	REGION 4	TEKS Introductions							
	Kinder	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade5**	**Grade 6**	**Grade 7**	**Grade 8**
(b)	**Introduction**	**Introduction**	**Introduction**	**Introduction**	**Introduction**	**Introduction**	**Introduction**	**Introduction**	**Introduction**
(1)	In Kindergarten through Grade 5, content is organized into recurring strands. The concepts			In Kindergarten through Grade 5 Science, content is organized into recurring strands. The			In Grades 6 through 8 Science, content is organized into recurring strands. The concepts		
(A)	**Scientific and engineering practices**. Scientific inquiry is the planned and deliberate investigation of the natural world using scientific and engineering practices. Scientific methods of investigation are descriptive, correlative, comparative, or experimental. The method chosen should								
(i)	**Scientific practices.** Students ask questions, plan and conduct investigations to answer questions, and explain phenomena using appropriate tools and models.								
(i)	**Engineering practices.** Students identify problems and design solutions using appropriate tools and models.								
(i)	To support instruction in the science content standards, it is		To support instruction in the science content standards, it is		To support instruction in the content standards, it is				
(B)	**Matter and its properties.** Students build their knowledge of the natural world using their senses. The students focus on observable properties and patterns of objects, including shape, color, texture, and material.	**Matter and its properties.** Students build their knowledge of the natural world using their senses. Students focus on observable properties and patterns of objects, including larger and smaller, heavier and lighter, shape, color, and texture. The students understand changes in materials caused by heating and cooling.	**Matter and its properties.** Students build upon their knowledge of the natural world using their senses. The students focus on physical properties of matter and determine how observable properties can be changed through various processes. Students use these processes to form new objects.	**Matter and energy.** Students build upon the knowledge learned in Kindergarten-Grade 2 by investigating the physical properties of matter. Students explore states of matter and observe that changes can occur to matter through heating and cooling. The students explore using substances by combining them to create or modify objects based on their physical properties.	**Matter and energy.** Students investigate matter's measurable properties, including mass, volume, states, temperature, magnetism, and relative density, to determine how it is classified, changed, and used. Students compare and contrast a variety of mixtures, including solutions, and demonstrate that matter is conserved.	**Matter and energy.** Students investigate matter expanding their understanding of properties learned in Grade 4 (mass, volume, states, temperature, magnetism, and relative density) to include solubility and the ability to conduct or insulate both thermal and electrical energy. Students observe the combination of substances to make mixtures and develop an understanding of conservation of matter. These concepts lead to the understanding of elements and compounds. Students will build on this understanding in middle school when they learn to determine density and to identify evidence of chemical changes.	**Matter and energy.** Students build upon their knowledge of properties of solids, liquids, and gases and further explore their molecular energies. In Grade 6, students learn how elements are classified as metals, nonmetals, or metalloids based on their properties on the Periodic Table. Students have previous experience with mixtures in Grade 5. Grade 6 furthers their understanding by investigating the different types of mixtures. Subsequent grades will learn about compounds. In Grade 6, students compare the density of substances relative to fluids and identify evidence of chemical changes.	**Matter and energy.** Students have prior experience with elements in Grade 6 and develop an understanding that compounds are also pure substances in Grade 7. Students investigate the differences between elements and compounds through observations, descriptions of physical properties, and chemical reactions. Students build upon their understanding of solutions by exploring aqueous solutions.	**Matter and energy.** Students make connections between elements, compounds, and mixtures that were introduced in prior grade levels. Students examine the properties of water, acids, and bases. In addition, students understand the basic concept of conservation of mass using chemical equations.
(C)	**Force, motion, and energy**. Students explore the location, motion, and position of objects and investigate the importance of light energy as it relates to the students' everyday lives. Students focus on demonstrating light energy sources and their effect on objects.	**Force, motion, and energy**. Students know that force and motion are related and that energy exists in many forms as a part of everyday life. Magnetism interacts with various materials and can be used as a push and pull. The students investigate the importance of heat and focus on changes caused by heating and cooling.	**Force, motion, and energy**. Students know that force and motion are related and that energy exists in many forms as a part of everyday life. Magnetism interacts with various materials and can be used as a push and pull. The students investigate sound energy and focus on how sound affects objects.	**Force, motion, and energy**. Students manipulate objects by pushing and pulling to demonstrate changes in motion and position. Students also identify forces such as magnetism and gravity. Students understand energy exists in many forms, including mechanical, thermal, light, and sound. The students identify forms of energy in everyday life.	**Force, motion, and energy**. Students investigate forces, including friction, gravity, and magnetism, to observe their effects on objects. They differentiate between mechanical, sound, light, thermal, and electrical energy. Students observe the cycle of energy and the parts of a system while exploring circuits that produce light and thermal energy. They will build on their understanding of circuits in Grade 5. As students explore thermal and electrical energy, they observe the behavior of different materials to identify patterns and label the materials as conductors or insulators.	**Force, motion, and energy**. Students investigate equal and unequal forces and the effects these forces have on objects (motion and direction). Additionally, students investigate energy, including mechanical, light, thermal, electrical, and sound. They uncover cycles (e.g., movement of thermal energy), patterns (e.g., behavior of light, including reflection and refraction), and systems through their exploration. Students will build on this understanding in middle school when they begin to use calculations and measurements to study force, motion, and energy through the study of Newton's Laws of Motion.	**Force, motion, and energy**. Students investigate the relationship between force and motion using a variety of means, including calculations and measurements through the study of Newton's Third Law of Motion. Subsequent grades will study force and motion through Newton's First and Second Laws of Motion. Energy occurs as either potential or kinetic energy. Potential energy can take several forms, including gravitational, elastic, and chemical energy. Energy is conserved throughout systems by changing from one form to another and transfers through waves.	**Force, motion, and energy**. Students measure, calculate, graph, and investigate how forces impact linear motion. Students build upon their understanding of the laws of motions by exploring Newton's First Law of Motion. Temperature is a measure of the average kinetic energy of molecules. Thermal energy is transferred by conduction, convection, or radiation in order to reach thermal equilibrium.	**Force, motion, and energy**. Students are introduced to Newton's Second Law of Motion and investigate how all three laws of motion act simultaneously within systems. Students understand that waves transfer energy and further explore the characteristics and applications of waves.

(D)	**Earth and space**. Patterns are recognizable in the natural world and among objects in the sky. Students understand that weather, seasons of the year, and day and night are repeated patterns. Materials found on Earth can be used and classified.	**Earth and space**. Patterns, cycles, and systems are recognizable in the natural world and among objects in the sky. Students make informed choices by understanding weather and seasonal patterns. Students understand that natural resources on Earth, including rocks, soil, and water, are used by humans and can be conserved.	**Earth and space**. Students observe objects in the sky, including the Sun and the Moon, and collect and analyze weather data. In addition, students identify natural and manmade resources and how they can be conserved.	**Earth and space**. Students learn that there are recognizable processes that change the Earth over time. Students compare day-to-day changes in weather. They also investigate how soil is formed through the processes of weathering and decomposition. Students model rapid changes to Earth's surface as well as explore ways to conserve Earth's resources. Students recognize that there are identifiable objects and patterns in Earth's solar system. Students model the orbits of the Sun, Earth, and Moon as well as describe their relationship to each other. This will set the foundation for Grade 4 when they look at changes in the appearance of the Moon. Students also identify the sequence of the planets in Earth's solar system.	**Earth and space**. Students learn about processes on Earth that create patterns of change. These processes include the water cycle, weathering, erosion, deposition, the appearance of the Moon, and seasons. Students will build on this understanding in Grade 5 when they learn about day and night, shadows, and the rotation of Earth on its axis. Finally, students identify Earth's resources and classify them as renewable or nonrenewable.	**Earth and space**. This strand is focused on identifying recognizable patterns and processes as students learn about Earth's rotation and demonstrate the effects this movement has on Earth's surface, including day and night, shadows, and the rotation of Earth on its axis. Students continue their learning of patterns and processes on Earth while exploring weather, climate, the water cycle, the formation of sedimentary rock and fossil fuels, and the formation of landforms. Finally, students learn ways to manage natural resources to support a healthy environment.	**Earth and space.** Cycles within Sun, Earth, and Moon systems are studied as students learn about seasons and tides. Students identify that the Earth is divided into spheres and examine the processes within and organization of the geosphere. Researching the advantages and disadvantages of short- and long-term uses of resources enables informed decision making about resource management.	**Earth and space.** Students explore characteristics and organization of objects and the role of gravity within our solar system. Earth has a specific set of characteristics that allows life to exist. Students further their understanding of the geosphere by illustrating how Earth's features change over time through tectonic movement. Students investigate how humans depend on and affect the hydrosphere.	**Earth and space.** Students learn that stars and galaxies are part of the universe. In addition, students use data to research scientific theories of the origin of the universe. Students learn how interactions in solar, weather, and ocean systems create changes in weather patterns and climate. In addition, students understand that climate can be impacted by natural events and human activities.
(E)	**Organisms and environments**. All living organisms satisfy basic needs through interactions with nonliving things and living organisms, and they have structures and functions that help them survive within their environments. Students investigate the life cycle of plants and identify likenesses between parents and young.	**Organisms and environments**. All living organisms interact with living and nonliving things within their environments and use structures to meet their basic needs. Students know that organisms are interdependent and part of a food chain. The students investigate the life cycle of animals and identify likenesses between parents and young.	**Organisms and environments**. All living organisms interact with living and nonliving things within their environments and use structures to meet their basic needs. Students understand that organisms are interdependent and part of a food chain. The students investigate the life cycle of animals and identify likenesses between parents and young.	**Organisms and environments**. Students explore patterns, systems, and cycles within environments by investigating characteristics of organisms, life cycles, and interactions among all components of the natural environment. Students examine how environment and the structures and functions of animals play a key role in survival. Students know that when changes in the environment occur, organisms may thrive, become ill, or perish. Students also examine fossils as evidence of past living organisms.	**Organisms and environments**. In this strand, students begin to understand how organisms within an ecosystem interact. Students investigate producers to learn how they make food. Students build on their understanding of food chains, from Grade 3, as they explore food webs where they describe the flow of energy and the role of producers, consumers, and decomposers. They also use fossil evidence to describe environments of the past. Additionally, students explore plant structures and their functions. Students also differentiate between inherited and acquired traits of organisms.	**Organisms and environments**. This strand focuses on identifying relationships, systems, and cycles within organisms and environments. Students describe the interactions of biotic and abiotic factors in an ecosystem. Students build on their understanding of food webs from Grade 4 by predicting how ecosystem changes affect the flow of energy. Additionally, they describe how humans impact the ecosystem. Students also learn how organisms' structures help them to survive, and they distinguish between instinctual and learned behaviors in animals. This will set the foundation for Grade 6 where students compare and contrast variations within organisms and how they impact survival.	**Organisms and environments**. All living organisms are made up of smaller units called cells. Ecosystems are organized into communities, populations, and organisms. Students compare and contrast variations within organisms and how they impact survival. Students examine relationships and interactions between organisms, biotic factors, and abiotic factors in an ecosystem.	**Organisms and environments.** Students further their understanding of organisms as systems made up of cells organized into tissues, tissues into organs, and organs into organ systems by identifying the main functions of the organs within the human body. During both sexual and asexual reproduction, traits are passed on to the next generation. Students understand how traits in populations can change through the processes of natural and artificial selection. Students analyze how energy flows through trophic levels and how biodiversity impacts an ecosystem's sustainability. Students gain an understanding of the taxonomic classifications of organisms and how characteristics determine their classification.	**Organisms and environments**. Students identify the function of organelles. Traits are contained in genetic material that is found on genes within a chromosome from the parent. These traits influence the success of a species over time. Students explore how organisms and their populations respond to environmental changes, including those caused by human activities.
(2)	**Nature of science.** Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process." This vast body of changing and increasing								
(3)	**Scientific observations, inferences, hypotheses and theories.** Students are expected to know that:								
(A)	observations are active acquisition of either qualitative or quantitative information from a primary source through the senses;								
(B)	inferences are conclusions reached on the basis of observations or reasoning supported by relevant evidence;								
(C)	hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power that have been tested over a wide variety of conditions are incorporated into theories; and								
(D)	scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well established and highly reliable explanations, but they may be subject to change as new areas of								
(4)	**Science and social ethics.** Scientific decision making is a way of answering questions about the natural world involving its own set of ethical standards about how the process of science should be carried out. Students distinguish between scientific decision-making practices and								
(5)	**Recurring themes and concepts**. Science consists of recurring themes and making connections between overarching concepts. Recurring themes include structure and function, systems, models, and patterns. All systems have basic properties that can be described in space, time, energy, and matter. Change and constancy occur in systems as patterns and can be observed, measured, and modeled. Models have limitations but provide a tool for understanding the ideas presented. Students analyze a system in terms of its components and how these								
(6)	Statements containing the word "**including**" reference content that must be mastered, while those containing the phrase "**such as**" are intended as possible illustrative examples.								

REGION 4	Scientific and Engineering Practices							
Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
(1) Scientific and engineering practices.								
K-12 (1)(A)ask questions and define problems based on observations or information from text, phenomena, models, or investigations;								
K-2(1)(B) use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems;			**3-5(1)(B**) use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems4		**5(1)(B)** use scientific practices to plan and conduct descriptive and simple experimental investigations and use engineering practices to design solutions to problems;	**6-12(1)(B)** use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems;		
K-2(1)(C) identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;			**3-5(1)(C)** demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;			**6-12(1)(C)** use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;		
K-2(1)(D) use tools, including... to observe, measure, test, and compare;			**3-5(1)(D)** use tools, including... to observe, measure, test, and analyze information;			**6-12(1)(D)** use appropriate tools, such as		
...hand lenses, goggles, trays, cups, bowls, sieves or sifters, notebooks, terrariums, aquariums, samples (rocks, sand, soil, loam, gravel, clay, seeds, and plants), windsock, demonstration thermometer, rain gauge, straws, ribbons, non-standard measuring items, blocks or cubes, tuning fork, various flashlights, small paper cups, items that roll, noise makers, hot plate, opaque objects, transparent objects, foil pie pans, foil muffin cups, wax paper, Sun-Moon-Earth model, and plant life cycle model...	...hand lenses, goggles, heat-resistant gloves, trays, cups, bowls, beakers, sieves/sifters, tweezers, primary balance, notebooks, terrariums, aquariums, stream tables, soil samples (loam, sand, gravel, rocks, and clay), seeds, plants, windsock, pinwheel, student thermometer, demonstration thermometer, rain gauge, straws, ribbons, non-standard measuring items, flashlights, sandpaper, wax paper, items that are magnetic, non-magnetic items, a variety of magnets, hot plate, aluminum foil, Sun-Moon-Earth model, and plant and animal life cycle models...	...hand lenses, goggles, heat-resistant gloves, trays, cups, bowls, beakers, notebooks, stream tables, soil, sand, gravel, flowering plants, student thermometer, demonstration thermometer, rain gauge, flashlights, ramps, balls, spinning tops, drums, tuning forks, sandpaper, wax paper, items that are flexible, non-flexible items, magnets, hot plate, aluminum foil, Sun-Moon-Earth model, and frog and butterfly life cycle models...	...hand lenses; metric rulers; Celsius thermometers; wind vanes; rain gauges; graduated cylinders; beakers; digital scales; hot plates; meter sticks; magnets; notebooks; Sun, Earth, Moon system models; timing devices; materials to support observation of habitats of organisms such as terrariums, aquariums, and collecting nets; and materials to support digital data collection such as computers, tablets, and cameras, ...	...hand lenses; metric rulers; Celsius thermometers; calculators; laser pointers; mirrors; digital scales; balances; graduated cylinders; beakers; hot plates; meter sticks; magnets; notebooks; timing devices; sieves; materials for building circuits; materials to support observation of habitats of organisms such as terrariums, aquariums, and collecting nets; and materials to support digital data collection such as computers, tablets, and cameras,...	...calculators, microscopes, hand lenses, metric rulers, Celsius thermometers, prisms, concave and convex lenses, laser pointers, mirrors, digital scales, balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, notebooks, timing devices, materials for building circuits, materials to support observations of habitats or organisms such as terrariums and aquariums, and materials to support digital data collection such as computers, tablets, and cameras...	graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, weather maps [grade 8 only], hand lenses, and lab notebooks or journals;		
1E collect observations and measurements as evidence;						**6-12(1)(E)** collect quantitative data using the International System of Units (SI) and qualitative		
1F record and organize data using pictures, numbers, words, symbols, and simple graphs; and			**1F** construct appropriate graphic organizers to collect data, including tables, bar graphs, line graphs, tree maps, concept maps, Venn diagrams, flow charts or sequence maps, and input-output tables that show cause and effect; and			**1F** construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data;		
1G develop and use models to represent phenomena, objects, and processes, or design a prototype for a solution to a problem.						**6-12(1)(G)** develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and		
						6-12(1)(H) distinguish between scientific hypotheses, theories, and laws.		
(2) Scientific and engineering practices.								
2A identify basic advantages and limitations of models such as their size, properties, and materials;								
2B analyze data by identifying significant features and patterns;			**2B** analyze data by identifying any significant features, patterns, or sources of error;			**6-12(2)(B)** analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations;		
2C use mathematical concepts to compare two objects with common attributes; and			**2C** use mathematical calculations to compare patterns and relationships; and			**6-12(2)(C)** use mathematical calculations to assess quantitative relationships in data; and		
2D evaluate a design or object using criteria to determine if it works as intended.			**2D** evaluate a design or object using criteria.		**5-12(2())D** evaluate experimental and engineering designs.			
(3) Scientific and engineering practices.								
K-5(3)(A) develop explanations and propose solutions supported by data and models;						**6-12(3)(A)** develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;		
K-12(3)(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and								
K-2(3)(C) listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.			**3-5(3)(C)** listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion.			**6-12(3)(C)** engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.		

Scientific and Engineering Practices

Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade5	Grade 6	Grade 7	Grade 8
(4) Scientific and engineering practices.								
K-2(4)(A) explain how science or an innovation can help others; and			**3-5(4)(A)** explain how scientific discoveries and innovative solutions to problems impact science and society; and			**6-8(4)(A)** relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists		
						6-8(4)(B) make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used; and		
K(4)(B) identify scientists and engineers such as Isaac Newton, Mae Jemison, and Ynes Mexia and explore what different scientists and engineers do.	**1(4)(B)** identify scientists and engineers such as Katherine Johnson, Sally Ride, and Ernest Just and explore what different scientists and engineers do.	**2(4)(B)** identify scientists and engineers such as Alexander Graham Bell, Marie Daly, Mario Molina, and Jane Goodall and explore what different scientists and engineers do.	**3-5(4)(B)** research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.			**6-12(4)(C)** research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.		

Recurring Themes and Concepts

Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
(5) Recurring themes and concepts.			**5 Recurring themes and concepts.**					
K-2(5)(A) identify and use patterns to describe phenomena or design solutions;			**3-5(5)(A)** identify and use patterns to explain scientific phenomena or to design solutions;			**6-8(5)(A)** identify and apply patterns to understand and connect scientific phenomena or to design solutions;		
K-2(5)(B) investigate and predict cause and effect relationships in science;			**3-8(5)(B)** identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;					
K-1(5)(C) describe the properties of objects in terms of relative size (scale) and relative quantity;		**2(5)(C)** measure and describe the properties of objects in terms of size and quantity	**3-5(5)(C)** use scale, proportion, and quantity to describe, compare, or model different systems;			**6-8(5)(C)** analyze how differences in scale, proportion, or quantity affect a system's structure or performance;		
K-2(5)(D) examine the parts of a whole to define or model a system;			**3-8(5)(D)** examine and model the parts of a system and their interdependence in the function of the system;					
K-2(5)(E) identify forms of energy and properties of matter;			**3(5)(E)** investigate the flow of energy and cycling of matter through systems;	**4-5(5)(E)** investigate how energy flows and matter cycles through systems and how matter is conserved		**6-8(5)(E)** analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems;		
K-2(5)(F) describe the relationship between structure and function of objects, organisms, and systems; and			**3-5(5)(F)** explain the relationship between the structure and function of objects, organisms, and systems; and			**6-8(5)(F)** analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems; and		
K-2(5)(G) describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.			**3-5(5)(G)** explain how factors or conditions impact stability and change in objects, organisms, and systems.			**6-8(5)(G)** analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.		

Matter and its Properties/Matter and Energy

	Matter and Its Properties			*Matter and Energy*					
	Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**	**Grade 7**	**Grade 8**
	K-2(6) Matter and its properties. The student knows that objects have physical properties that determine how they are described and classified. The student is expected to:		**2(6) Matter and its properties. The student knows that matter has physical properties that determine how it is described, classified, and used. The student is expected to:**	**3-5(6) Matter and energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to:**			**6(6) Matter and energy. The student knows that matter is made of atoms, can be classified according to its properties, and can undergo changes. The student is expected to:**	**7(6) Matter and energy. The student distinguishes between elements and compounds, classifies changes in matter, and understands the properties of solutions. The student is expected to:**	**8(6) Matter and energy. The student understands that matter can be classified according to its properties and matter is conserved in chemical changes that occur within closed systems. The student is expected to:**
Structures of Matter		1(6)(C) demonstrate and explain that a whole object is a system made of organized parts such as a toy that can be taken apart and put back together.	2(6)(C) demonstrate that small units such as building blocks can be combined or reassembled to form new objects for different purposes and explain the materials chosen based on their physical properties.	3(6)(B) describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container;	4(6)(B) investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids; and	5(6)(D) illustrate how matter is made up of particles that are too small to be seen such as air in a balloon.	6(6)(A) compare solids, liquids, and gases in terms of their structure, shape, volume, and kinetic energy of atoms and molecules;	7(6)(A) compare and contrast elements and compounds in terms of atoms and molecules, chemical symbols, and chemical formulas;	8(6)(A) explain by modeling how matter is classified as elements, compounds, homogeneous mixtures, or heterogeneous mixtures;
								7(6)(B) use the periodic table to identify the atoms and the number of each kind within a chemical formula;	
Properties of Matter	K(6) identify and record observable physical properties of objects, including shape, color, texture, and material, and generate ways to classify objects.	1(6)(A) classify objects by observable physical properties, including, shape, color, and texture, and attributes such as larger and smaller and heavier and lighter;	2(6)(A) classify matter by observable physical properties, including texture, flexibility, and relative temperature, and identify whether a material is a solid or liquid;	3(6)(A) measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float in water;	4(6)(A) classify and describe matter using observable physical properties, including temperature, mass, magnetism, relative density (the ability to sink or float in water), and physical state (solid, liquid, gas);	5(6)(A) compare and contrast matter based on measurable, testable, or observable physical properties, including mass, magnetism, relative density (sinking and floating using water as a reference point), physical state (solid, liquid, gas), volume, solubility in water, and the ability to conduct or insulate thermal energy and electric energy;	6(6)(D) compare the density of substances relative to various fluids; and	7(6)(D) describe aqueous solutions in terms of solute and solvent, concentration, and dilution; and	8(6)(C) describe the properties of cohesion, adhesion, and surface tension in water and relate to observable phenomena such as the formation of droplets, transport in plants, and insects walking on water;
				3(6)(D) demonstrate that materials can be combined based on their physical properties to create or modify objects such as building a tower or adding clay to sand to make a stronger brick and justify the selection of materials based on their physical properties.		5(6)(B) demonstrate and explain that some mixtures maintain physical properties of their substances such as iron filings and sand or sand and water;	6(6)(B) investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures;	7(6)(E) investigate and model how temperature, surface area, and agitation affect the rate of dissolution of solid solutes in aqueous solutions.	8(6)(D) compare and contrast the properties of acids and bases, including pH relative to water; and
							6(6)(C) identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life;		

Matter and its Properties/Matter and Energy

Matter and Its Properties | *Matter and Energy*

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Changes in Matter and Conservation of Matter		1(6)(B) explain and predict changes in materials caused by heating and cooling; and	2(6)(B) conduct a descriptive investigation to explain how physical properties can be changed through processes such as cutting, folding, sanding, melting, or freezing; and	3(6)(C) predict, observe, and record changes in the state of matter caused by heating or cooling in a variety of substances such as ice becoming liquid water, condensation forming on the outside of a glass, or liquid water being heated to the point of becoming water vapor (gas); and	4(6)(C) demonstrate that matter is conserved when mixtures such as soil and water or oil and water are formed.	5(6)(C) compare the properties of substances before and after they are combined into a solution and demonstrate that matter is conserved in solutions; and	6(6)(E) identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas, change in thermal energy, production of a precipitate, and color change.	7(6)(C) distinguish between physical and chemical changes in matter;	8(6)(B) use the periodic table to identify the atoms involved in chemical reactions; 8(6)(E) investigate how mass is conserved in chemical reactions and relate conservation of mass to the rearrangement of atoms using chemical equations, including photosynthesis.

Force, Motion, and Energy

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
	K-2(7) Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to:			**3-5(7) Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to:**			**6(7) Force, motion, and energy. The student knows the nature of forces and their role in systems that experience stability or change. The student is expected to:**	**7(7) Force, motion, and energy. The student describes the cause-and-effect relationship between force and motion. The student is expected to:**	**8(7) Force, motion, and energy. The student understands the relationship between force and motion within systems. The student is expected to:**
Forces and Motion	K(7) describe and predict how a magnet interacts with various materials and how magnets can be used to push or pull.	1(7)(A) explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion; and	2(7)(A) explain how objects push on each other and may change shape when they touch or collide; and	3(7)(A) demonstrate and describe forces acting on an object in contact or at a distance, including magnetism, gravity, and pushes and pulls; and	4(7) plan and conduct descriptive investigations to explore the patterns of forces such as gravity, friction, or magnetism in contact or at a distance on an object.	5(7)(A) investigate and explain how equal and unequal forces acting on an object cause patterns of motion and transfer of energy; and	6(7)(A) identify and explain how forces act on objects, including gravity, friction, magnetism, applied forces, and normal forces, using real-world applications;	7(7)(A) calculate average speed using distance and time measurements from investigations;	8(7)(A) calculate and analyze how the acceleration of an object is dependent upon the net force acting on the object and the mass of the object using Newton's Second Law of Motion; and
		1(7)(B) plan and conduct a descriptive investigation that predicts how pushes and pulls can start, stop, or change the speed or direction of an object's motion.	2(7)(B) plan and conduct a descriptive investigation to demonstrate how the strength of a push and pull changes an object's motion.	3(7)(B) plan and conduct a descriptive investigation to demonstrate and explain how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.		5(7)(B) design a simple experimental investigation that tests the effect of force on an object in a system such as a car on a ramp or a balloon rocket on a string.	6(7)(B) calculate the net force on an object in a horizontal or vertical direction using diagrams and determine if the forces are balanced or unbalanced; and	7(7)(B) distinguish between speed and velocity in linear motion in terms of distance, displacement, and direction;	8(7)(B) investigate and describe how Newton's three laws of motion act simultaneously within systems such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.
							6(7)(C) identify simultaneous force pairs that are equal in magnitude and opposite in direction that result from the interactions between objects using Newton's Third Law of Motion.	7(7)(C) measure, record, and interpret an object's motion using distance-time graphs; and	
								7(7)(D) analyze the effect of balanced and unbalanced forces on the state of motion of an object using Newton's First Law of Motion.	

REGION 4

Force, Motion, and Energy

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
	K-2(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to:			**3-5(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to:**			**6(8) Force, motion, and energy. The student knows that the total energy in systems is conserved through energy transfers and transformations. The student is expected to:**	**7(8) Force, motion, and energy. The student understands the behavior of thermal energy as it flows into and out of systems. The student is expected to:**	**8(8) Force, motion, and energy. The student knows how energy is transferred through waves. The student is expected to:**
GRADE-LEVEL FOCUS	***LIGHT***	***HEAT***	***SOUND***	***MECHANICAL***	***ELECTRICAL***	***TRANSFORMATIONS***	***KINETIC/POTENTIAL***	***HEAT TRANSFER***	***WAVES***
Energy Forms, Uses, and Transformations	K(8)(A) communicate the idea that objects can only be seen when a light source is present and compare the effects of different amounts of light on the appearance of objects; and	1(8)(A) investigate and describe applications of heat in everyday life such as cooking food or using a clothes dryer; and	2(8)(A) demonstrate and explain that sound is made by vibrating matter and that vibrations can be caused by a variety of means, including sound;	3(8)(A) identify everyday examples of energy, including light, sound, thermal, and mechanical; and	4(8)(A) investigate and identify the transfer of energy by objects in motion, waves in water, and sound;	5(8)(A) investigate and describe the transformation of energy in systems such as energy in a flashlight battery that changes from chemical energy to electrical energy to light energy;	6(8)(A) compare and contrast gravitational, elastic, and chemical potential energies with kinetic energy;	7(8)(A) investigate methods of thermal energy transfer into and out of systems, including conduction, convection, and radiation;	
	K(8)(B) demonstrate and explain that light travels through some objects and is blocked by other objects, creating shadows.	1(8)(B) describe how some changes caused by heat may be reversed such as melting butter and other changes cannot be reversed such as cooking an egg or baking a cake.	2(8)(B) explain how different levels of sound are used in everyday life such as a whisper in a classroom or a fire alarm; and	3(8)(B) plan and conduct investigations that demonstrate how the speed of an object is related to its mechanical energy.	4(8)(B) identify conductors and insulators of thermal and electrical energy; and	5(8)(B) demonstrate that electrical energy in complete circuits can be transformed into motion, light, sound, or thermal energy and identify the requirements for a functioning electrical circuit; and	6(8)(B) describe how energy is conserved through transfers and transformations in systems such as electrical circuits, food webs, amusement park rides, or photosynthesis; and	7(8)(B) investigate how thermal energy moves in a predictable pattern from warmer to cooler until all substances within the system reach thermal equilibrium; and	
			2(8)(C) design and build a device using tools and materials that uses sound to solve the problem of communicating over a distance.		4(8)(C) demonstrate and describe how electricity travels in a closed path that can produce light and thermal energy.			7(8)(C) explain the relationship between temperature and the kinetic energy of the particles within a substance.	
Waves					4(8)(A) investigate and identify the transfer of energy by objects in motion, waves in water, and sound;	5(8)(C) demonstrate and explain how light travels in a straight line and can be reflected, refracted, or absorbed.	6(8)(C) explain how energy is transferred through transverse and longitudinal waves.		8(8)(A) compare the characteristics of amplitude, frequency, and wavelength in transverse waves, including the electromagnetic spectrum; and
									8(8)(B) explain the use of electromagnetic waves in applications such as radiation therapy, wireless technologies, fiber optics, microwaves, ultraviolet sterilization, astronomical observations, and X-rays

Earth and Space

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
	K(9) Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:	**1(9) Earth and space. The student knows that the natural world has recognizable patterns. The student is expected to:**	**2(9) Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:**	**3(9) Earth and space. The student knows there are recognizable objects and patterns in Earth's solar system. The student is expected to:**	**4-5(9) Earth and space. The student recognizes patterns among the Sun, Earth, and Moon system and their effects. The student is expected to:**		**6(9) Earth and space. The student models the cyclical movements of the Sun, Earth, and Moon and describes their effects. The student is expected to:**	**7(9) Earth and space. The student understands the patterns of movement, organization, and characteristics of components of our solar system. The student is expected to:**	**8(9) Earth and space. The student describes the characteristics of the universe and the relative scale of its components. The student is expected to:**
Patterns in the Natural World	K(9)(A) identify, describe, and predict the patterns of day and night and their observable characteristics; and	1(9) describe and predict the patterns of seasons of the year such as order of occurrence and changes in nature.		3(9)(A) construct models and explain the orbits of the Sun, Earth, and Moon in relation to each other; and	4(9)(A) collect and analyze data to identify sequences and predict patterns of change in seasons such as change in temperature and length of daylight; and	5(9) demonstrate that Earth rotates on its axis once approximately every 24 hours and explain how that causes the day/night cycle and the appearance of the Sun moving across the sky, resulting in changes in shadow positions and shapes.	6(9)(A) model and illustrate how the tilted Earth revolves around the Sun, causing changes in seasons; and	7(9)(A) describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, comets, Kuiper belt, and Oort cloud;	
					4(9)(B) collect and analyze data to identify sequences and predict patterns of change in the observable appearance of the Moon from Earth.		6(9)(B) describe and predict how the positions of the Earth, Sun, and Moon cause daily, spring, and neap cycles of ocean tides due to gravitational forces.	7(9)(B) describe how gravity governs motion within Earth's solar system; and	
Components of the Solar System and Universe	K(9)(B) observe, describe, and illustrate the Sun, Moon, stars, and objects in the sky such as clouds.		2(9)(A) describe the Sun as a star that provides light and heat and explain that the Moon reflects the Sun's light; and					7(9)(A) describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, comets, Kuiper belt, and Oort cloud;	8(9)(A) describe the life cycle of stars and compare and classify stars using the Hertzsprung-Russell diagram;
			2(9)(B) observe objects in the sky using tools such as a telescope and compare how objects in the sky are more visible and can appear different with a tool than with an unaided eye.	3(9)(B) identify the order of the planets in Earth's solar system in relation to the Sun.				7(9)(C) analyze the characteristics of Earth that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere.	8(9)(B) categorize galaxies as spiral, elliptical, and irregular and locate Earth's solar system within the Milky Way galaxy; and
									8(9)(C) research and analyze scientific data used as evidence to develop scientific theories that describe the origin of the universe.

REGION 4

Earth and Space

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
	K(10) Earth and space. The student knows that the natural world includes earth materials and systems that can be observed. The student is expected to:	**1-2(10) Earth and space. The student knows that the natural world includes earth materials that can be observed in systems and processes. The student is expected to:**		**3(10) Earth and space. The student knows that there are recognizable processes that change Earth over time. The student is expected to:**	**4(10) Earth and space. The student knows that there are processes on Earth that create patterns of change. The student is expected to:**	**5(10) Earth and space. The student knows that there are recognizable patterns and processes on Earth. The student is expected to:**	**6(10) Earth and space. The student understands the rock cycle and the structure of Earth. The student is expected to:**	**7(10) Earth and space. The student understands the causes and effects of plate tectonics. The student is expected to:**	**8(10) Earth and space. The student knows that interactions between Earth, ocean, and weather systems impact climate. The student is expected to:**
Earth Materials and Systems	K(10)(A) sescribe and classify rocks by the observable properties of size, shape, color, and texture;	1(10)(A) investigate and document the properties of particle size, shape, texture, and color and the components of different types of soils such as topsoil, clay, and sand;		3(10)(B) investigate and explain how soils such as sand and clay are formed by weathering of rock and by decomposition of plant and animal remains; and		5(10)(B) model and describe the processes that led to the formation of sedimentary rocks and fossil fuels; and	6(10)(A) differentiate between the biosphere, hydrosphere, atmosphere, and geosphere and identify components of each system;		
		1(10)(C) compare the properties of puddles, ponds, streams, rivers, lakes, and oceans, including color, clarity, size, shape, and whether it is freshwater or saltwater; and					6(10)(B) model and describe the layers of Earth, including the inner core, outer core, mantle, and crust; and		
Earth's Changing Surface		1(10)(B) investigate and describe how water can move rock and soil particles from one place to another;	2(10)(A) investigate and describe how wind and water move soil and rock particles across the Earth's surface such as wind blowing sand into dunes on a beach or a river carrying rocks as it flows;	3(10)(C) model and describe rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.	4(10)(B) model and describe slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice; and	5(10)(C) model and identify how changes to Earth's surface by wind, water, or ice result in the formation of landforms, including deltas, canyons, and sand dunes.	6(10)(C) describe how metamorphic, igneous, and sedimentary rocks form and change through geologic processes in the rock cycle.	7(10)(A) describe the evidence that supports that Earth has changed over time, including fossil evidence, plate tectonics, and superposition; and	
								7(10)(B) describe how plate tectonics causes ocean basin formation, earthquakes, mountain building, and volcanic eruptions, including supervolcanoes and hot spots.	

REGION 4

Earth and Space

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
weather and climate	K(10)(B) observe and describe weather changes from day to day and over seasons; and	1(10)(D) describe and record observable characteristics of weather, including hot or cold, clear or cloudy, calm or windy, and rainy or icy, and explain the impact of weather on daily choices.	2(10)(B) measure, record, and graph weather information, including temperature and precipitation; and	3(10)(A) compare and describe day-to-day weather in different locations at the same time, including air temperature, wind direction, and precipitation;	4(10)(A) describe and illustrate the continuous movement of water above and on the surface of Earth through the water cycle and explain the role of the Sun as a major source of energy in this process;	5(10)(A) explain how the Sun and the ocean interact in the water cycle and affect weather;			8(10)(A) describe how energy from the Sun, hydrosphere, and atmosphere interact and influence weather and climate;
	K(10)(C) identify evidence that supports the idea that air is all around us and demonstrate that wind is moving air using items such as a windsock, pinwheel, or ribbon.		2(10)(C) investigate different types of severe weather events such as a hurricane, tornado, or flood and explain that some events are more likely than others in a given region.		4(10)(C) differentiate between weather and climate.				8(10)(B) identify global patterns of atmospheric movement and how they influence local weather; and
									8(10)(C) describe the interactions between ocean currents and air masses that produce tropical cyclones, including typhoons and hurricanes.
	K(11) Earth and space. The student knows that earth materials are important to everyday life. The student is expected to:	**1-2(11) Earth and space. The student knows that earth materials and products made from these materials are important to everyday life. The student is expected to:**		**3-5(11) Earth and Space. The student understands how natural resources are important and can be managed. The student is expected to:**			**6(11) Earth and space. The student understands how resources are managed. The student is expected to:**	**7(11) Earth and space. The student understands how human activity can impact the hydrosphere. The student is expected to:**	**8(11) Earth and space. The student knows that natural events and human activity can impact global climate. The student is expected to:**
Natural Resources	K(11) observe and generate examples of practical uses for rocks, soil, and water.	1(11)(A) identify and describe how plants, animals, and humans use rocks, soil, and water; and	2(11)(A) distinguish between natural and manmade resources; and	3(11)(A) explore and explain how humans use natural resources such as in construction, in agriculture, in transportation, and to make products;	4(11)(A) identify and explain advantages and disadvantages of using Earth's renewable and nonrenewable natural resources such as wind, water, sunlight, plants, animals, coal, oil, and natural gas;	5(11) design and explain solutions such as conservation, recycling, or proper disposal to minimize environmental impact of the use of natural resources.			
					4(11)(C) determine the physical properties of rocks that allow Earth's natural resources to be stored there.				
Human Impact on Natural Resources		1(11)(B) explain why water conservation is important; and	2(11)(B) describe how human impact can be limited by making choices to conserve and properly dispose of materials such as reducing use of, reusing, or recycling paper, plastic, and metal.	3(11)(B) explain why the conservation of natural resources is important; and	4(11)(B) explain the critical role of energy resources to modern life and how conservation, disposal, and recycling of natural resources impact the environment; and	5(11) design and explain solutions such as conservation, recycling, or proper disposal to minimize environmental impact of the use of natural resources.	6(11)(A) research and describe why resource management is important in reducing global energy, poverty, malnutrition, and air and water pollution, and	7(11)(A) analyze the beneficial and harmful influences of human activity on groundwater and surface water in a watershed; and	
		1(11)(C) describe ways to conserve water such as turning off the faucet when brushing teeth and protect natural sources of water such as keeping trash out of bodies of water.		3(11)(C) identify ways to conserve natural resources through reducing, reusing, or recycling.			6(11)(B) explain how conservation, increased efficiency, and technology can help manage air, water, soil, and energy resources.	7(11)(B) describe human dependence and influence on ocean systems and explain how human activities impact these systems.	

Earth and Space

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
								8(11) Earth and space. The student knows that natural events and human activity can impact global climate. The student is expected to:
Global Climate Change								8(11)(A) use scientific evidence to describe how natural events, including volcanic eruptions, meteor impacts, abrupt changes in ocean currents, and the release and absorption of greenhouse gases influence climate;
								8(11)(B) use scientific evidence to describe how human activities, including the release of greenhouse gases, deforestation, and urbanization, can influence climate; and
								8(11)(C) describe the carbon cycle.

Organisms and Environments

**14 strands in grade 7*

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
K(12) Organisms and environments. The student knows that plants and animals depend on the environment to meet their basic needs for survival. The student is expected to:	**1(12) Organisms and environments. The student knows that the environment is composed of relationships between living organisms and nonliving components. The student is expected to:**	**2(12) Organisms and environments. The student knows that living organisms have basic needs that must be met through interactions within their environment. The student is expected to:**	**3-5(12) Organisms and environments. The student describes patterns, cycles, systems, and relationships within environments. The student is expected to:**			**6(12) Organisms and environments. The student knows that interdependence occurs between living systems and the environment. The student is expected to:**	**7(12) Organisms and environments. The student understands that ecosystems are dependent upon the cycling of matter and the flow of energy. The student is expected to:**	**8(12) Organisms and environments. The student understands stability and change in populations and ecosystems. The student is expected to:**
Interdependent Relationships in Ecosystems								
K(12)(A) observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and	1(12)(A) classify living and nonliving things based upon whether they have basic needs and produce young;	2(12)(A) describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an ecosystem;	3(12)(A) explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and plant responses through dormancy;		5(12)(A) observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy ecosystem;	6(12)(A) investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as availability of light and water, range of temperatures, or soil composition;		
K(12)(B) observe and identify the dependence of animals on air, water, food, space, and shelter.	1(12)(B) describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums; and	2(12)(C) explain and demonstrate how some plants depend on other living things, wind, or water for pollination and to move their seeds around.				6(12)(B) describe and give examples of predatory, competitive, and symbiotic relationships between organisms, including mutualism, parasitism, and commensalism; and		
						6(12)(C) describe the hierarchical organization of organism, population, and community within an ecosystem.		

REGION 4

Organisms and Environments

**14 strands in grade 7*

	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Cycling of Matter and Energy Transfer in Ecosystems		1(12)(C) identify and illustrate how living organisms depend on each other through food chains.	2(12)(B) create and describe food chains identifying producers and consumers to demonstrate how animals depend on other living things; and	3(12)(B) identify and describe the flow of energy in a food chain and predict how changes in a food chain such as removal of frogs from a pond or bees from a field affect the ecosystem;	4(12)(A) investigate and explain how most producers can make their own food using sunlight, water, and carbon dioxide through the cycling of matter;	5(12)(B) predict how changes in the ecosystem affect the cycling of matter and flow of energy in a food web; and		7(12)(A) diagram the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids; and	8(12)(A) explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems;
					4(12)(B) describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers; and			7(12)(B) describe how ecosystems are sustained by the continuous flow of energy and the recycling of matter and nutrients within the biosphere.	
Change and Stability in Ecosystems				3(12)(C) describe how natural changes to the environment such as floods and droughts cause some organisms to thrive and others to perish or move to new locations; and		5(12)(C) describe a healthy ecosystem and how human activities can be beneficial or harmful to an ecosystem.			8(12)(B) describe how primary and secondary ecological succession affect populations and species diversity after ecosystems are disrupted by natural events or human activity; and
				3(12)(D) identify fossils as evidence of past living organisms and environments, including common Texas fossils.	4(12)(C) identify and describe past environments based on fossil evidence, including common Texas fossils.				8(12)(C) describe how biodiversity contributes to the stability and sustainability of an ecosystem and the health of the organisms within the ecosystem.

REGION 4

Organisms and Environments

*14 strands in grade 7

	Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade5	Grade 6	Grade 7	Grade 8
	K-1(13) Organisms and environments. The student knows that organisms resemble their parents and have structures and undergo processes that help them interact and survive within their environments. The student is expected to:		**2(13) Organisms and environments. The student knows that organisms have structures and undergo processes that help them interact and survive within their environments. The student is expected to:**	**3-4(13) Organisms and environments. The student knows that organisms undergo similar life processes and have structures that function to help them survive within their environments. The student is expected to:**		**5(13) Organisms and environments. The student knows that organisms undergo similar life processes and have structures and behaviors that help them survive within their environments. The student is expected to:**	**6(13) Organisms and environments. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:**	**7(13) Organisms and environments. The student knows how systems are organized and function to support the health of an organism and how traits are inherited. The student is expected to:**	**8(13) Organisms and environments. The student knows how cell functions support the health of an organism and how adaptation and variation relate to survival. The student is expected to:**
Structure and Function	K(13)(A) identify the structures of plants, including roots, stems, leaves, flowers, and fruits;	1(13)(A) identify the external structures of different animals and compare how those structures help different animals live, move, and meet basic needs for survival;	2(13)(A) identify the roots, stems, leaves, flowers, fruits, and seeds of plants and compare how those structures help different plants meet their basic needs for survival;	3(13)(A) explore and explain how external structures and functions of animals such as the neck of a giraffe or webbed feet on a duck enable them to survive in their environment; and	4(13)(A) explore and explain how structures and functions of plants such as waxy leaves and deep roots enable them to survive in their environment; and	5(13)(A) analyze the structures and functions of different species to identify how organisms survive in the same environment; and	6(13)(A) describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function;	7(13)(A) identify and model the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, urinary, reproductive, integumentary, nervous, immune, and endocrine systems;	8(13)(A) identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells;
	K(13)(B) identify the different structures that animals have that allow them to interact with their environment such as seeing, hearing, moving, and grasping objects;		2(13)(B) record and compare how the structures and behaviors of animals help them find and take in food, water, and air;				6(13)(B) identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, and autotrophic and heterotrophic; and	7(13)(B) describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals;	
Growth and Development	K(13)(C) identify and record the changes from seed, seedling, plant, flower, and fruit in a simple plant life cycle; and	1(13)(B) record observations of and describe basic life cycles of animals, including a bird, a mammal, and a fish; and	2(13)(D) investigate and describe some of the unique life cycles of animals where young animals do not resemble their parents, including butterflies and frogs.	3(13)(B) explore, illustrate, and compare life cycles in organisms such as beetles, crickets, radishes, or lima beans.					
Inheritance and Variation ofTraits	K(13)(D) identify ways that young plants resemble the parent plant.	1(13)(C) compare ways that young animals resemble their parents.			4(13)(B) differentiate between inherited and acquired physical traits of organisms.			7(13)(C) compare the results of asexual and sexual reproduction of plants and animals in relation to the diversity of offspring and the changes in the population over time; and	8(13)(B) describe the function of genes within chromosomes in determining inherited traits of offspring; and

	REGION 4	Organisms and Environments							
								*14 strands in grade 7	
	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Natural Selection			2(13)(C) record and compare how being part of a group helps animals obtain food, defend themselves, and cope with changes; and			5(13)(B) explain how instinctual behavioral traits such as turtle hatchlings returning to the sea and learned behavioral traits such as orcas hunting in packs increase chances of survival.	6(13)(C) describe how variations within a population can be an advantage or disadvantage to the survival of a population as environments change.	7(13)(D) describe and give examples of how natural and artificial selection change the occurrence of traits in a population over generations.	8(13)(C) describe how variations of traits within a population lead to structural, behavioral, and physiological adaptations that influence the likelihood of survival and reproductive success of a species over generations.
Taxonomy								**7(14) Organisms and environments. The student knows how the taxonomic system is used to describe relationships between organisms. The student is expected to:** 7(14)(A) describe the taxonomic system that categorizes organisms based on similarities and differences shared among groups; and 7(14)(B) describe the characteristics of the recognized kingdoms and their importance in ecosystems such as bacteria aiding digestion or fungi decomposing organic matter.	