NEBRASKA
DEPARTMENT OF
EDUCATION

301 Centennial Mall South
Lincoln, Nebraska 68509-4987

NEBRASKA SCIENCE STANDARDS

Grades K-12

Adopted by the Nebraska State Board of Education
October 6, 2010

Adopted 10-6-10

SC K-12.1 Comprehensive Science Standard – Inquiry, the Nature of Science, and Technology
Students will combine scientific processes and knowledge with scientific reasoning and critical thinking to ask questions about phenomena and propose explanations based on gathered evidence.

1. Inquiry, the Nature of Science, and Technology	**Grade Band Standards**			
	K-2	**3-5**	**6-8**	**9-12**
1. Abilities to do Scientific Inquiry	SC2.1.1 Students will ask questions and conduct investigations that lead to observations and communication of findings.	SC5.1.1 Students will plan and conduct investigations that lead to the development of explanations.	SC8.1.1 Students will design and conduct investigations that will lead to descriptions of relationships between evidence and explanations.	SC12.1.1 Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models.
Scientific Questioning	SC2.1.1.a Ask questions that relate to a science topic	SC5.1.1.a Ask testable scientific questions	SC8.1.1.a Formulate testable questions that lead to predictions and scientific investigations	SC12.1.1.a Formulate a testable hypothesis supported by prior knowledge to guide an investigation
Scientific Investigations	SC2.1.1.b Conduct simple investigations	SC5.1.1.b Plan and conduct investigations and identify factors that have the potential to impact an investigation	SC8.1.1.b Design and conduct logical and sequential investigations including repeated trials	SC12.1.1.b Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations
Scientific Controls and Variables			SC8.1.1.c Determine controls and use dependent (responding) and independent (manipulated) variables	SC12.1.1.c Identify and manage variables and constraints
Scientific Tools	SC2.1.1.c Select and use simple tools appropriately	SC5.1.1.c Select and use equipment correctly and accurately	SC8.1.1.d Select and use equipment appropriate to the investigation, demonstrate correct techniques	SC12.1.1.d Select and use lab equipment and technology appropriately and accurately
Scientific Observations	SC2.1.1.d Describe objects, organisms, or events using pictures, words, and numbers	SC5.1.1.d Make relevant observations and measurements	SC8.1.1.e Make qualitative and quantitative observations	SC12.1.1.e Use tools and technology to make detailed qualitative and quantitative observations
Scientific Data Collection	SC2.1.1.e Collect and record observations	SC5.1.1.e Collect and organize data	SC8.1.1.f Record and represent data appropriately and review for quality, accuracy, and relevancy	SC12.1.1.f Represent and review collected data in a systematic, accurate, and objective manner

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1. Inquiry, the Nature of Science, and Technology	Grade Band Standards			
	K-2	3-5	6-8	9-12
Scientific Interpretations, Reflections, and Applications		SC5.1.1.f Develop a reasonable explanation based on collected data	SC8.1.1.g Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information	SC12.1.1.g Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations SC12.1.1.h Use results to verify or refute a hypothesis SC12.1.1.i Propose and/or evaluate possible revisions and alternate explanations
Scientific Communication	SC2.1.1.f Use drawings and words to describe and share observations with others	SC5.1.1.g Share information, procedures, and results with peers and/or adults	SC8.1.1.h Share information, procedures, results, and conclusions with appropriate audiences	SC12.1.1.j Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers)
		SC5.1.1.h Provide feedback on scientific investigations	SC8.1.1.i Analyze and provide appropriate critique of scientific investigations	SC12.1.1.k Evaluate scientific investigations and offer revisions and new ideas as appropriate
Mathematics	SC2.1.1.g Use appropriate mathematics in all aspects of scientific inquiry	SC5.1.1.i Use appropriate mathematics in all aspects of scientific inquiry	SC8.1.1.j Use appropriate mathematics in all aspects of scientific inquiry	SC12.1.1.l Use appropriate mathematics in all aspects of scientific inquiry

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1. Inquiry, the Nature of Science, and Technology	Grade Band Standards			
	K-2	3-5	6-8	9-12
2. Nature of Science		SC5.1.2 Students will describe how scientists go about their work.	SC8.1.2 Students will apply the nature of science to their own investigations.	SC12.1.2 Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations.
Scientific Knowledge		SC5.1.2.a Recognize that scientific explanations are based on evidence and scientific knowledge	SC8.1.2.a Recognize science is an ongoing process and the scientific community accepts and uses explanations until they encounter new experimental evidence not matching existing explanations	SC12.1.2.a Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge
Science and Society		SC5.1.2.b Recognize that new discoveries are always being made which impact scientific knowledge	SC8.1.2.b Describe how scientific discoveries influence and change society	SC12.1.2.b Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society
Science as a Human Endeavor		SC5.1.2.c Recognize many different people study science	SC8.1.2.c Recognize scientists from various cultures have made many contributions to explain the natural world	SC12.1.2.c Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world SC12.1.2.d Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted

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1. Inquiry, the Nature of Science, and Technology	Grade Band Standards			
	K-2	3-5	6-8	9-12
3. Technology		SC5.1.3 Students will solve a simple design problem.	SC8.1.3 Students will solve a design problem which involves one or two science concepts.	SC12.1.3 Students will solve a complex design problem.
Abilities to do Technical Design		SC5.1.3.a Identify a simple problem	SC8.1.3.a Identify problems for technical design	
		SC5.1.3.b Propose a solution to a simple problem	SC8.1.3.b Design a solution or product	SC12.1.3.a Propose designs and choose between alternative solutions of a problem
				SC12.1.3.b Assess the limits of a technical design
		SC5.1.3.c Implement the proposed solution	SC8.1.3.c Implement the proposed design	SC12.1.3.c Implement the selected solution
		SC5.1.3.d Evaluate the implementation	SC8.1.3.d Evaluate completed technological designs or products	SC12.1.3.d Evaluate the solution and its consequences
		SC5.1.3.e Communicate the problem, design, and solution	SC8.1.3.e Communicate the process of technical design	SC12.1.3.e Communicate the problem, process, and solution
Understanding of Technical Design			SC8.1.3.f Distinguish between scientific inquiry (asking questions about the natural world) and technological design (using science to solve practical problems)	SC12.1.3.f Compare and contrast the reasons for the pursuit of science and the pursuit of technology
			SC8.1.3.g Describe how science and technology are reciprocal	SC12.1.3.g Explain how science advances with the introduction of new technology
			SC8.1.3.h Recognize that solutions have intended and unintended consequences	SC12.1.3.h Recognize creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering
			SC8.1.3.i Compare and contrast the reporting of scientific knowledge and the reporting of technological knowledge	

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SC K-12.2 Comprehensive Science Standard – Physical Science Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Physical Sciences to make connections with the natural and engineered world.				
2. Physical Science	**Grade Band Standards**			
	K-2	**3-5**	**6-8**	**9-12**
1. Matter	SC2.2.1 Students will observe and describe properties of objects and their behavior.	SC5.2.1 Students will explore and describe the physical properties of matter and its changes.	SC8.2.1 Students will identify and describe the particulate nature of matter including physical and chemical interactions.	SC12.2.1 Students will investigate and describe matter in terms of its structure, composition and conservation.
Properties and Structure of Matter	SC2.2.1.a Observe physical properties of objects (freezing and melting, sinking and floating, color, size, texture, shape, weight)	SC5.2.1.a Identify mixtures and pure substances	SC8.2.1.a Compare and contrast elements, compounds, and mixtures	
	SC2.2.1.b Separate and sort objects by physical attributes	SC5.2.1.b Identify physical properties of matter (color, odor, elasticity, weight, volume)	SC8.2.1.b Describe physical and chemical properties of matter	SC12.2.1.a Recognize bonding occurs when outer electrons are transferred (ionic) or shared (covalent)
	SC2.2.1.c Measure objects using standard and non-standard units	SC5.2.1.c Use appropriate metric measurements to describe physical properties		
States of Matter	SC2.2.1.d Identify solids and liquids and recognize that liquids take the shape of their container	SC5.2.1.d Identify state changes caused by heating and cooling solids, liquids, and gases	SC8.2.1.c Recognize most substances can exist as a solid, liquid, or gas depending on temperature	SC12.2.1.b Describe the energy transfer associated with phase changes between solids, liquids, and gases
			SC8.2.1.d Compare and contrast solids, liquids, and gases based on properties of these states of matter	SC12.2.1.c Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle arrangement, particle motion, and strength of bond between molecules

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2. Physical Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
Physical and Chemical Changes			SC8.2.1.e Distinguish between physical and chemical changes (phase changes, dissolving, burning, rusting) SC8.2.1.f Recognize conservation of matter in physical and chemical changes	SC12.2.1.d Recognize a large number of chemical reactions involve the transfer of either electrons (oxidation/reduction) or hydrogen ions (acid/base) between reacting ions, molecules, or atoms SC12.2.1.e Identify factors affecting rates of chemical reactions (temperature, particle size, surface area)
Atomic Structure				SC12.2.1.f Recognize the charges and relative locations of subatomic particles (neutrons, protons, electrons) SC12.2.1.g Describe properties of atoms, ions, and isotopes
Classification of Matter			SC8.2.1.g Classify substances into similar groups based on physical properties	SC12.2.1.h Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties

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2. Physical Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
2. Force and Motion	SC2.2.2 Students will compare relative position and motion of objects.	SC5.2.2 Students will identify the influence of forces on motion.	SC8.2.2 Students will investigate and describe forces and motion.	SC12.2.2 Students will investigate and describe the nature of field forces and their interactions with matter.
Motion	SC2.2.2.a State location and/or motion relative to another object or its surroundings (in front of, behind, between, over, under, faster, slower, forward and backward, up and down) SC2.2.2.b Describe how objects move in many different ways (straight, zigzag, round and round, back and forth, and fast and slow)	SC5.2.2.a Describe motion by tracing and measuring an object's position over a period of time (speed)	SC8.2.2.a Describe motion of an object by its position and velocity	SC12.2.2.a Describe motion with respect to displacement and acceleration
Inertia/Newton's 1st law			SC8.2.2.b Recognize an object that is not being subjected to a force will continue to move at a constant speed in a straight line or stay at rest (Newton's 1st law)	SC12.2.2.b Describe how the law of inertia (Newton's 1st law) is evident in a real-world event
Forces/Newton's 2nd law		SC5.2.2.b Describe changes in motion due to outside forces (push, pull, gravity)	SC8.2.2.c Compare the motion of objects related to the effects of balanced and unbalanced forces	SC12.2.2.c Make predictions based on relationships among net force, mass, and acceleration (Newton's 2nd law)

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2. Physical Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
Newton's 3rd law				SC12.2.2.d Recognize that all forces occur in equal and opposite pairs (Newton's 3rd law) SC12.2.2.e Describe how Newton's 3rd law of motion is evident in a real-world event
Universal Forces		SC5.2.2.c Describe magnetic behavior in terms of attraction and repulsion	SC8.2.2.d Recognize that everything on or around Earth is pulled towards Earth's center by gravitational force	SC12.2.2.f Describe gravity as a force that each mass exerts on another mass, which is proportional to the masses and the distance between them SC12.2.2.g Recognize that an attractive or repulsive electric force exists between two charged particles and that this force is proportional to the magnitude of the charges and the distance between them

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2. Physical Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
3. Energy		SC5.2.3 Students will observe and identify signs of energy transfer.	SC8.2.3 Students will identify and describe how energy systems and matter interact.	SC12.2.3 Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter.
Sound/Mechanical Waves		SC5.2.3.a Recognize that sound is produced from vibrating objects; the sound can be changed by changing the vibration	SC8.2.3.a Recognize that vibrations set up wave-like disturbances that spread away from the source (sound, seismic, water waves) SC8.2.3.b Identify that waves move at different speeds in different materials	SC12.2.3.a Describe mechanical wave properties (speed, wavelength, frequency, amplitude) and how waves travel through a medium SC12.2.3.b Recognize that the energy in waves can be changed into other forms of energy
Light		SC5.2.3.b Recognize that light travels in a straight line and can be reflected by an object (mirror) SC5.2.3.c Recognize that light can travel through certain materials and not others (transparent, translucent, opaque)	SC8.2.3.c Recognize that light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection) SC8.2.3.d Recognize that to see an object, light from the surface of the object must enter the eye; the color seen depends on the properties of the surface and the color of the available light sources	SC12.2.3.c Recognize that light can behave as a wave (diffraction and interference)

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2. Physical Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
Heat		SC5.2.3.d Identify ways to generate heat (friction, burning, incandescent light bulb)	SC8.2.3.e Recognize that heat moves from warmer objects to cooler objects until both reach the same temperature	SC12.2.3.d Distinguish between temperature (a measure of the average kinetic energy of atomic or molecular motion) and heat (the quantity of thermal energy that transfers due to a change in temperature) SC12.2.3.e Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation
Electricity/Magnetism		SC5.2.3.e Identify materials that act as thermal conductors or insulators SC5.2.3.f Recognize that the transfer of electricity in an electrical circuit requires a closed loop		SC12.2.3.f Recognize that the production of electromagnetic waves is a result of changes in the motion of charges or by a changing magnetic field SC12.2.3.g Compare and contrast segments of the electromagnetic spectrum (radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength

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2. Physical Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
Nuclear				SC12.2.3.h Recognize that nuclear reactions (fission, fusion, radioactive decay) convert a fraction of the mass of interacting particles into energy, and this amount of energy is much greater than the energy in chemical interactions
Conservation			SC8.2.3.f Describe transfer of energy from electrical and magnetic sources to different energy forms (heat, light, sound, chemical) SC8.2.3.g Recognize all energy is neither created nor destroyed	SC12.2.3.i Interpret the law of conservation of energy to make predictions for the outcome of an event
Mechanical Energy				SC12.2.3.j Identify that all energy can be considered to be either kinetic, potential, or energy contained by a field (e.g. electromagnetic waves)
Chemical Energy				SC12.2.3.k Identify endothermic and exothermic reactions

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SC K-12.3 Comprehensive Science Standard – Life Science Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Life Sciences to make connections with the natural and engineered world.				
3. Life Science	**Grade Band Standards**			
	K-2	**3-5**	**6-8**	**9-12**
1. Structure and Function of Living Systems	SC2.3.1 Students will investigate the characteristics of living things.	SC5.3.1 Students will investigate and compare the characteristics of living things.	SC8.3.1 Students will investigate and describe the structure and function of living organisms.	SC12.3.1 Students will investigate and describe the chemical basis of the growth, development, and maintenance of cells.
Characteristics of Life	SC2.3.1.a Differentiate between living and nonliving things	SC5.3.1.a Compare and contrast characteristics of living and nonliving things	SC8.3.1.a Recognize the levels of organization in living organisms (cells, tissues, organs, organ systems, organisms)	SC12.3.1.a Identify the complex molecules (carbohydrates, lipids, proteins, nucleic acids) that make up living organisms
Cellular Composition of Organisms			SC8.3.1.b Recognize that all organisms are composed of one or many cells; that these cells must grow, divide, and use energy; and that all cells function similarly SC8.3.1.c Recognize specialized cells perform specialized functions in multicellular organisms SC8.3.1.d Identify the organs and functions of the major systems of the human body and describe ways that these systems interact with each other	SC12.3.1.b Identify the form and function of sub-cellular structures that regulate cellular activities SC12.3.1.c Describe the cellular functions of photosynthesis, respiration, cell division, protein synthesis, transport of materials, and energy capture/release

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3. Life Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
Characteristics of Living Organisms	SC2.3.1.b Identify the basic needs of living things (food, water, air, space, shelter) SC2.3.1.c Identify external parts of plants and animals SC2.3.1.d Observe and match plants and animals to their distinct habitats	SC5.3.1.b Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect move, root of a plant helps the plant obtain water)		
Behavior			SC8.3.1.e Describe how plants and animals respond to environmental stimuli	SC12.3.1.d Describe how an organism senses changes in its internal or external environment and responds to ensure survival

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3. Life Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
2. Heredity	SC2.3.2 Students will recognize changes in living things.	SC5.3.2 Students will identify variations of inherited characteristics and life cycles.	SC8.3.2 Students will investigate and describe the relationship between reproduction and heredity.	SC12.3.2 Students will describe the molecular basis of reproduction and heredity.
Inherited Traits	SC2.3.2.a Describe how offspring resemble their parents	SC5.3.2.a Identify inherited characteristics of plants and animals	SC8.3.2.a Recognize that hereditary information is contained in genes within the chromosomes of each cell	SC12.3.2.a Identify that information passed from parents to offspring is coded in DNA molecules SC12.3.2.b Describe the basic structure of DNA and its function in genetic inheritance SC12.3.2.c Recognize how mutations could help, harm, or have no effect on individual organisms
Reproduction	SC2.3.2.b Describe how living things change as they grow	SC5.3.2.b Identify the life cycle of an organism	SC8.3.2.b Compare and contrast sexual and asexual reproduction	SC12.3.2.d Describe that sexual reproduction results in a largely predictable, variety of possible gene combinations in the offspring of any two parents

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3. Life Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
3. Flow of Matter and Energy in Ecosystems		SC5.3.3 Students will describe relationships within an ecosystem.	SC8.3.3 Students will describe populations and ecosystems.	SC12.3.3 Students will describe, on a molecular level, the cycling of matter and the flow of energy between organisms and their environment.
Flow of Energy		SC5.3.3.a Diagram and explain a simple food chain beginning with the Sun SC5.3.3.b Identify the role of producers, consumers, and decomposers in an ecosystem	SC8.3.3.a Diagram and explain the flow of energy through a simple food web SC8.3.3.b Compare the roles of producers, consumers, and decomposers in an ecosystem	SC12.3.3.a Explain how the stability of an ecosystem is increased by biological diversity
Ecosystems		SC5.3.3.c Recognize the living and nonliving factors that impact the survival of organisms in an ecosystem	SC8.3.3.c Recognize that producers transform sunlight into chemical energy through photosynthesis SC8.3.3.d Determine the biotic and abiotic factors that impact the number of organisms an ecosystem can support SC8.3.3.e Recognize a population is all the individuals of a species at a given place and time SC8.3.3.f Identify symbiotic relationships among organisms	SC12.3.3.b Recognize that atoms and molecules cycle among living and nonliving components of the biosphere SC12.3.3.c Explain how distribution and abundance of different organisms in ecosystems are limited by the availability of matter and energy and the ability of the ecosystem to recycle materials
Impact on Ecosystems		SC5.3.3.d Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live	SC8.3.3.g Identify positive and negative effects of natural and human activity on an ecosystem	SC12.3.3.d Analyze factors which may influence environmental quality

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3. Life Science	Grade Band Standards			
	K-2	3-5	6-8	9-12
4. Biodiversity	SC2.3.4 Students will recognize changes in organisms.	SC5.3.4 Students will describe changes in organisms over time.	SC8.3.4 Students will identify characteristics of organisms that help them survive.	SC12.3.4 Students will describe the theory of biological evolution.
Biological Adaptations	SC2.3.4.a Recognize seasonal changes in animals and plants	SC5.3.4.a Describe adaptations made by plants or animals to survive environmental changes	SC8.3.4.a Describe how an inherited characteristic enables an organism to improve its survival rate	SC12.3.4.a Identify different types of adaptations necessary for survival (morphological, physiological, behavioral)
Biological Evolution			SC8.3.4.b Recognize the extinction of a species is caused by the inability to adapt to an environmental change	SC12.3.4.b Recognize that the concept of biological evolution is a theory which explains the consequence of the interactions of: (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring
			SC8.3.4.c Use anatomical features of an organism to infer similarities among other organisms	SC12.3.4.c Explain how natural selection provides a scientific explanation of the fossil record and the molecular similarities among the diverse species of living organisms
				SC12.3.4.d Apply the theory of biological evolution to explain diversity of life over time

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SC K-12.4 Comprehensive Science Standard – Earth and Space Sciences Students will integrate and communicate the information, concepts, principles, processes, theories, and models of Earth and Space Sciences to make connections with the natural and engineered world.				
4. Earth and Space Sciences	**Grade Band Standards**			
	K-2	**3-5**	**6-8**	**9-12**
1. Earth in Space	SC2.4.1 Students will observe and identify objects of the sky.	SC5.4.1 Students will observe and describe characteristics, patterns, and changes in the sky.	SC8.4.1 Students will investigate and describe Earth and the solar system.	SC12.4.1 Students will investigate and describe the known universe.
Objects in the Sky and Universe	SC2.4.1.a Identify objects in the sky (the Sun, the Moon, the stars) and when they are observable	SC5.4.1.a Recognize that the observed shape of the Moon changes from day to day during a one month period	SC8.4.1.a Describe the components of the solar system (the Sun, planets, moons, asteroids, comets)	SC12.4.1.a Describe the formation of the universe using the Big Bang Theory SC12.4.1.b Recognize that stars, like the Sun, transform matter into energy by nuclear reactions which leads to the formation of other elements SC12.4.1.c Describe stellar evolution
Motion of Objects in the Solar System	SC2.4.1.b Identify objects that appear to move in the sky (the Sun, the Moon, stars)	SC5.4.1.b Recognize the motion of objects in the sky (the Sun, the Moon, stars) change over time in recognizable patterns	SC8.4.1.b Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipses, phases of the Moon and seasons	
Gravitational Effects			SC8.4.1.c Describe the effects of gravity on Earth (tides) and the effect of gravity on objects in the solar system	

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4. Earth and Space Sciences	Grade Band Standards			
	K-2	3-5	6-8	9-12
2. Earth Structures and Processes	SC2.4.2 Students will observe, identify, and describe characteristics of Earth's materials.	SC5.4.2 Students will observe and describe Earth's materials, structure, and processes.	SC8.4.2 Students will investigate and describe Earth's structure, systems, and processes.	SC12.4.2 Students will investigate the relationships among Earth's structure, systems, and processes.
Properties of Earth Materials	SC2.4.2.a Describe Earth materials (sand, soil, rocks, water)	SC5.4.2.a Describe the characteristics of rocks, minerals, soil, water, and the atmosphere	SC8.4.2.a Describe the layers of Earth (core, mantle, crust, atmosphere) SC8.4.2.b Describe the physical composition of soil SC8.4.2.c Describe the mixture of gases in Earth's atmosphere and how the atmosphere's properties change at different elevations SC8.4.2.d Describe evidence of Earth's magnetic field	SC12.4.2.a Recognize how Earth materials move through geochemical cycles (carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter
Earth's Processes		SC5.4.2.b Identify weathering, erosion, and deposition as processes that build up or break down Earth's surface	SC8.4.2.e Compare and contrast constructive and destructive forces (deposition, erosion, weathering, plate motion causing uplift, volcanoes, earthquakes) that impact Earth's surface SC8.4.2.f Describe the rock cycle SC8.4.2.g Describe the water cycle (evaporation, condensation, precipitation)	SC12.4.2.b Describe how heat convection in the mantle propels the plates comprising Earth's surface across the face of the globe (plate tectonics)
Use of Earth Materials	SC2.4.2.b Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling	SC5.4.2.c Identify how Earth materials are used (fuels, building materials, sustaining plant life)	SC8.4.2.h Classify Earth materials as renewable or nonrenewable	SC12.4.2.c Evaluate the impact of human activity and natural causes on Earth's resources (groundwater, rivers, land, fossil fuels)

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4. Earth and Space Sciences	Grade Band Standards			
	K-2	3-5	6-8	9-12
3. Energy in Earth's Systems	SC2.4.3 Students will observe simple patterns of change on Earth.	SC5.4.3 Students will observe and describe the effects of energy changes on Earth.	SC8.4.3 Students will investigate and describe energy in Earth's systems.	SC12.4.3 Students will investigate and describe the relationships among the sources of energy and their effects on Earth's systems.
Energy Sources	SC2.4.3.a Observe that the Sun provides heat and light	SC5.4.3.a Describe the Sun's warming effect on the land and water	SC8.4.3.a Describe how energy from the Sun influences the atmosphere and provides energy for plant growth	SC12.4.3.a Describe how radiation, conduction, and convection transfer heat in Earth's systems SC12.4.3.b Identify internal and external sources of heat energy in Earth's systems SC12.4.3.c Compare and contrast benefits of renewable and nonrenewable energy sources
Weather and Climate	SC2.4.3.b Observe and describe simple daily changes in weather SC2.4.3.c Describe simple seasonal weather indicators and how they impact student choices (activities, clothing)	SC5.4.3.b Observe, measure, and record changes in weather (temperature, wind direction and speed, precipitation) SC5.4.3.c Recognize the difference between weather, climate, and seasons	SC8.4.3.b Identify factors that influence daily and seasonal changes on Earth (tilt of the Earth, humidity, air pressure, air masses) SC8.4.3.c Describe atmospheric movements that influence weather and climate (air masses, jet stream)	SC12.4.3.d Describe natural influences (Earth's rotation, mountain ranges, oceans, differential heating) on global climate

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4. Earth and Space Sciences	Grade Band Standards			
	K-2	3-5	6-8	9-12
4. Earth's History		SC5.4.4 Students will describe changes in Earth.	SC8.4.4 Students will use evidence to draw conclusions about changes in Earth.	SC12.4.4 Students will explain the history and evolution of Earth.
Past/Present Earth		SC5.4.4.a Describe how slow processes (erosion, weathering, deposition) and rapid processes (landslides, volcanic eruptions, earthquakes) change Earth's surface	SC8.4.4.a Recognize that Earth processes we see today are similar to those that occurred in the past (uniformity of processes) SC8.4.4.b Describe how environmental conditions have changed through use of the fossil record	SC12.4.4.a Recognize that in any sequence of sediments or rocks that has not been overturned, the youngest sediments or rocks are at the top of the sequence and the oldest are at the bottom (law of superposition) SC12.4.4.b Interpret Earth's history by observing rock sequences, using fossils to correlate the sequences at various locations, and using data from radioactive dating methods SC12.4.4.c Compare and contrast the physical and biological differences of the early Earth with the planet we live on today