	(H)region4	TEKS Introductions							
	Kindor	Crada 1	Crada 2	Crada 2	Crada 4	Grada	Crada 6	Crada 7	Crada 9
(b)	Introduction		Grade 2	Grade 5	Grade 4	Introduction			Grade o
(D) (4)	Introduction	Introduction	Introduction	Introduction	Introduction		Introduction	Introduction	
(1)	In Kindergarten through Grade	5, content is organized into recul	ning strands. The concepts	In Kindergarten through Grade	5 Science, content is organized	Into recurring strands. The	In Grades 6 Infough 8 Science,	content is organized into recurri	hig strands. The concepts within
(A) (i)	Scientific practices. Students	actices. Scientific inquiry is the p	bianned and deliberate investiga	uon of the hatural world using st	ne appropriate tools and models	s. Scientific methods of investig	auon are descriptive, correlative	, comparative, or experimental.	ne metriod chosen should be
(1)	Engineering practices. Students	ask questions, plan and conduct	solutions using appropriate tools	and models	ng appropriate tools and models				
(i)	To support instruction in the sci	ence content standards it is	To support instruction in the sci	ence content standards it is	To support instruction in the co	ntent standards, it is			
(B)	Matter and its properties.	Matter and its properties.	Matter and its properties.	Matter and energy. Students	Matter and energy. Students	Matter and energy. Students	Matter and energy, Students	Matter and energy, Students	Matter and energy. Students
• • •	Students build their knowledge	Students build their knowledge	Students build upon their	build upon the knowledge	investigate matter's	investigate matter expanding	build upon their knowledge of	have prior experience with	make connections between
	of the natural world using their	of the natural world using their	knowledge of the natural world	learned in Kindergarten-Grade	measurable properties.	their understanding of	properties of solids, liquids.	elements in Grade 6 and	elements, compounds, and
	senses. The students focus on	senses. Students focus on	using their senses. The	2 by investigating the physical	including mass, volume,	properties learned in Grade 4	and gases and further explore	develop an understanding that	mixtures that were introduced
	observable properties and	observable properties and	students focus on physical	properties of matter. Students	states, temperature,	(mass, volume, states,	their molecular energies. In	compounds are also pure	in prior grade levels. Students
	patterns of objects, including	patterns of objects, including	properties of matter and	explore states of matter and	magnetism, and relative	temperature, magnetism, and	Grade 6, students learn how	substances in Grade 7.	examine the properties of
	shape, color, texture, and	larger and smaller, heavier	determine how observable	observe that changes can	density, to determine how it is	relative density) to include	elements are classified as	Students investigate the	water, acids, and bases. In
	material.	and lighter, shape, color, and	properties can be changed	occur to matter through	classified, changed, and used.	solubility and the ability to	metals, nonmetals, or	differences between elements	addition, students understand
		texture. The students	through various processes.	heating and cooling. The	Students compare and	conduct or insulate both	metalloids based on their	and compounds through	the basic concept of
		understand changes in	Students use these processes	students explore using	contrast a variety of mixtures,	thermal and electrical energy.	properties on the Periodic	observations, descriptions of	conservation of mass using
		materials caused by heating	to form new objects.	substances by combining them	including solutions, and	Students observe the	Table. Students have previous	physical properties, and	chemical equations.
		and cooling.		to create or modify objects	demonstrate that matter is	combination of substances to	experience with mixtures in	chemical reactions. Students	
				based on their physical	conserved.	make mixtures and develop an	Grade 5. Grade 6 furthers their	build upon their understanding	
				properties.		understanding of conservation	understanding by investigating	of solutions by exploring	
						of matter. These concepts lead	the different types of mixtures.	aqueous solutions.	
						lo the understanding of	Subsequent grades will learn		
						Students will build on this	about compounds. In Grade 6,		
						understanding in middle school	of substances relative to fluids		
						when they learn to determine	and identify evidence of		
						density and to identify	chemical changes		
						evidence of chemical changes.	shellinga shangest		
						3			
(C)	Force motion and energy	Force motion and energy	Force motion and energy	Force motion and energy	Force motion and energy	Force motion and energy	Force motion and energy	Force motion and energy	Force motion and energy
(0)	Students explore the location.	Students know that force and	Students know that force and	Students manipulate objects	Students investigate forces.	Students investigate equal and	Students investigate the	Students measure, calculate.	Students are introduced to
	motion, and position of objects	motion are related and that	motion are related and that	by pushing and pulling to	including friction, gravity, and	unequal forces and the effects	relationship between force and	graph, and investigate how	Newton's Second Law of
	and investigate the importance	energy exists in many forms as	energy exists in many forms as	demonstrate changes in	magnetism, to observe their	these forces have on objects	motion using a variety of	forces impact linear motion.	Motion and investigate how all
	of light energy as it relates to	a part of everyday life.	a part of everyday life.	motion and position. Students	effects on objects. They	(motion and direction).	means, including calculations	Students build upon their	three laws of motion act
	the students' everyday lives.	Magnetism interacts with	Magnetism interacts with	also identify forces such as	differentiate between	Additionally, students	and measurements through	understanding of the laws of	simultaneously within systems.
	Students focus on	various materials and can be	various materials and can be	magnetism and gravity.	mechanical, sound, light,	investigate energy, including	the study of Newton's Third	motions by exploring Newton's	Students understand that
	demonstrating light energy	used as a push and pull. The	used as a push and pull. The	Students understand energy	thermal, and electrical energy.	mechanical, light, thermal,	Law of Motion. Subsequent	First Law of Motion.	waves transfer energy and
	sources and their effect on	students investigate the	students investigate sound	exists in many forms, including	Students observe the cycle of	electrical, and sound. They	grades will study force and	Temperature is a measure of	further explore the
	objects.	importance of heat and focus	energy and focus on how	mechanical, thermal, light, and	energy and the parts of a	uncover cycles (e.g.,	motion through Newton's First	the average kinetic energy of	characteristics and
		on changes caused by heating	sound affects objects.	sound. The students identify	system while exploring circuits	movement of thermal energy),	and Second Laws of Motion.	molecules. Thermal energy is	applications of waves.
		and cooling.		forms of energy in everyday	that produce light and thermal	patterns (e.g., behavior of light,	Energy occurs as either	transferred by conduction,	
				lite.	energy. They will build on their	including reflection and	potential or kinetic energy.	convection, or radiation in	
					understanding of circuits in	retraction), and systems	Potential energy can take	order to reach thermal	
					Grade 5. As students explore	through their exploration.	several forms, including	equilibrium.	
					they observe the behavior of	Students will build on this	gravitational, elastic, and		
					different meterials to identify	understanding in middle school	chemical energy. Energy is		
					unerent materials to identify	when they begin to use	by changing from one form to		
					materials as conductors or	measurements to study force	another and transfers through		
					insulatore	motion and energy through			
					insulators.	the study of Newton's Laws of	Waves.		
						Motion			

(0)	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 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 Acaden	ny of Sciences, is the "use of evi	idence to construct testable expla	anations and predictions of natu	ral phenomena, as well as the ki	nowledge generated through this	process." This vast body of cha	nging and increasing
(3)	Scientific observations, infer	ences, hypotheses and theorie	es. Students are expected to kno	ow that:					
(A) (B)	inferences are conclusions read	thed on the basis of observation	s or reasoning supported by rele	y source infough the senses;					
(B) (C)	hypotheses are tentative and te	stable statements that must be o	capable of being supported or no	an evidence, of supported by observational evidence	dence. Hypotheses of durable e	xplanatory power that have been	tested over a wide variety of co	nditions are incorporated into the	eories: and
(D)	scientific theories are based on	natural and physical phenomena	a and are capable of being tester	d by multiple independent resear	rchers. Unlike hypotheses. scien	tific theories are well established	and highly reliable explanation	s, but they may be subject to cha	inge as new areas of science
(4)	Science and social ethics. Sc	ientific decision making is a way	of answering questions about th	ne natural world involving its own	set of ethical standards about h	ow the process of science shoul	d be carried out. Students distin	guish between scientific decision	-making practices and ethical
(5)	Recurring themes and conce	pts. Science consists of recurrin	g themes and making connectio	ns between overarching concept	ts. Recurring themes include stru	ucture and function, systems, mo	odels, and patterns. All systems	have basic properties that can be	e described in space, time,
	energy, and matter. Change an	d constancy occur in systems as	patterns and can be observed,	measured, and modeled. Models	s have limitations but provide a t	ool for understanding the ideas	presented. Students analyze a sy	stem in terms of its components	and how these components
(6)	Statements containing the word	"including" reference content t	hat must be mastered, while tho	se containing the phrase "such a	as" are intended as possible illus	strative examples.			

(WW)region4°	Scientific and Engine	ering 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 o	define problems based on obser	vations or information from text,	phenomena, models, or investig	gations;				
K-2(1)(B) use scientific practice engineering practices to design	es to plan and conduct simple de solutions to problems;	escriptive investigations and use	3-5(1)(B) use scientific practice descriptive investigations and u design solutions to problems4	es to plan and conduct use engineering practices to	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 prace experimental investigations a	tices to plan and conduct desc and use engineering practices to	riptive, comparative, and o design solutions to problems;
K-2(1)(C) identify, describe, and investigations as outlined in Tex	d demonstrate safe practices du kas Education Agency-approved	ring classroom and field I safety standards;	3-5(1)(C) demonstrate safe pra field investigations as outlined i	actices and the use of safety equ in Texas Education Agency-app	ipment during classroom and roved safety standards;	6-12(1)(C) use appropriate s field investigations as outline	afety equipment and practices	during laboratory, classroom, and 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 to	ools, 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 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 r temperature probes, laborato microscopes, slides, life scie or force sensors, tools that n only], hand lenses, and lab n	ulers, periodic tables, balances ry ware, timing devices, pH ind nce models, petri dishes, disse todel wave behavior, satellite in otebooks or journals;	, scales, thermometers, licators, hot plates, models, cting kits, magnets, spring scales nages, weather maps [grade 8
 1E collect observations and me 1F record and organize data us	asurements as evidence; ing pictures, numbers, words, s	ymbols, and simple graphs; and	1F construct appropriate graphi graphs, tree maps, concept ma output tables that show cause a	ic organizers to collect data, incl .ps, Venn diagrams, flow charts and effect; and	luding tables, bar graphs, line or sequence maps, and input-	6-12(1)(E) collect quantitative 1F construct appropriate tabl organize data;	e data using the International S les, graphs, maps, and charts u	ystem of Units (SI) and qualitative using repeated trials and means to
1G develop and use models to	represent phenomena, objects,	and processes, or design a prote	btype for a solution to a problem.			6-12(1)(G) develop and use to engineering problems; and	models to represent phenomen d	ia, systems, processes, or solutions
						6-12(1)(H) distinguish betwe	en scientific hypotheses, theori	es, and laws.
(2) Scientific and engineering	practices							
2A identify basic advantages ar	nd limitations of models such as	their size, properties, and mater	ials;					
2B analyze data by identifying s	ignificant features and patterns;		2B analyze data by identifying a	any significant features, patterns	s, or sources of error;	6-12(2)(B) analyze data by ic	Jentifying any significant descrip	ptive statistical features, patterns,
 2C use mathematical concepts	to compare two objects with cor	nmon attributes; and	2C use mathematical calculation	ons to compare patterns and rela	ationships; and	6-12(2)(C) use mathematical	I calculations to assess quantita	ative relationships in data; and
2D evaluate a design or object	using criteria to determine if it w	orks as intended.	20 evaluate a design or object	using criteria.	15-12(2())D evaluate experiment	al and engineering designs.		
(3) Scientific and engineering	practices.							
K-5(3)(A) develop explanations	and propose solutions supporte	ed by data and models;				6-12(3)(A) develop explanati consistent with scientific idea	ons and propose solutions sup as, principles, and theories;	ported by data and models and
K-12(3)(B) communicate explai	nations and solutions individually	y and collaboratively in a variety	of settings and formats; and				, , , , , , , , , , , , , , , , ,	
K-2(3)(C) listen actively to other respectfully in scientific discuss	rs' explanations to identify impor ion.	rtant evidence and engage	3-5(3)(C) listen actively to other respectfully in scientific discuss	rs' explanations to identify releva sion.	ant evidence and engage	6-12(3)(C) engage respectfu and empirical evidence.	Ily in scientific argumentation u	sing applied scientific explanations

(ttt) region 4	Scientific and Engine	ering Practices						
Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade5	Grade 6	Grade 7	Grade 8
(4) Scientific and engineerin	g practices.							
K-2(4)(A) explain how science	or an innovation can help others	s; and	3-5(4)(A) explain how scientific science and society; and	discoveries and innovative solu	tions to problems impact	6-8(4)(A) relate the impact of p including the process of science 6-8(4)(B) make informed decise to assess the credibility, accura	ast and current research on scie e, cost-benefit analysis, and con ions by evaluating evidence from ion cost-effectiveness and met	ntific thought and society, tributions of diverse scientists n multiple appropriate sources pods 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.	4)(B) identify scientists and gineers such as Isaac wton, Mae Jemison, and gineers do. 1(4)(B) identify scientists and engineers such as Katherine Johnson, Sally Ride, and different scientists and engineers do. 2(4)(B) identify scientists and engineers such as Alexande Graham Bell, Marie Daly, Mario Molina, and Jane Godall and explore what different scientists and engineers do.			e resources such as museums, li es, online platforms, and mentor nathematics (STEM) field to inve	braries, professional s employed in a science, stigate STEM careers.	6-12(4)(C) research and explor organizations, private compani- technology, engineering, and m	e resources such as museums, es, online platforms, and mentor nathematics (STEM) field to inve	ibraries, professional s employed in a science, stigate STEM careers.
(TTT)region4"	Recurring Themes an	d Concepts						
			-	Ц.	1		1	
Kinder	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
(5) Recurring themes and co K-2(5)(A) identify and use path	oncepts. erns to describe phenomena or o	design solutions;	5 Recurring themes and con 3-5(5)(A) identify and use patte	cepts. erns to explain scientific phenom	ena or to design solutions;	6-8(5)(A) identify and apply pat design solutions;	terns to understand and connec	t scientific phenomena or to
K-2(5)(B) investigate and pred	lict cause and effect relationships	s in science;	3-8(5)(B) identify and investiga	te cause-and-effect relationships	s to explain scientific phenomen	a or analyze problems;		
K-1(5)(C) describe the proper size (scale) and relative quant	ies of objects in terms of relative ity;	2(5)(C) measure and describe the properties of objects in terms of size and quantity	3-5(5)(C) use scale, proportion	n, and quantity to describe, comp	are, or model different systems;	6-8(5)(C) analyze how difference performance;	ces in scale, proportion, or quan	tity affect a system's structure or
K-2(5)(D) examine the parts o	f a whole to define or model a sy	stem;	3-8(5)(D) examine and model t	the parts of a system and their in	terdependence in the function of	the system;		
K-2(5)(E) identify forms of ene	rgy 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 through systems and how matter through systems and how matter	gy flows and matter cycles er is conserved	6-8(5)(E) analyze and explain h energy and matter are conserve	now energy flows and matter cyc ed through a variety of systems;	les through systems and how
K-2(5)(F) describe the relation systems; and	ship between structure and funct	tion of objects, organisms, and	3-5(5)(F) explain the relationsh systems; and	ip between the structure and fun	ction of objects, organisms, and	6-8(5)(F) analyze and explain the function of objects, organisms,	he complementary relationship b and systems; and	petween the structure and
K-2(5)(G) describe how factor either change or stay the same	s or conditions can cause objects e.	s, organisms, and systems to	3-5(5)(G) explain how factors of and systems.	or conditions impact stability and	change in objects, organisms,	6-8(5)(G) analyze and explain h organisms, and systems.	now factors or conditions impact	stability and change in objects,

	(tttt)region4'	Matter and its Proper	ties/Matter and Energy	/		Office Matter and its Properties/Matter and Energy								
		Matter and Its Properties				Matter a	nd Energy							
	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8					
	K-2(6) Matter and its propertion objects have physical proper are described and classified.	es. The student knows that ties that determine how they 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 properties that determine hor student is expected to:	student knows that matter h w matter is identified, classifi	as measurable physical ed, changed, and used. The	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:					
ures 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	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 f 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;					
Structu			their physical properties.					7(6)(B) use the periodic table to identify the atoms and the number of each kind within a chemical formula;						
-						5(0)(A)		7(0)(D)						
f 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;					
Properties o				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; 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;	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					

	(ttt)region4	Matter and its Propert	ties/Matter and Energy	,					
	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Matter ar 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.
	(XXX)region4"	Force, Motion, and Er	nergy						
	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
	K-2(7) Force, motion, and ene motion and position in every	ergy. The student knows that f	forces cause changes in ed to:	3-5(7) Force, motion, and ene patterns of their interactions.	rgy. The student knows the n The student is expected to:	ature of forces and the	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:
	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 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 is of a motion.	2(7)(A) explain how objects push on each other and may change shape when they touch or collide; and 2(7)(B) plan and conduct a descriptive investigation to demonstrate how the strength of a push and pull changes an object's	 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 3(7)(B) plan and conduct a descriptive investigation to demonstrate and explain how position and motion can be changed by 	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 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	6(7)(A) identify and explain how forces act on objects, including gravity, friction, magnetism, applied forces, and normal forces, using real-world applications; 6(7)(B) calculate the net force on an object in a horizontal or vertical direction using diagrams and determine if the forces are	7(7)(A) calculate average speed using distance and time measurements from investigations; 7(7)(B) distinguish between speed and velocity in linear motion in terms of distance, displacement, and direction;	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 8(7)(B) investigate and describe how Newton's three laws of motion act simultaneously within systems such as in vehicle
Forces and Motion		direction of an object's motion.	motion.	pushing and pulling objects such as swings, balls, and wagons.		ramp or a balloon rocket on a string.	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.	restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.
H									

	((XXX) region 4"	Force, Motion, and E	nergy						
\vdash		Kindorgarton	Grado 1	Grado 2	Grada 2	Grada 4	Grada 5	Grado 6	Grado 7	Grado 8
		Kindergarten K-2(8) Force, motion, and ene be observed in everyday life.	ergy. The student knows that The student is expected to:	energy is everywhere and can	3-5(8) Force, motion, and end be observed in cycles, patter	ergy. The student knows that erns, and systems. The student	Crade 5 energy is everywhere and can 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	LIGHT	HEAT	SOUND	MECHANICAL	ELECTRICAL	TRANSFORMATIONS	KINETIC/POTENTIAL	HEAT TRANSFER	WAVES
	ormations	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 <u>objects in motio</u> n, 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	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;	
	Forms, Uses, and Transl	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	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	
	Energy			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, <u>waves in water</u> , and <u>sound;</u>	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
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	(ttp://region4	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 s among the Sun, Earth, and N The student is expected to:	student recognizes patterns loon system and their effects.	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:
n 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 <u>movements</u> of the Sun, planets, moons, meteors, asteroids, comets, Kuiper belt, and Oort cloud;	
Patterns ir		1	1	<u></u>	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	
nd 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 p <u>hysical</u> <u>properties, locations</u> , 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;
s of the Solar System a		-	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
Components									8(9)(C) research and analyze scientific data used as evidence to develop scientific theories that describe the origin of the universe.
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	(1) region 4"	Earth and Space							
	Kindergarten 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:	Grade 1 1-2(10) Earth and space. The natural world includes earth i observed in systems and pro expected to:	Grade 2 student knows that the materials that can be cesses. The student is	Grade 3 3(10) Earth and space. The student knows that there are recognizable processes that change Earth over time. The student is expected to:	Grade 4 4(10) Earth and space. The student knows that there are processes on Earth that create patterns of change. The student is expected to:	Grade 5 5(10) Earth and space. The student knows that there are recognizable patterns and processes on Earth. The student is expected to:	Grade 6 6(10) Earth and space. The student understands the rock cycle and the structure of Earth. The student is expected to:	Grade 7 7(10) Earth and space. The student understands the causes and effects of plate tectonics. The student is expected to:	Grade 8 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; 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		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; 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
late	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;
weather and clin	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 materials and products made important to everyday life. Th	student knows that earth from these materials are e student is expected to:	3-5(11) Earth and Space. The s and can be managed. The stu	student understands how natu dent is expected to:	ral resources are important	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:
ural 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.			
Nat					4(11)(C) determine the physical properties of rocks that allow Earth's natural resources to be stored there.		1		
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 material	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	
Human Impact on		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.	piastic, and metal.	3(11)(C) identify ways to conserve natural resources through reducing, reusing, or recycling.		1	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.	

	(1) region 4"	Earth and Space							8(11) Earth and space. The
		-							student knows that natural
									can impact global climate
									The student is expected to:
	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
									8(11)(A)
									use scientific evidence to
									describe how natural events,
									including volcanic eruptions,
a									changes in ocean currents
gng									and the release and absorption
che									of greenhouse gases influence
ate									climate;
ime									8(11)(B)
U U									use scientific evidence to
oba									including the release of
ğ									greenhouse gases,
									deforestation, and
									urbanization, can influence
									climate; and
									describe the carbon cycle.
									,
-	(CCC) region 4"	Organisms and Envir	onments						
								*14 strands in grade 7	
	Kindergarten	Grade 1 1(12) Organisms and	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade /	Grade 8
	environments. The student	environments. The student	environments. The student	and relationships within envir	onments. The student describes	cted to:	environments. The student	environments. The student	environments. The student
	knows that plants and	knows that the environment	knows that living organisms		•		knows that interdependence	understands that ecosystems	understands stability and
	animals depend on the	is composed of relationships	have basic needs that must				a a a suna da a funcia a multi dina n		
	environment to meet their	botwoon living organisms					occurs between living	are dependent upon the	change in populations and
		and popliving components	be met through interactions				systems and the	are dependent upon the cycling of matter and the flow of energy. The student	change in populations and ecosystems. The student is
	student is expected to:	and nonliving components. The student is expected to:	be met through interactions within their environment. The student is expected to:				systems and the environment. The student is expected to:	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
	student is expected to:	and nonliving components. The student is expected to:	be met through interactions within their environment. The student is expected to:				systems and the environment. The student is expected to:	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
	student is expected to: K(12)(A)	and nonliving components. The student is expected to: 1(12)(A)	be met through interactions within their environment. The student is expected to: 2(12)(A)	3(12)(A)		5(12)(A)	systems and the environment. The student is expected to: 6(12)(A)	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
	K(12)(A) observe and identify the dependence of plants on air	and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether	be met through interactions within their environment. The student is expected to: 2(12)(A) describe how the physical characteristics of	3(12)(A) explain how temperature and precipitation affect animal		5(12)(A) observe and describe how a variety of organisms survive by	systems and the environment. The student is expected to: 6(12)(A) investigate how organisms and populations in an ecosystem	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
રા	K(12)(A) beserve and identify the dependence of plants on air, sunlidht, water, nutrients in the	and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether they have basic needs and	be met through interactions within their environment. The student is expected to: 2(12)(A) describe how the physical characteristics of environments. including the	3(12)(A) explain how temperature and precipitation affect animal growth and behavior through		5(12)(A) observe and describe how a variety of organisms survive by interacting with biotic and	systems and the environment. The student is expected to: 6(12)(A) investigate how organisms and populations in an ecosystem depend on and may compete	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
tems	K(12)(A) observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and	and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether they have basic needs and produce young;	be met through interactions within their environment. The student is expected to: 2(12)(A) describe how the physical characteristics of environments, including the amount of rainfall, support	3(12)(A) explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and		5(12)(A) observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy	systems and the environment. The student is expected to: 6(12)(A) investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
systems	k(12)(A) observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and	and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether they have basic needs and produce young;	be met through interactions within their environment. The student is expected to: 2(12)(A) describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an	3(12)(A) explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and plant responses through		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	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
cosystems	K(12)(A) observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and	and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether they have basic needs and produce young;	be met through interactions within their environment. The student is expected to: 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,	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
n Ecosystems	K(12)(A) observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and	and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether they have basic needs and produce young;	be met through interactions within their environment. The student is expected to: 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	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
os 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	and nonliving organisms and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether they have basic needs and produce young;	be met through interactions within their environment. The student is expected to: 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;	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:
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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 K(12)(B) observe and identify the dependence of animals on air, water, food, space, and shelter.	and nonliving components. The student is expected to: 1(12)(A) classify living and nonliving things based upon whether they have basic needs and produce young; 1(12)(B) describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums; and	be met through interactions within their environment. The student is expected to: 2(12)(A) describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an ecosystem; 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.	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; 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	are dependent upon the cycling of matter and the flow of energy. The student is expected to:	change in populations and ecosystems. The student is expected to:

	(DDD) region 4"	Organisms and Envir	ronments						
								*14 strands in grade 7	
	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
tter and Energy Ecosvstems		1(12)(C) identify and illustrate how living organisms depend on each other through food chains.	2(12)(B) g 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;
Cycling of Ma Transfer in					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.	
oility 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
Change and Stat				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.

	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:
e 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;
Structur	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.			(13)(B) differentiate between inherited and acquired physical traits of organisms.			(1(3)(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
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							-		*14 strands in grade 7	
_	ĸ	Indergarten	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.	((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.
	Тахопоту								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.	