Intermediate Grades 3-5
Science Essential Standards

Standard #1: INQUIRY

Plan and conduct simple investigations and discuss results

Standard #2: CONNECTIONS

Connect interdisciplinary concepts through the use of critical thinking skills

Standard #3: INFLUENCE

Research the impact of science on self, surrounding community and environment

Directions for Use of Content Standards

The grade level Content Standards are designed to accompany the Essential Standards. Faculty discussion will need to take place to ensure consistency in teaching. The administrator should reproduce the Content Standards and distribute them to all the teachers.

The format for the Content Standards is as follows:

1. Blank box to record date of instruction of content standards or to use as a check-off to indicate that instruction of standards occurred
2. Numeric system that identifies the specific standard statement
3. Standard Strand
4. Next Generation Science Standard Reference Number **(NGSS)**
5. Program Standard Reference: Inquiry (Q), Connection (C), Influence (I)

Teachers will use this guide as the basis for planning their lessons for the year. Use of the guide will assist students in attaining the Standards for which all are accountable. Teachers are required to spend 80% of their time teaching strictly from the curriculum guide with the remaining 20% of their time teaching concepts that enhance the curriculum.

Program Standards

"**Q**" stands for **Inquiry**; "**C**" stands for **Connections (**NGSS Cross-cutting concepts); "**I**" stands for **Influence**

Inquiry, connections, and influence are part of the essential standards that are listed at the beginning of the K – 12 Science Curriculum Standards. Refer to these standards to better understand how the Content Standards support the overall Essential Standards.

Within each content standard strand, NGSS standards equivalence is given in parentheses (e.g.NGSS-3-LS1)
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Clarification statements are given to provide teachers with details, vocabulary, and examples for teaching the performance expectations.

Assessment boundary statements *are given to provide limits to instruction and assessment because these concepts are taught at a higher grade level. This is done to avoid redundancies and to keep standards developmentally appropriate.*

For an explanation of what is meant by the clarification statements and assessment boundaries, please view the following:

Standard 3.8.a:
Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. (NGSS 3-LS3-1)

● Clarification Statement: Patterns are the similarities and differences in *traits* shared between *offspring* and their parents, or among siblings. Emphasis is on *organisms* other than humans.

● Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.

*Details given in this example would include: "emphasis on organisms other than humans"
*Vocabulary given in this example would include: traits, organisms, and offspring
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Abilities to do Scientific Inquiry (NDE SC5.1.1.a-i) **<u>Science Process Skills for Integrating Inquiry into the Content Areas</u>** *The following scientific process skills will be **integrated throughout the content areas** for Grades 3-5. These skills should be mastered at the appropriate level by the end of fifth grade.*		
	Grade 3 Inquiry 3.1	**Plan and conduct investigations that lead to the development of explanations.** ● <u>Clarification Statement:</u> Students should be able to do the following: ○ Ask a testable scientific question ○ Plan and conduct investigations and identify factors that have the potential to impact an investigation ○ Select and use equipment correctly and accurately ○ Make relevant observations and measurements ○ Collect and organize data ○ Develop a reasonable explanation based on collected data ○ Share information, procedures, and results with peers and/or adults ○ Provide feedback on scientific investigations ○ Use appropriate mathematics in all aspects of scientific inquiry
	Inquiry 3.2	**Nature of Science (NDE SC5.1.2.a-c)**
	3.2.a	**Describe how scientists go about their work.** ● <u>Clarification Statement:</u> Students should be able to do the following: ○ Recognize that scientific explanations are based on evidence and scientific knowledge ○ Recognize that new discoveries are always being made which impact scientific knowledge ○ Recognize many different people study science
	Inquiry 3.3	**Technology (NDE SC 5.1.3.a-e)**
	3.3.a	**Solve a simple design problem.** ● <u>Clarification Statement:</u> Students should be able to do the following: ○ Identify a simple problem ○ Propose a solution to a simple problem ○ Implement the proposed solution ○ Evaluate the implementation ○ Communicate the problem, design, and solution
	Inquiry 3.4	**Engineering and Design**
	3.4.a	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.** **(NGSS 3-5-ETS1-1)**
	3.4.b	**Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.** **(NGSS 3-5-ETS1-2)**

	3.4.c	**Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. (NGSS 3-5-ETS1-3)**

✓	Grade Level	Content Standard Strand	Program Standard		
	Grade 3	**Physical Science**	Q	C	I
3.5 PS		**Motion and Stability: Forces and Interactions (NGSS 3-PS2)**			
	3.5.a	**Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. (NGSS 3-PS2-1)** ● Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all. ● *Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment is limited to gravity being addressed as a force that pulls objects down.*	Q	C	
	3.5.b	**Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. (NGSS 3-PS2-2)** ● Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, pendulum, a ball rolling back and forth in a bowl, and two children on a see-saw. ● *Assessment Boundary: Assessment does not include technical terms such as period and frequency.*	Q	C	
	3.5.c	**Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. (NGSS 3-PS2-3)** ● Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force. ● *Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, (objects that are concrete/tangible), and electrical interactions are limited to static electricity.*	Q	C	

	3.5.d	**Define a simple design problem that can be solved by applying scientific ideas about magnets. (NGSS 3-PS2-4)** ● Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.	Q	C	I

Grade 3		**Life Science**			
3.6 LS		**From Molecules to Organisms: Structures and Processes (NGSS 3-LS1)**			
	3.6.a	**Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. (NGSS 3-LS1-1)** • Clarification Statement: Changes organisms go through during their life form a pattern. • *Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.*	Q	C	I
3.7 LS		**Ecosystems: Interactions, Energy, and Dynamics (NGSS 3-LS2)**			
	3.7.a	**Construct an argument that some animals form groups that help members survive. (NGSS 3-LS2-1)** • Clarification Statement: Being a part of a big group helps animals obtain food, defend themselves and cope with changes. Groups may serve different functions and vary dramatically in size.	Q	C	I
3.8 LS		**Heredity: Inheritance and Variation of Traits (NGSS 3-LS3)**			
	3.8.a	**Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. (NGSS 3-LS3-1)** • Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans. • *Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.*	Q	C	
	3.8.b	**Use evidence to support the explanation that traits can be influenced by the environment. (NGSS 3-LS3-2)** • Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.	Q	C	

3.9 LS		Biological Evolution: Unity and Diversity (NGSS 3-LS4)			
	3.9.a	**Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. (NGSS 3-LS4-1)** ● Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms. (Some kinds of plants and animals that once lived on Earth are no longer found anywhere. Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.) ● *Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.*	Q	C	
	3.9.b	**Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. (NGSS 3-LS4-2)** ● Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.	Q	C	
	3.9.c	**Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. (NGSS 3-LS403)** ● Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other. (Ideas might include having students report on a topic supported by facts, reasons, and/or relevant details.)	Q	C	
	3.9.d	**Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. (NGSS 3-LS4-4)** ● Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms. (Ideas might include having students report on a topic supported by facts, reasons, and/or relevant details.) ● *Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.*	Q	C	I

Grade 3		**Earth Science**			
3.10 ES		**Earth's systems (NGSS 3-ESS2)**			
	3.10.a	**Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. (NGSS 3-ESS2-1)** ● Clarification Statement: Examples of data could include average temperature, precitpitation, and wind directin. ● *Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.*	Q	C	
	3.10.b	**Obtain and combine information to describe climates in different regions of the world. (NGSS 3-ESS2-2)** ● Clarification Statement: Students can research the climates of different areas of the world to better understand the factors that help determine the climate of a given region.	Q	C	
3.11 ES		**Earth and Human Activity (NGSS 3-ESS3)**			
	3.11.a	**Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. (NSGG 3-ESS3-1)** ● Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.	Q	C	I
Grade 3		**Science in Personal and Social Perspectives**			
	3.12.a	**Develop an understanding and appreciation of our God-given resources.**	Q	C	I

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	Abilities to do Scientific Inquiry (NDE SC5.1.1.a-i) **<u>Science Process Skills for Integrating Inquiry into the Content Areas</u>** *The following scientific process skills will be **integrated throughout the content areas** for Grades 3-5. These skills should be mastered at the appropriate level by the end of fifth grade.*	
	Grade 4 Inquiry 4.1	**Plan and conduct investigations that lead to the development of explanations.** ● <u>Clarification Statement:</u> Students should be able to do the following: ○ Ask a testable scientific question ○ Plan and conduct investigations and identify factors that have the potential to impact an investigation ○ Select and use equipment correctly and accurately ○ Make relevant observations and measurements ○ Collect and organize data ○ Develop a reasonable explanation based on collected data ○ Share information, procedures, and results with peers and/or adults ○ Provide feedback on scientific investigations ○ Use appropriate mathematics in all aspects of scientific inquiry
	Inquiry 4.2	**Nature of Science (NDE SC5.1.2a-c)**
	4.2.a	**Describe how scientists go about their work.** ● <u>Clarification Statement:</u> Recognize that scientific explanations are based on evidence and scientific knowledge ○ Recognize that new discoveries are always being made which impact scientific knowledge ○ Recognize many different people study science
	Inquiry 4.3	**Technology (NDE SC5.1.3a-e)**
	4.3.a	**Solve a simple design problem.** ● <u>Clarification Statement:</u> Students should be able to do the following: ○ Identify a simple problem ○ Propose a solution to a simple problem ○ Implement the proposed solution ○ Evaluate the implementation ○ Communicate the problem, design, and solution
	Inquiry 4.4	**Engineering and Design**
	4.4.a	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**
	4.4.b	**Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.**
	4.4.c	**Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.**

✓	Grade Level	Content Standard Strand	Program Standard		
	Grade 4	**Physical Science**	**Q**	**C**	**I**
4.5 PS		**Energy (NGSS 4-PS3)**			
	4.5.a	**Use evidence to construct an explanation relating the speed of an object to the energy of that object. (NGSS 4-PS3-1)** ● Clarification Statement: The faster a given object is moving, the more energy it possesses. ● *Assessment Boundary: Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy. (Students vocabulary should be limited to terms such as slower, faster, change in direction, etc. Rather than focusing on precise calculations and measurements of speed, etc.)*	Q	C	
	4.5.b	**Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. (NGSS 4-PS3-2)** ● Clarification Statement: Energy can be moved from place to place by moving objects or through sound, light, or electric currents. ● *Assessment Boundary: Assessment does not include quantitative measurements of energy. Students' vocabulary should be limited to terms such as slower, faster, change in direction, etc. , rather than focusing on precise calculations and measurements of speed, etc.*	Q		
	4.5.c	**Ask questions and predict outcomes about the changes in energy that occur when objects collide. (NGSS 4-PS3-3)** ● Clarification Statement: Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact. ● *Assessment Boundary: Assessment does not include quantitative measurements of energy. (Students' vocabulary should be limited to terms such as slower, faster, change in direction, etc., rather than focusing on precise calculations and measurements of speed, etc.)*	Q	C	
	4.5.d	**Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. (NGSS 4-PS3-4)** ● Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device. (Suggested materials to be used for this might include "Snap Circuit" sets.) ● *Assessment Boundary: Devices should be limited to those that convert motion energy to electric energy or use stored energy to cause motion or produce light or sound. (spool racers, circuits, solar cookers, rubber band cars, etc.).*	Q		I

4.6 PS		**Waves and Their Applications in Technologies for Information Transfer (NGSS 4-PS4)**			
	4.6.a	**Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. (NGSS 4-PS4-1)** ● Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves. (Suggested materials to be used for this might include Slinkys.) ● *Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.*	Q		
	4.6.b	**Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. (NGSS 4-PS4-2)** ● *Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.*	Q		
	4.6.c	**Generate and compare multiple solutions that use patterns to transfer information. (NGSS 4-PS4-3)** ● Clarification Statement: Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, and using Morse code to send text.	Q	C	
	Grade 4	**Life Science**	**Q**	**C**	**I**
From Molecules to Organisms: Structures and Processes (NGSS 4-LS1)					
	4.7.a	**Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. (NGSS 4-LS1-1)** ● Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, exoskeleton, vertebrae, heart, stomach, lung, brain, and skin. (Many of these same structures and functions can be applied to systems in the human body.) ● *Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems. (Human body systems should be limited to skeletal, muscular, nervous, circulatory, respiratory, and digestive.)*	Q		

	4.7.b	**Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. (NGSS 4-LS1-2)** ● Clarification Statement: Emphasis is on systems of information transfer. (Different sense receptors are specialized for particular kinds of information. Which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.) ● Assessment Boundary: *Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.*	Q		

Grade 4		**Earth Science**			
4.8 ES		**Earth's Place in the Universe (NGSS 4-ESS1)**			
	4.8.a	**Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (NGSS 4-ESS1-1)** ● Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock. ● *Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.*	Q	C	
	4.8.b	**Identify characteristics of the following types of rocks: sedimentary, igneous, and metamorphic.**	Q		
4.9 ES		**Earth's Systems (NGSS 4- ESS2)**			
	4.9.a	**Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. (NGSS 4-ESS2-1)** ● Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow. ● *Assessment Boundary: Assessment is limited to a single form of weathering or erosion.*	Q	C	

	4.9.b	**Analyze and interpret data from maps to describe patterns of Earth's features. (NGSS 4-ESS2-2)** • Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.	Q		

4.10 ES		**Earth and Human Activity (NGSS 4-ESS3)**			
	4.10.a	**Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. (NGSS 4-ESS3-1)** • Clarification Statement: Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; nonrenewable energy resources are fossil fuels. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.	Q	C	I
	4.10.b	**Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. (NGSS 4-ESS3-2)** • Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity. (Design doesn't have to be a tangible 3D model, but could instead be an illustration with an explanation/description.) • *Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.*	Q	C	I
Grade 4		**Science in Personal and Social Perspectives**			
	4.11.a	**Develop an understanding of personal health.** • Demonstrate knowledge of cleanliness; nutrition; exercise; rest; safety rules at home and school; how our choices affect our bodies.	Q	C	
	4.11.b	**Describe how different substances can damage the body and alter how the body functions: drugs, alcohol, tobacco**	Q	C	

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Inquiry 5.2	**Nature of Science**
5.2.a	**Describe how scientist go about their work.** ● Clarification Statement: Students should be able to do the following: ○ Recognize that scientific explanations are based on evidence and scientific knowledge ○ Recognize that new discoveries are always being made which impact scientific knowledge ○ Recognize many different people study science
Inquiry 5.3	**Technology (NDE SC 5.1.3)**
5.3.a	**Solve a simple design problem,** ● Clarification Statement: Students should be able to do the following: ○ Identify a simple problem ○ Propose a solution to a simple problem ○ Implement the proposed solution ○ Evaluate the implementation ○ Communicate the problem, design, and solution
Inquiry 5.4	**Engineering and Design**
5.4.a	**Define a simple design problem reflecting a need or a want that includes a specified criteria for success and constraints on materials, time and cost.** **(NGSS 3-5-ETS1-1)**
5.4.b	**Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.** **(NGSS 3-5-ETS1-2)**

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	Grade 5	**Physical Science**	**Q**	**C**	**I**
5.5 PS		**Matter and Its Interactions (NGSS 5-PS1)**			
	5.5.a	**Develop a model to describe that matter is made of particles too small to be seen. (NGSS 5-PS1-1)** ● Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water. ● *Assessment Boundary: Assessment does not include defining the unseen particles.*	Q	C	I
	5.5.b	**Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. (NGSS 5-PS1-2)** ● Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances. ● *Assessment Boundary: Assessment does not include distinguishing mass and weight.*	Q	C	I
	5.5.c	**Make observations and measurements to identify materials based on their properties. (NGSS 5-PS1-3)** ● Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property. ● *Assessment Boundary: Assessment does not include density or distinguishing mass and weight.*	Q	C	I
	5.5.d	**Conduct an investigation to determine whether the mixing of two or more substances results in new substances. (NGSS-5-PS1-4)** • Clarification Statement: Materials could include oil and water, or drink powder and water.	Q	C	I

5.6 PS		**Motion and Stability: Forces and Interactions (NGSS 5-PS2)**			
	5.6.a	**Support an argument that the gravitational force exerted by Earth on objects is directed down. (NGSS 5-PS2-1)** ● Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth. ● *Assessment Boundary: Assessment does not include mathematical representation of gravitational force.*	Q	C	I
5.7 PS		**Energy (NGSS 5-PS3)**			
	5.7.a	**Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. (NGSS 5-PS3-1)** ● Clarification Statement: Examples of models could include diagrams and flowcharts, and food chains.	Q	C	I
Grade 5		**Life Science**			
5.8 LS		**From Molecules to Organisms: Structures and Processes (NGSS 5-LS1)**			
	5.8.a	**Support an argument that plants get the materials they need for growth chiefly from air and water. (NGSS 5-LS1-1)** ● Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.	Q		
5.9 LS		**Ecosystems: Interactions, Energy, and Dynamics (NGSS 5-LS2)**			
	5.9.a	**Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. (NGSS 5-LS2-1)** ● Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth. (Possible materials could include a terrarium, aquarium, compost piles, or worm bins.) ● *Assessment Boundary: Assessment does not include molecular explanations.*	Q	C	I

Grade 5		Earth Science			
5.10 ES		**Earth's Place in the Universe (NGSS 5-ESS1)**			
	5.10.a	**Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth. (NGSS 5-ESS1-1)** ● Clarification Statement: The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. ● *Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).*	Q	C	I
	5.10.b	**Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. (NGSS 5-ESS1-2)** ● Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun, pattern and names of moon phases, and selected stars that are visible only in particular months. ● *Assessment Boundary: Assessment does not include causes of seasons or moon phases.*	Q	C	I
5.11 ES		**Earth's Systems (NGSS 5-ESS2)**			
	5.11.a	**Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. (NGSS 5-ESS2-1)** ● Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system. ● *Assessment Boundary: Assessment is limited to the interactions of two systems at a time.*	Q	C	I
	5.11.b	**Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. (NGSS 5-ESS2-2)** ● Clarification Statement: Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. ● *Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.*	Q	C	I

5.12 ES		Earth and Human Activity (NGSS 5-ESS3)			
	5.12.a	**Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (NGSS 5-ESS3-1)** • Clarification Statement: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. However, individuals and communities are doing things to help protect Earth's resources and environments.	Q	C	I

Grade 5		Science in Personal and Social Perspectives			
	5.13.a	**Describe how recycling and pollution affects the environment.**	Q	C	I
	5.13.b	**Describe human activities (e.g., urban growth, land use, and waste disposal) which can accelerate many natural changes.**	Q	C	I
	5.13.c	**Distinguish between natural environmental changes and human influenced changes/good and bad choices.**	Q	C	I