that is suitable to sustain life</p>		<p><i>Scope and Sequence – Solar System</i> a. Describe physical features of the planet Earth that allows life to exist (e.g., air, water, temperature) and compare these to the physical features of the sun, the moon and other planets</p>	
ST			
<p>C. Most of the information we know about the universe comes from the electromagnetic spectrum</p>	Not assessed at this level		

Standard 6: Composition and Structure of the Universe and the Motion of the Objects within It

2. Regular and predictable motions of objects in the universe can be described and explained as the result of gravitational forces			
Concept	Grade 3	Grade 4	Grade 5
<p>A. The positions of the Sun and other stars, as seen from Earth, appear to change in observable patterns</p>	<p><i>Scope and Sequence – Earth, Sun, and Moon</i> a. Illustrate and describe how the sun appears to move slowly across the sky from east to west during the day</p>		
ST			
<p>B. The appearance of the moon that can be seen from Earth and its position relative to Earth changes in observable patterns</p>	<p><i>Scope and Sequence – Earth, Sun, and Moon</i> a. Illustrate and describe how the moon appears to move slowly across the sky from east to west during the day and/or night b. Observe the change in the moon's appearance relative to time of day and month over several months and note the pattern in this change</p>	<p><i>Scope and Sequence – Solar System</i> a. Sequence images of the lit portion of the moon seen from Earth as it cycles from day-to-day in about a month in order of occurrence (DO NOT assess cause of moon phases)</p>	
ST			
<p>C. The regular and predictable motions of the Earth and moon relative to the sun explain natural phenomena on Earth such as the day, the month, the year, shadows, moon phases, eclipses, tides, and seasons</p>	<p><i>Scope and Sequence – Earth, Sun, and Moon</i> a. Recognize that there is a day/night cycle every 24 hours b. Describe the changes in length and position (direction) of shadows from morning to midday to afternoon c. Describe how the sun's position in the sky changes the length and position of shadows</p>	<p><i>Scope and Sequence – Solar System</i> a. Recognize that the Earth rotates once every 24 hours b. Relate changes in the length and position of a shadow to the time of day and apparent position of the sun in the sky as determined by Earth's rotation c. Relate the apparent motion of the sun, moon, and stars in the sky to the rotation of the Earth</p>	
ST			
<p>D. Gravity is a force of attraction between objects in the solar system that governs their motion</p>	Not assessed at this level		

Standard 6: Composition and Structure of the Universe and the Motion of the Objects within It

1. The universe has observable properties and structure			
Concept	Grade 6		
<p>A. The Earth, sun, and moon are part of a larger system that includes other planets and smaller celestial bodies</p>	<p><i>Scope and Sequence – Objects and their Motion in the Solar System</i></p> <ul style="list-style-type: none"> a. Classify celestial bodies in the solar system into categories: sun, moon, planets and other small bodies (i.e., asteroids, comets, meteors) based on physical properties b. Compare and contrast the size, composition, atmosphere and surface of the planets (inner vs. outer) in our solar system and Earth's moon c. Identify the relative proximity of common celestial bodies (i.e., sun, moon, planets, smaller celestial bodies such as comets and meteors, and other stars) in the sky to the Earth 		
ST			
<p>B. The Earth has a composition and location that is suitable to sustain life</p>	<p><i>Scope and Sequence – Objects and their Motion in the Solar System</i></p> <ul style="list-style-type: none"> a. Describe how the Earth's placement in the solar system is favorable to sustain life (i.e. distance from the sun, temperature, atmosphere) b. Compare and contrast the characteristics of Earth that support life with the characteristics of other planets that are considered favorable or unfavorable to life (e.g. atmospheric gases, extremely high/low temperatures) 		
ST			
<p>C. Most of the information we know about the universe comes from the electromagnetic spectrum</p>			
ST			

Standard 6: Composition and Structure of the Universe and the Motion of the Objects Within It

2. Regular and predictable motions of objects in the universe can be described and explained as the result of gravitational forces			
Concept	Grade 6		
<p>A. The positions of the Sun and other stars, as seen from Earth, appear to change in observable patterns</p>			
ST			
<p>B. The appearance of the moon that can be seen from Earth and its position relative to Earth changes in observable patterns</p>			
ST			

Standard 6: Composition and Structure of the Universe and the Motion of the Objects Within It

2. Regular and predictable motions of objects in the universe can be described and explained as the result of gravitational forces			
Concept	Grade 6		
<p>C. The regular and predictable motions of the Earth and moon relative to the sun explain natural phenomena on Earth such as the day, the month, the year, shadows, moon phases, eclipses, tides, and seasons</p>	<p><i>Scope and Sequence – Objects and their Motion in the Solar System</i></p> <ol style="list-style-type: none"> Illustrate and explain a day as the time it takes a planet to make a full rotation on its axis Diagram the path (orbital ellipse) the Earth travels as it revolves around the sun Illustrate and explain a year as the time it takes a planet to revolve around the sun Explain the relationships between a planet's length of year (period of revolution) and its position in the solar system Relate the axial tilt and orbital position of the Earth as it revolves around the Sun to the intensity of sunlight falling on different parts of the Earth during different seasons 		
ST			
<p>D. Gravity is a force of attraction between objects in the solar system that governs their motion</p>	<p><i>Scope and Sequence -- Objects and their Motion in the Solar System</i></p> <ol style="list-style-type: none"> Describe how the Earth's gravity pulls any object on or near the Earth toward it (including natural and artificial satellites) Describe how the planets' gravitational pull keeps satellites and moons in orbit around them Describe how the sun's gravitational pull holds the Earth and other planets in their orbits 		
ST			

Standard 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills and scientific knowledge in combination with scientific investigation, reasoning, and critical thinking			
Concept	Kindergarten	Grade 1	Grade 2
<p style="text-align: center;">A.</p> <p>Scientific inquiry includes the ability of students to formulate a testable question and explanation and to select appropriate investigative methods in order to obtain evidence relevant to the explanation</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Pose questions about objects, materials, organisms and events in the environment</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Pose questions about objects, materials, organisms, and events in the environment</p> <p>b. Plan and conduct a simple investigation (fair test) to answer a question</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Pose questions about objects, materials, organisms and events in the environment</p> <p>b. Plan and conduct a simple investigation (fair test) to answer a question</p>
ST			
<p style="text-align: center;">B.</p> <p>Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Make qualitative observations using the five senses</p> <p>b. Observe using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)</p> <p>c. Measure length and mass using non-standard units</p> <p>d. Compare amounts/measurements</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Make qualitative observations using the five senses</p> <p>b. Observe using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)</p> <p>c. Measure length, mass, and temperature using standard and non-standard units</p> <p>d. Compare amounts/measurements</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Make qualitative observations using the five senses</p> <p>b. Observe using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)</p> <p>c. Measure length, mass, and temperature using standard and non-standard units</p> <p>d. Compare amounts/measurements</p>
ST			
<p style="text-align: center;">C.</p> <p>Evidence is used to formulate explanations</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Use observations to construct reasonable explanations</p> <p>b. Use observations to describe relationships and make predictions to be tested</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Use observations to construct reasonable explanations</p> <p>b. Use observations to describe relationships and make predictions to be tested</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Use observations to construct reasonable explanations</p> <p>b. Use observations to describe relationships and make predictions to be tested</p>
ST			
<p style="text-align: center;">D.</p> <p>Scientific inquiry includes evaluation of explanations (hypotheses, laws, theories) in light of scientific principles (understandings)</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Compare explanations with prior knowledge</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Compare explanations with prior knowledge</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Compare explanations with prior knowledge</p>
ST			

Standard 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills and scientific knowledge in combination with scientific investigation, reasoning, and critical thinking			
Concept	Kindergarten	Grade 1	Grade 2
E. The nature of science relies upon communication of results and justification of explanations	<i>Scope and Sequence: All Units</i> a. Communicate observations using words, pictures, and numbers	<i>Scope and Sequence: All Units</i> a. Communicate simple procedures and results of investigations and explanations through: <ul style="list-style-type: none"> ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, pictographs) ⇒ writings 	<i>Scope and Sequence: All Units</i> a. Communicate simple procedures and results of investigations and explanations through: <ul style="list-style-type: none"> ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, pictographs) ⇒ writings
ST			

Refer to DESE materials that articulate standards for data recording and template for experimental design

Standard 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills and scientific knowledge in combination with scientific investigation, reasoning, and critical thinking			
Concept	Grade 3	Grade 4	Grade 5
A. Scientific inquiry includes the ability of students to formulate a testable question and explanation and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	<i>Scope and Sequence: All Units</i> a. Pose questions about objects, materials, organisms, and events in the environment b. Plan and conduct a fair test to answer a question	<i>Scope and Sequence: All Units</i> a. Formulate testable questions and explanations (hypotheses) b. Recognize the characteristics of a fair and unbiased test c. Conduct a fair test to answer a question	<i>Scope and Sequence: All Units</i> a. Formulate testable questions and explanations (hypotheses) b. Recognize the characteristics of a fair and unbiased test c. Conduct a fair test to answer a question d. Make suggestions for reasonable improvements or extensions of a fair test
ST			
B. Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	<i>Scope and Sequence: All Units</i> a. Make qualitative observations using the five senses b. Observe using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders) c. Measure length to the nearest centimeter, mass using grams, temperature using degrees Celsius, volume using liters d. Compare amounts/measurements e. Judge whether measurements and computation of quantities are reasonable	<i>Scope and Sequence: All Units</i> a. Make qualitative observations using the five senses b. Observe using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale) c. Measure length to the nearest centimeter, mass using grams, temperature using degrees Celsius, volume to the nearest milliliter, weight to the nearest Newton d. Compare amounts/measurements e. Judge whether measurements and computation of quantities are reasonable	<i>Scope and Sequence: All Units</i> a. Make qualitative observations using the five senses b. Determine the appropriate tools and techniques to collect data c. Use a variety of tools and equipment to gather data (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scales) d. Measure length to the nearest centimeter, mass to the nearest gram, volume to the nearest milliliter, temperature to the nearest degree Celsius, weight to the nearest Newton e. Compare amounts/measurements f. Judge whether measurements and computation of quantities are reasonable
ST			
C. Evidence is used to formulate explanations	<i>Scope and Sequence: All Units</i> a. Use quantitative and qualitative data to construct reasonable explanations b. Use data to describe relationships and make predictions to be tested	<i>Scope and Sequence: All Units</i> a. Use quantitative and qualitative data to construct reasonable explanations b. Use data to describe relationships and make predictions to be tested	<i>Scope and Sequence: All Units</i> a. Use quantitative and qualitative data to construct reasonable explanations b. Use data to describe relationships and make predictions to be tested
ST			

Standard 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills and scientific knowledge in combination with scientific investigation, reasoning, and critical thinking			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">D.</p> <p>Scientific inquiry includes evaluation of explanations (hypotheses, laws, theories) in light of scientific principles (understandings)</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Make predictions supported by scientific knowledge/explanations</p> <p>b. Evaluate the reasonableness of an explanation</p> <p>c. Analyze whether evidence supports proposed explanations</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Make predictions supported by scientific knowledge/explanations</p> <p>b. Evaluate the reasonableness of an explanation</p> <p>c. Analyze whether evidence supports proposed explanations</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Make predictions supported by scientific knowledge/explanations</p> <p>b. Evaluate the reasonableness of an explanation</p> <p>c. Analyze whether evidence supports proposed explanations</p>
ST			
<p style="text-align: center;">E.</p> <p>The nature of science relies upon communication of results and justification of explanations</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Communicate simple procedures and results of investigations and explanations through:</p> <ul style="list-style-type: none"> ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictographs) ⇒ writings <p>b. Interpret data presented in writings, tables, graphs (bar, single line, pictographs), and drawings</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Communicate the procedures and results of investigations and explanations through:</p> <ul style="list-style-type: none"> ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictographs) ⇒ writings <p>b. Interpret data in order to make and support conclusions</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Communicate the procedures and results of investigations and explanations through:</p> <ul style="list-style-type: none"> ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictographs) ⇒ writings <p>b. Interpret data in order to make and support conclusions</p>
ST			

Refer to DESE materials that articulate standards for data recording and template for experimental design

Standard 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills and scientific knowledge in combination with scientific investigation, reasoning, and critical thinking			
Concept	Grade 6		
<p style="text-align: center;">A.</p> <p>Scientific inquiry includes the ability of students to formulate a testable question and explanation and to select appropriate investigative methods in order to obtain evidence relevant to the explanation</p>	<p><i>Scope and Sequence: All Units</i></p> <ul style="list-style-type: none"> a. Formulate testable questions and hypotheses b. Recognize the importance of the independent variable, dependent variables, control of constants, and multiple trials to the design of a valid experiment c. Design and conduct a valid experiment (with control and experimental groups) d. Evaluate the design of an experiment and make suggestions for reasonable improvements or extensions of an experiment e. Recognize that different kinds of questions suggest different kinds of scientific investigations (e.g., some involve observing and describing objects organisms, or events; some involve collecting specimens; some involve experiments; some involve making observations in nature; some involve discovery of new objects and phenomena; and some involve making models) 		
ST			
<p style="text-align: center;">B.</p> <p>Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations</p>	<p><i>Scope and Sequence: All Units</i></p> <ul style="list-style-type: none"> a. Make qualitative observations using the five senses b. Determine the appropriate tools and techniques to collect data c. Use a variety of tools and equipment to gather data (e.g., microscopes, thermometers, computers, spring scales, balances, magnets, metric rulers, graduated cylinders, stopwatches) d. Measure length to the nearest millimeter, mass to the nearest gram, volume to the nearest milliliter, temperature to the nearest degree Celsius, force (weight) to the nearest Newton, time to the nearest second e. Compare amounts/measurements f. Judge whether measurements and computation of quantities are reasonable 		
ST			

Standard 7: Scientific Inquiry

1. Science understanding is developed through the use of science process skills and scientific knowledge in combination with scientific investigation, reasoning, and critical thinking			
Concept	Grade 6		
<p>C. Evidence is used to formulate explanations</p>	<p><i>Scope and Sequence: All Units</i></p> <ul style="list-style-type: none"> a. Use quantitative and qualitative data to construct reasonable explanations (conclusions) b. Use data to describe relationships and make predictions to be tested c. Recognize the possible effects of errors in observations, measurements, and calculations on the formulation of explanations (conclusions) 		
ST			
<p>D. Scientific inquiry includes evaluation of explanations (hypotheses, laws, theories) in light of scientific principles (understandings)</p>	<p><i>Scope and Sequence: All Units</i></p> <ul style="list-style-type: none"> a. Make predictions supported by scientific knowledge/explanations b. Analyze whether evidence (data) supports proposed explanations (hypotheses, laws, theories) c. Evaluate the reasonableness of an explanation (conclusion) 		
ST			
<p>E. The nature of science relies upon communication of results and justification of explanations</p>	<p><i>Scope and Sequence: All Units</i></p> <ul style="list-style-type: none"> a. Communicate the procedures and results of investigations and explanations through: <ul style="list-style-type: none"> ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictographs) ⇒ writings b. Interpret data in order to make and support conclusions 		
ST			

Refer to DESE materials that articulate standards for data recording and template for experimental design

Standard 8: Impact of Science, Technology and Human Activity

1. The nature of technology is advanced by and can advance science as it seeks to apply scientific knowledge in ways that meet human needs			
Concept	Kindergarten	Grade 1	Grade 2
A. Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all		<i>Scope and Sequence – Properties of Matter/Observing Water & Weather</i> a. Recognize that some objects occur in nature (natural objects); others have been designed and made by people	<i>Scope and Sequence – Forms of Energy: Sound</i> a. Design and construct a musical instrument using materials (e.g., cardboard, wood, plastic, metal) and/or existing objects (e.g. toy wheels, gears, boxes, sticks) that can be used to perform a task (ASSESS LOCALLY)
ST			
B. Advances in technology often result in improved data collection and an increase in scientific information	<i>Scope and Sequence – Properties of Matter/Plants and Animals</i> a. Describe how tools have helped scientists make better observations (i.e., magnifiers)	<i>Scope and Sequence – Properties of Matter/Characteristics of Plants and Animals</i> a. Describe how tools have helped scientists make better observations (e.g., magnifiers, balances, thermometers)	<i>Scope and Sequence – Forms of Energy: Sound/Properties of Rocks & Soil</i> a. Describe how tools have helped scientists make better observations, measurements, or equipment for investigations (e.g., magnifiers, balances, stethoscopes, thermometers)
ST			
C. Technological solutions to problems often have drawbacks as well as benefits	Not assessed at this level		

Standard 8: Impact of Science, Technology and Human Activity

2. A historical perspective of scientific explanations helps to improve understanding of the nature of science and how science knowledge and technology evolve over time			
Concept	Kindergarten	Grade 1	Grade 2
<p style="text-align: center;">A.</p> <p>People from various cultures, races, and of different gender have contributed to scientific discoveries and the invention of technological innovations</p>	Not assessed at this level		
<p style="text-align: center;">B.</p> <p>Scientific theories are developed based on the body of knowledge that exists at any particular time and must be rigorously questioned and tested for validity</p>	Not assessed at this level		

Standard 8: Impact of Science, Technology and Human Activity

3. Science is a Human Endeavor			
Concept	Kindergarten	Grade 1	Grade 2
<p>A. People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify a question that was asked or could be asked or a problem that needed to be solved when given a brief scenario (fiction or nonfiction stories of individuals solving everyday problems or learning through discovery)</p> <p>b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (ASSESS LOCALLY)</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify a question that was asked or could be asked or a problem that needed to be solved when given a brief scenario (fiction or nonfiction stories of individuals solving everyday problems or learning through discovery)</p> <p>b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (ASSESS LOCALLY)</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify a question that was asked or could be asked or a problem that needed to be solved when given a brief scenario (fiction or nonfiction stories of individuals solving everyday problems or learning through discovery)</p> <p>b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (ASSESS LOCALLY)</p>
<p>ST</p>			
<p>B. Social, political, economic, ethical, and environmental factors strongly influence and are influenced by the direction of progress of science and technology</p>		<p>Not assessed at this level</p>	
<p>C. Scientific ethics require that scientists must not knowingly subject people or the community to health or property risks without their knowledge and consent</p>		<p>Not assessed at this level</p>	
<p>D. Scientific information is presented through a number of credible sources, but is at times influenced in such a way to become non-credible</p>		<p>Not assessed at this level</p>	

Standard 8: Impact of Science, Technology and Human Activity

1. The nature of technology is advanced by and can advance science as it seeks to apply scientific knowledge in ways that meet human needs			
Concept	Grade 3	Grade 4	Grade 5
A. Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all	<i>Scope and Sequence – Forms of Energy: Light</i> a. Recognize that some objects (i.e., Sun) occur in nature (natural objects); others (e.g., bulbs, candles, lanterns) have been designed and made by people to solve human problems and enhance the quality of life (manmade objects)	<i>Scope and Sequence – Forms of Energy: Electrical Circuits</i> a. Design and construct an electrical device using materials and/or existing objects that can be used to perform a task (ASSESS LOCALLY)	<i>Scope and Sequence – Forms of Energy: Work and Simple Machines</i> a. Design and construct a machine using materials and/or existing objects that can be used to perform a task (ASSESS LOCALLY)
ST			
B. Advances in technology often result in improved data collection and an increase in scientific information	<i>Scope and Sequence – Investigating States of Matter/ Earth, Sun, and Moon/Plants</i> a. Describe how new technologies have helped scientists make better observations and measurements for investigations (e.g., telescopes, magnifiers, balances, microscopes, computers, stethoscopes, thermometers)	<i>Scope and Sequence – Mixtures and Solutions/ Forms of Energy: Electrical Circuits</i> a. Describe how new technologies have helped scientists make better observations and measurements for investigations (e.g., telescopes, magnifiers, balances, microscopes, computers, stethoscopes, thermometers)	<i>Scope and Sequence – Simple Machines/Water Cycle and Weather/Solar System/Classification of Plants and Animals</i> a. Describe how new technologies have helped scientists make better observations and measurements for investigations (e.g., telescopes, magnifiers, balances, microscopes, computers, stethoscopes, thermometers)
ST			
C. Technological solutions to problems often have drawbacks as well as benefits	Not assessed at this level	<i>Scope and Sequence – Forms of Energy: Electrical Circuits/Laws of Motion/Interactions among Organisms and Their Environments</i> a. Identify how sometimes the effects of inventions or technological advances (e.g., different types of light bulbs, semiconductors/integrated circuits and electronics, satellite imagery, robotics, communication, transportation, generation of energy, renewable materials) can be helpful and sometimes they are harmful (ASSESS LOCALLY)	<i>Scope and Sequence – Simple Machines/Water Cycle and Weather/Solar System/Classification of Plants and Animals</i> a. Identify how sometimes the effects of inventions or technological advances (e.g., complex machinery, technologies used in space exploration, satellite imagery, weather observation and prediction, communication, transportation, robotics, tracking devices) can be helpful and sometimes they are harmful (ASSESS LOCALLY)
ST			

Standard 8: Impact of Science, Technology and Human Activity

2. A historical perspective of scientific explanations helps to improve understanding of the nature of science and how science knowledge and technology evolve over time			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">A.</p> <p>People from various cultures, races, and of different gender have contributed to scientific discoveries and the invention of technological innovations</p>	<p><i>Scope and Sequence – All units</i></p> <p>a. Research biographical information about various scientists and inventors from different gender, ethnic and cultural backgrounds and describe how their work contributed to science and technology (ASSESS LOCALLY)</p>	<p><i>Scope and Sequence – All units</i></p> <p>a. Research biographical information about various scientists and inventors from different gender, ethnic and cultural backgrounds and describe how their work contributed to science and technology (ASSESS LOCALLY)</p>	<p><i>Scope and Sequence – All units</i></p> <p>a. Research biographical information about various scientists and inventors from different gender, ethnic and cultural backgrounds and describe how their work contributed to science and technology (ASSESS LOCALLY)</p>
ST			
<p style="text-align: center;">B.</p> <p>Scientific theories are developed based on the body of knowledge that exists at any particular time and must be rigorously questioned and tested for validity</p>	Not assessed at this level		

Standard 8: Impact of Science, Technology and Human Activity

3. Science is a Human Endeavor			
Concept	Grade 3	Grade 4	Grade 5
<p style="text-align: center;">A.</p> <p>People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify a question that was asked or could be asked or a problem that needed to be solved when given a brief scenario (fiction or nonfiction stories of people working alone or in groups solving everyday problems or learning through discovery)</p> <p>b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (ASSESS LOCALLY)</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify a question that was asked or could be asked or a problem that needed to be solved when given a brief scenario (fiction or nonfiction stories of people working alone or in groups solving everyday problems or learning through discovery)</p> <p>b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (ASSESS LOCALLY)</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify a question that was asked or could be asked or a problem that needed to be solved when given a brief scenario (fiction or nonfiction stories of people working alone or in groups solving everyday problems or learning through discovery)</p> <p>b. Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (ASSESS LOCALLY)</p>
ST			
<p style="text-align: center;">B.</p> <p>Social, political, economic, ethical, and environmental factors strongly influence and are influenced by the direction of progress of science and technology</p>		Not assessed at this level	
<p style="text-align: center;">C.</p> <p>Scientific ethics require that scientists must not knowingly subject people or the community to health or property risks without their knowledge and consent</p>		Not assessed at this level	
<p style="text-align: center;">D.</p> <p>Scientific information is presented through a number of credible sources, but is at times influenced in such a way to become non-credible</p>		Not assessed at this level	

Standard 8: Impact of Science, Technology and Human Activity

1. The nature of technology is advanced by and can advance science as it seeks to apply scientific knowledge in ways that meet human needs	
Concept	Grades 6, 7, 8
<p style="text-align: center;">A.</p> <p>Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify and evaluate the physical, social, economic, and/or environmental problems that may be overcome using science and technology (e.g., the need for alternative fuels, human travel in space, AIDS)</p> <p>b. Explain how technological improvements such as those developed for use in space exploration or by the military have led to the invention of new products that may improve our lives here on Earth (e.g., materials, freeze-dried foods, infrared goggles, Velcro, satellite imagery, robotics)</p>
ST	
<p style="text-align: center;">B.</p> <p>Advances in technology often result in improved data collection and an increase in scientific information</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Identify the link between technological developments and the scientific discoveries made possible through their development (e.g., Hubble telescope and stellar evolution, composition and structure of the universe; the electron microscope and cell organelles; sonar and the composition of the Earth; manned and unmanned space missions and space exploration; Doppler radar and weather conditions; MRI and CAT-scans and brain activity)</p>
ST	
<p style="text-align: center;">C.</p> <p>Technological solutions to problems often have drawbacks as well as benefits</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Describe how technological solutions to problems can have both benefits and drawbacks (e.g., storm water runoff, fiber optics, windmills, efficient car design, electronic trains without conductors, sonar, robotics, Hubble telescope) (ASSESS LOCALLY)</p>
ST	

Standard 8: Impact of Science, Technology and Human Activity

2. A historical perspective of scientific explanations helps to improve understanding of the nature of science and how science knowledge and technology evolve over time	
Concept	Grades 6, 7, 8
<p style="text-align: center;">A.</p> <p>People from various cultures, races, and of different gender have contributed to scientific discoveries and the invention of technological innovations</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Describe how the contributions of scientists and inventors have contributed to science, technology and human activity (e.g., George Washington Carver, Thomas Edison, Thomas Jefferson, Isaac Newton, Marie Curie, Galileo, Albert Einstein, Mae Jemison, Edwin Hubble, Charles Darwin, Jonas Salk, Louis Pasteur, Jane Goodall, Tom Akers, John Wesley Powell) (ASSESS LOCALLY)</p>
ST	
<p style="text-align: center;">B</p> <p>Scientific theories are developed based on the body of knowledge that exists at any particular time and must be rigorously questioned and tested for validity</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Recognize the difficulty science innovators experienced as they attempted to break through the accepted ideas (hypotheses, laws, theories) of their time to reach conclusions that are now considered to be common knowledge (e.g., Darwin, Copernicus, Newton)</p> <p>b. Recognize that explanations have changed over time as a result of new evidence</p>
ST	

Standard 8: Impact of Science, Technology and Human Activity

3. Science is a Human Endeavor	
Concept	Grades 6, 7, 8
<p>A. People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done</p>	<p>Not assessed at this level</p>
<p>ST</p> <p>B. Social, political, economic, ethical, and environmental factors strongly influence and are influenced by the direction of progress of science and technology</p>	<p><i>Scope and Sequence: All Units</i></p> <p>a. Describe ways in which science and society influence one another (e.g., scientific knowledge and the procedures used by scientists influence the way many individuals in society think about themselves, others, and the environment; societal challenges often inspire questions for scientific research; social priorities often influence research priorities through the availability of funding for research)</p>
<p>ST</p> <p>C. Scientific ethics require that scientists must not knowingly subject people or the community to health or property risks without their knowledge and consent</p>	<p>Not assessed at this level</p>
<p>D. Scientific information is presented through a number of credible sources, but is at times influenced in such a way to become non-credible</p>	<p>Not assessed at this level</p>

