Science TEKS Review Final Recommendations

Texas Essential Knowledge and Skills (TEKS) Science, Kindergarten–Grade 8

Final Recommendations

The document reflects final recommendations to the content standards for the science Texas Essential Knowledge and Skills (TEKS) for kindergarten–grade 8 that have been recommended by the State Board of Education's TEKS review **Work Group F**. The document is presented in a vertical alignment chart to present vertical alignment across grade levels. The work groups did not make changes to the scientific and engineering practices, knowledge and skills statements (1)-(4). Based on recommendations from previous work groups, Work Group F added a new strand on recurring themes and concepts, knowledge and skills statement (5). The content standards begin with knowledge and skills statement (6) for each grade level. Introductions have been drafted but are not included in this document at this time.

Proposed additions are shown in green font with underline (additions). Proposed deletions are shown in red font with strikethroughs (~~deletions~~). Text proposed to be moved from its current student expectation is shown in purple italicized font with strikethrough (~~*moved text*~~) and is shown in the proposed new location in purple italicized font with underlines (*new text location*). Numbering for the knowledge and skills statements in the document will be finalized when the proposal is prepared to file with the *Texas Register*.

Comments in the right-hand column provide explanations for the proposed changes. Abbreviations in the explanations refer to the following.

KS: knowledge and skills statement

SE: student expectation

CA: content advisor feedback

ESC FG: ESC focus group feedback

RTC: supports recurring themes and concepts

SEP: supports scientific and engineering practices

VA: change to support VA

Framework: *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*

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Kindergarten-Grade 2	Grades 3-5	Grades 6-8
(1) Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:	**(1) Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:**	**(1) Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:**
(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;
(B) use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems;	(B) use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems; **Grade 5 only** (B) use scientific practices to plan and conduct descriptive and simple experimental investigations and use engineering practices to design solutions to problems;	(B) use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to *design* solutions to problems;
(C) identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards	(C) demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;	(C) use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency approved safety standards;
(D) use tools to observe, measure, test, and compare, including [list of tools have been drafted by grade level but are not included in this document]	(D) use tools to observe, measure, test, and analyze information, including [list of tools have been drafted by grade level but are not included in this document]	(D) use appropriate tools [list of tools have been drafted by grade level but are not included in this document];
(E) collect observations and measurements as evidence;	(E) collect observations and measurements as evidence;	(E) collect quantitative data using the International System of Units (SI) and qualitative data as evidence;
(F) record and organize data using [data organizers have been drafted by grade level but are not included in this document]	(F) construct appropriate graphic organizers used [data organizers have been drafted by grade level but are not included in this document]	(F) construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data;
(G) develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	(G) develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	(G) develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and
		(H) distinguish between scientific hypotheses, theories, and laws.
(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:	**(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:**	**(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:**
(A) identify basic advantages and limitations of models such as their size~~,~~ properties, and materials;	(A) identify advantages and limitations of models such as their size, scale, properties, and materials;	(A) identify advantages and limitations of models such as their size, scale, properties, and materials;
(B) analyze data by identifying significant features and patterns;	(B) analyze data by identifying any significant features, patterns, or sources of error;	(B) analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations;
(C) use mathematical concepts to compare two objects with common attributes; and	(C) use mathematical calculations to compare patterns and relationships; and	(C) use mathematical calculations to assess quantitative relationships in data; and
(D) evaluate a design or object using criteria to determine if it works as intended.	(D) evaluate a design or object using criteria. **Grade 5 only** (D) evaluate experimental and engineering designs.	(D) evaluate experimental and engineering designs.
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	**(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:**	**(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions.**
(A) develop explanations and propose solutions supported by data and models;	(A) develop explanations and propose solutions supported by data and models;	(A) develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;
(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	(B) communicate individually and collaboratively valid conclusions to determine explanations from both direct and indirect evidence; and	(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and
(C) listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	(C) listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion.	(C) engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.

Kindergarten-Grade 2	Grades 3-5	Grades 6-8
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:	**(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:**	**(4) Scientific and engineering practices. The students knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:**
(A) plain how science or an innovation can help others; and	(A) explain how scientific discoveries and innovative solutions to problems impact science and society; and	(A) relate the impact of past and current research on scientific thought and society, including the process of science and contributions of diverse scientists as related to the content;
(B) identify what a scientist or engineer is and explore what different scientists and engineers do.	(B) research and explore connections (connect) between grade-level appropriate science concepts and STEM careers.	(B) make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, and methods used; and
		(C) research and explore connections between grade-level appropriate science concepts and STEM careers.
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:	**(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:**	**(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:**
(A) identify and use patterns to describe phenomena or design solutions	(A) identify and use patterns to explain scientific phenomena or to design solutions	(A) identify and apply patterns to understand and connect scientific phenomena or to design solutions
(B) investigate and predict cause and effect relationships in science	(B) identify and investigate cause and effect relationships to explain scientific phenomena or analyze problems	(B) identify and investigate cause and effect relationships to explain scientific phenomena or analyze problems
(C) describe the properties of objects in terms of relative size (scale) and relative quantity Grade 2 only (C) measure and describe the properties of objects in terms of size and quantity	(C) use scale, proportion, and quantity to describe, compare, or model different systems	(C) analyze how differences in scale, proportion, or quantity affect a system's structure or performance
(D) examine the parts of a whole to define or model a system	(D) examine and model the parts of a system and their interdependence in the function of the system	(D) examine and model the parts of a system and their interdependence in the function of the system
(E) identify forms of energy and properties of matter	(E) investigate the flow of energy and cycling of matter through systems Grade 4 and 5 only (E) investigate how energy flows and matter cycles through systems and how matter is conserved`	(E) analyze and explain how energy flows and matter cycles through systems and energy and matter are conserved through a variety of systems
(F) describe the relationship between structure and function of objects, organisms, and systems	(F) explain the relationship between structure and function of objects, organisms, and systems	(F) analyze and explain the complementary relationship between structure and function of objects, organisms, and systems
(G) describe how factors or conditions can cause objects, organisms, and systems to change or stay the same	(G) explain how factors or conditions impact stability and change in objects, organisms, and systems	(G) analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems

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Science TEKS Review Work Group F Recommendations

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
6. ~~5.~~ 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:	**6. ~~5.~~ 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:**	**6. ~~5.~~ 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:**	**6. ~~5.~~ Matter and energy. The student knows that matter has measurable physical properties that~~, and those properties~~ determine how matter is identified, classified, changed, and used. The student is expected to:**	**6. ~~5.~~ Matter and energy. The student knows that matter has measurable physical properties that~~, and those properties~~ determine how matter is identified, classified, changed, and used. The student is expected to:**	**6. ~~5.~~ Matter and energy. The student knows that matter has measurable physical properties that~~, and those properties~~ determine how matter is identified, classified, changed, and used. The student is expected to:**	**6. ~~5.~~ 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:**	**6. ~~5.~~ 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:**	**6. ~~5.~~ 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:**	Streamline language, VA
K.6. ~~5.~~ A identify and record observable physical properties of objects, including shape, color, texture, and material, and generate ways to classify objects.	1.6. ~~5.~~ A classify objects by observable physical properties, including, shape, color, and texture and attributes such as larger and smaller and heavier and lighter; and	2.6. ~~5.~~ 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. ~~5.~~ A measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float in water;	4.6. ~~5.~~ A classify and describe matter using observable physical properties, including *temperature,* mass, *magnetism,* ~~*volume*~~, ~~*and*~~ relative density (the ability to sink or float in water), physical state (solid, liquid, gas), ~~*temperature*~~, ~~*magnetism*~~, and *volume* ~~*relative density (the ability to sink or float in water)*~~; and	5.6. ~~5.~~ 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, and gas), ~~*relative density (sinking and floating using water as a reference point)*~~, volume, solubility in water, and the ability to conduct or insulate thermal energy and electric energy;	6.6. ~~5.~~ A compare solids, liquids, and gases in terms of their structure, shape, volume, and kinetic energy of atoms and molecules;	7.6. ~~5.~~ A compare and contrast elements and compounds in terms of atoms and molecules, ~~structure,~~ chemical symbols, and chemical formulas;	8.6. ~~5.~~ A explain by modeling how matter is classified ~~characterize and classify matter~~ as elements, compounds, homogeneous mixtures, or heterogeneous mixtures;	New 3.6.A and 4.6.A: addition of water adds specificity New 6.6.A: creates a boundary that limits to the type of energy that determine solids, liquids, and gases vs. chemical energy New 7.6.A: CA feedback New 8.6.A Organization, ESC FG, CA feedback
						6.6. ~~5.~~ D compare the density of substances relative to various fluids; and			
	1.6. ~~5.~~ B explain and predict changes in materials caused by heating and cooling.	2.6. ~~5.~~ 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. ~~5.~~ 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;			6.6. ~~5.~~ C classify elements on the periodic table as metals, nonmetals, and metalloids using their physical properties;	7.6. ~~5.~~ B distinguish between physical and chemical changes in matter;	8.6. ~~5.~~ B 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 ~~5~~. 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 ~~5~~. B investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids~~, and explore the conservation of matter.~~	5.6. ~~5.~~B demonstrate and explain that some mixtures maintain physical properties of their substances such as iron filings and sand and sand and water;	6. 6 ~~5~~. B investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures;	7.6 ~~5~~. C describe aqueous solutions in terms of solute and solvent, concentration, and dilution; and	8.6 ~~5~~. C compare and contrast the properties of acids and bases including pH relative to water, sour or bitter taste, and how they feel to the touch; and	New 4.6B: revised to clarify the boundary for conservation of matter (ESC FG and K-12 Framework; VA with 5th) New 6.6.B: clarify the properties addressed TEKS GUIDE: include additional examples of mixtures, including solutions, appropriate for grade levels

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Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
				4.6.C demonstrate that matter is conserved when mixtures such as soil and water and oil and water are formed	5.6 ~~5~~. C compare the properties of substances before and after they are combined into a solution and demonstrate that matter is conserved; and		7.6 ~~5~~.D investigate and model how temperature, surface area, and agitation affect the rate of dissolution of solid solutes in aqueous solutions.	8.6 ~~5~~.D investigate how mass is conserved in chemical reactions and relate conservation of mass to the rearrangement of atoms using chemical equations, including photosynthesis.	New 4.6.C: moved conversation of energy to its own SE (from original 4.5.B) with examples TEKS GUIDE: include additional examples of mixtures, including solutions, appropriate for grade levels
	1.6.C demonstrate 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 ~~5~~. 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 ~~5~~. 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 ~~5~~. D illustrate ~~model~~ how matter is made up of ~~can be divided into~~ particles that are too small to be seen such as air in a balloon	6.6 ~~5~~. 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.			New 1.6.C: Public feedback; VA with SEP and RTC on systems and systems thinking New 2.6C revised based on CA feedback New 5.6.D: ESC FG, Public feedback, TSELA comments to clarify

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Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
7. ~~6.~~ Force, ~~and~~ motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to:	**7. ~~6.~~ Force, ~~and~~ motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to:**	**7. ~~6.~~ Force, ~~and~~ motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to:**	**7. ~~6.~~ Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to:**	**7. ~~6.~~ Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to:**	**7. ~~6.~~ Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to:**	**7. ~~6.~~ Force, motion, and energy. The student knows the nature of forces~~, their interactions,~~ and their role in systems that experience stability or change. The student is expected to:**	**7. ~~6.~~ Force, motion, and energy. The student describes the cause-and-effect relationship between force and motion. The student is expected to:**	**7. ~~6.~~ Force, motion, and energy. The student understands the relationship between force and motion within systems. The student is expected to:**	K&S 6.6 was revised to make less wordy
K.7 ~~6~~.A describe and predict how a magnet interacts with various materials and how they can be used to push or pull.	1.7~~6~~.A. explain how pushes and pulls can start, stop, or ~~and~~ change the speed or direction of an object's motion; and	2.7~~6~~.A explain how objects push on each other and may ~~can~~ change shape when they touch or collide; and	3.7~~6~~.A demonstrate and describe ~~explain~~ forces acting on an object in contact or at a distance including magnetism, gravity, and pushes and pulls ~~acting on objects~~; and	4.7.A~~6.B~~ 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~~6~~.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~~6~~.A ~~identify and describe~~ identify and explain how forces ~~that~~ act on objects, including gravity, friction, magnetism, applied forces, and normal forces using real-world applications	7.7~~6~~.D analyze the effect of balanced and unbalanced forces on the state of motion of an object using Newton's First Law of motion.	8.7~~6~~. 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	New 1.7A and 2.7A revised based on CA feedback New 3.7.A and 6.7.A: differentiated for VA based on ESC FG and organization
				~~4.6.A investigate and record observations of the forces of static electricity and friction; and~~		6.7~~6~~.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.		8.7~~6~~..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.	New 4.7.A: eliminated based on ESC FG and public feedback. Suggest including static electricity as an example for friction in TEKS GUIDE
	1.7~~6~~.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~~6~~.B plan and conduct ~~an~~ a descriptive investigation to demonstrate how the strength of a push and pull changes an object's motion.	3.7~~6~~.B plan and conduct ~~an~~ 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~~6~~.A investigate and explain how equal and unequal forces acting on an object cause patterns of motion and transfer of energy; and	6.7~~6~~.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~~6~~.A calculate average speed using distance and time measurements from investigations;		New 2.7B & 3.7B revised based on organization feedback New 7.7A: organization feedback
							7.7~~6~~.B distinguish between speed and velocity in linear motion in terms of distance, displacement, and direction;		
							7.7~~6~~.C measure, record, and interpret an object's motion using distance-time graphs; and		

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Science TEKS Review Work Group F Recommendations

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
8. ~~7.~~ Force, motion, and energy. ~~Energy.~~ The student knows that energy is everywhere ~~there are multiple phenomena~~ and can be observed **in everyday life** ~~that come from the transfer of energy from place to place and between objects.~~ **The student is expected to:**	**8. ~~7.~~ Force, motion, and energy. ~~Energy.~~ The student knows that** energy is everywhere ~~there are multiple phenomena~~ and can be observed **in everyday life** ~~that come from the transfer of energy from place to place and between objects.~~ **The student is expected to:**	**8. ~~7.~~ Force, motion, and energy. ~~Energy.~~ The student knows that** energy is everywhere ~~there are multiple phenomena~~ and can be observed **in everyday life** ~~that come from the transfer of energy from place to place and between objects.~~ **The student is expected to:**	**8. ~~7.~~ Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, or systems. The student is expected to:**	**8. ~~7.~~ Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, or systems. The student is expected to:**	**8. ~~7.~~ Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, or systems. The student is expected to:**	**8. ~~7.~~ 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:**	**8. ~~7.~~ 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. ~~7.~~ Force, motion, and energy. The student knows how energy is transferred through waves. The student is expected to:**	VA
K.8~~7~~.A identify ~~demonstrate~~ 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~~7~~.A investigate and describe applications of heat in everyday life such as cooking food or using a hair dryer; and	2.8~~7~~.B explain how different levels of sound are used in everyday life such as a whisper in a classroom or a fire alarm.	3.8~~7~~.A identify everyday examples of ~~that demonstrate the phenomena associated with~~ energy, including light, sound, thermal and mechanical ~~systems~~; and	4.8~~7~~.C demonstrate and identify that electrical energy travels in a closed path~~, creating a series circuit~~ that can produce light and thermal energy.	5.8~~7~~.C demonstrate and explain how light travels in a straight line and can be reflected and refracted.	6.8~~7~~.A compare and contrast kinetic energy with gravitational, elastic, and chemical potential energies;	7.8~~7~~.C explain the relationship between temperature and the kinetic energy of the molecules within a substance.	8.8.A~~7.B~~ compare the characteristics of amplitude, frequency, and wavelength in transverse waves, including the electromagnetic spectrum; and	New 3.8.A: clarifies SE 4.8.C: removed focus on series circuits based on ESC FG, public feedback, organization feedback
K.8~~7~~.B identify and demonstrate that light travels through some objects and is blocked by other objects, creating shadows.		2.8~~7~~.A demonstrate and explain that sound is made by vibrating matter and that sound can make matter vibrate; and		4.8~~7~~.B identify conductors and insulators of thermal and electrical energy; and		6.8.B ~~7.C~~ describe how energy is conserved through transfers and transformations in systems such as electrical circuits, food webs, amusement park rides, and photosynthesis.		8.8.B~~7C~~ explain the use of electromagnetic waves in applications such as radiation therapy, wireless technologies, fiber optics, microwaves, ultraviolet sterilization, astronomical observations, and X-rays.	6.8.B TEKS GUIDE: the boundary is the concept of the energy that was there (radiant energy is now chemical energy) 6.8.B was revised to include the idea of energy transfer as well as transformation.
	1.8~~7~~.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.			4.8~~7~~.A investigate and identify the transfer of energy by objects in motion, waves in water, and sound ~~and light~~;	5.8~~7~~.A investigate and describe the transformation of energy in systems such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy;	~~6.7.B describe and demonstrate how energy transfers between objects due to forces or transforms from one form of energy to another; and~~ 6.8~~7~~.C. ~~8.7.A~~ *explain how energy is transferred through transverse and longitudinal waves;*	7.8~~7~~.A investigate methods of thermal energy transfer into and out of systems, including conduction, convection, and radiation;	~~*8.7.A explain how energy is transferred through transverse and longitudinal waves;*~~	1.8.B: TEKS GUIDE, heat causes change 4.8.A added verb to make SE more assessable; removed light to streamline the SE 5.8.A TEKS GUIDE: keep the explanations of transformations simple such as chemical transformations occur in food webs, photosynthesis, and batteries 6.8.B was deleted due to overlap with 4.8.A, 5.7.A, 5.8.A, 6.8.B, and 7.8.A NEW 6.8.C to scaffold waves at middle school TEKS GUIDE: should include how energy, not matter, is transferred by waves

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Science TEKS Review Work Group F Recommendations

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
		2.8~~7~~.C design and build a device using tools and materials that uses sound to solve the problem of communicating over a distance.	3.8~~7~~.B plan and conduct investigations that demonstrate how the speed of an object is related to its mechanical energy.		5.8~~7~~.B demonstrate that electrical energy in complete circuits ~~in series and parallel circuits~~ can be transformed into motion, light, sound, or thermal energy and identify the requirements for a functioning electrical circuit; and		7.8~~7~~.B investigate how thermal energy moves in a predictable pattern from warmer to cooler until all substances within the system reach thermal equilibrium; and		5.8.B: removed focus on series and parallel circuits based on ESC FG, public feedback, organization feedback 5.8.B TEKS GUIDE: The focus is on how the energy flows in a complete/closed pathway.

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Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
9.8. 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:	**9.8. Earth and space. The student knows that the natural world has recognizable patterns. The student is expected to:**	**9.8. 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:**	**9.8. Earth and space. The student knows there are recognizable objects and patterns in Earth's solar system. The student is expected to:**	**9.8. Earth and space. The student recognizes patterns among the Sun, Earth, and Moon system and their effects. The student is expected to:**	**9.8. Earth and space. The student recognizes patterns among the Sun, Earth, and Moon system and their effects. The student is expected to: ~~The student knows that there are recognizable patterns among the Sun, Earth, and Moon system. The student is expected to:~~**	**9.8. Earth and space. The student ~~describes and~~ models the cyclical movements of the Sun, Earth, and Moon and describes their effects. The student is expected to:**	**9.8. Earth and space. The student understands the patterns of movement, organization, and characteristics of components of our solar system. The student is expected to:**	**9.8. Earth and space. The student describes the characteristics of the universe and the relative scale of its components. The student is expected to:**	**New KS 5.9 was revised to call attention to the effects as in grade 4. New KS 6.9 was revised to better reflect the student expectations.**
K.9~~8~~.A identify, describe, and predict the patterns of day and night and their observable characteristics;		2.9~~8~~.B observe and compare how objects in the sky are more visible and can appear different with a telescope than with an unaided eye	3.9~~8~~.B identify the sequence of the planets in Earth's solar system in relation to the Sun.	4.9~~8~~.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		6.9~~8~~.A model and illustrate how the tilted Earth revolves around the Sun, causing changes in seasons; and	7. 9~~8~~.A describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, comets, Kuiper belt, and Oort cloud;	8.9~~8~~.B categorize galaxies as spiral, elliptical, and irregular and locate the solar system within the Milky Way galaxy; and	
K.9~~8~~.B observe, describe, and illustrate the Sun, the Moon, stars, and objects in the sky such as clouds; and		2.9~~8~~.A describe the Sun as a star that provides light and heat and explain that the Moon reflects the Sun's light;		4.9~~8~~.B collect and analyze data to identify sequences and predict patterns of change in the observable appearance of the Moon from Earth ~~during the lunar cycle.~~	5.9~~8~~.A demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle, ~~shadows,~~ and the apparent movement of the Sun across the sky, resulting in changes in shadow positions and shapes; ~~and constellations across the sky.~~	6.9~~8~~.B describe and predict how the positions of the Earth, Sun and moon cause ~~and their gravitational forces affect~~ daily, spring, and neap cycles of ocean tides due to gravitational forces.	7.9~~8~~.B describe how gravity governs motion within our solar system; and	8.9~~8~~.A describe the life cycle of stars and compare and classify stars using the Hertzsprung-Russell diagram;	4.9.B revised based on ESC FG feedback 5.9.A revised based on public feedback 6.9.B revised based on organization feedback TEKS GUIDE —focus is on recognition of patterns of change in moon phases and not names of moon phases
~~*K.8.C observe and describe weather changes from day to day and over seasons.*~~	~~*1.8.B record observable characteristics of weather including hot or cold, clear or cloudy, calm or windy, or rainy or icy, and describe their impact on daily choices; and*~~	~~*2.8.C measure, record, and graph weather information, including temperature and precipitation.*~~					7.9~~8~~.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~~8~~.C research and analyze ~~how~~ scientific data ~~are~~ used as evidence to develop scientific theories to describe the origin of the universe.	K-2 ESC FG feedback recommended moving weather SE for K-2 to KS 9 for VA with grades 3-8 8.9.C revised based on organization feedback
	1.9.A~~8C~~. describe and predict the patterns of seasons of the year such as order of occurrence and changes in nature.	~~*2.8.D 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.*~~	3.9~~8~~.A construct models and explain the orbits of the Sun, Earth, and Moon in relation to each other; and						2.9.D ESC FG feedback recommended moving weather SE for K-2 to KS 9 for VA with grades 3-8 1.9.A was revised for clarity

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Science TEKS Review Work Group F Recommendations

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
	~~*1.8.A describe that air is all around us and demonstrate that wind is moving air using items such as a windsock, pinwheel, or ribbon;*~~								1.9.A ESC FG feedback recommended moving weather SE for K-2 to KS 9 for VA with grades 3-8
10.~~9.~~ Earth and space. The student knows that the natural world includes earth materials and systems that can be observed. The student is expected to:	**10.~~9.~~ 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:**	**10.~~9.~~ 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:**	**10.~~9.~~ Earth and space. The student knows that there are recognizable processes that change the Earth over time. The student is expected to:**	**10.~~9.~~ Earth and space. The student knows that there are processes on Earth that create patterns of change. The student is expected to:**	**10.~~9.~~ Earth and space. The student knows that there are recognizable patterns and processes on Earth. The student is expected to:**	**10.~~9.~~ Earth and space. The student understands the rock cycle and the structure of Earth. The student is expected to:**	**10.~~9.~~ Earth and space. The student understands the causes and effects of plate tectonics. The student is expected to:**	**10.~~9.~~ Earth and space. The student knows that interactions among Earth, ocean, and weather systems impact climate. The student is expected to:**	
K.10~~9~~.A describe and classify rocks by the observable properties of size, shape, color, and texture.	1.10~~9~~.A investigate and document the properties of particle size, shape, texture, and color and the components of different types of soils such as top soil, clay, and sand;		3.10~~9~~.C model and describe rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.	4.10~~9~~.B model and describe slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice.	5.10~~9~~.D 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~~9~~.C describe how metamorphic, igneous, and sedimentary rocks form and change through geologic processes in the rock cycle ~~and classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation.~~	7.10~~9~~.B describe how plate tectonics causes ocean basin formation, earthquakes, mountain building, and volcanic eruptions, including supervolcanoes and hot spots; and		6.10.C revised based on public feedback
	1.10.B~~9.C~~ investigate and describe how water can move rocks and soil from one place to another.	2.10~~9~~.A investigate and describe how wind and water move soil and rocks 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~~9~~.B investigate and explain how soils *such as sand and clay* are formed by weathering of rock ~~*such as sand and clay*~~ and by the decomposition of plant and animal remains; and		5.10~~9~~.C model and describe the processes that led to the formation of sedimentary rocks and fossil fuels; and	6.10~~9~~.B model and describe the layers of Earth, including the inner core, outer core, mantle, and crust; and	7.10~~9~~.A describe the evidence that supports that the Earth has changed over time, including fossil evidence, plate tectonics, and superposition;		3.10.B revised based on CA feedback
K.~~8.C~~ 10.B *observe and describe weather changes from day to day and over seasons;*	1.10.D ~~8.B~~ describe and *record observable characteristics of weather, including hot or cold, clear or cloudy, calm or windy, or rainy or icy, and* explain ~~describe~~ *their impact on daily choices*	2.10.B.~~8.C~~ *measure, record, and graph weather information, including temperature and precipitation.*	3.10~~9~~.A compare and describe day-to-day weather in different locations at the same time that include air temperature, wind direction, and precipitation;	4.10~~9~~.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; and	5.10~~9~~.B explain how the Sun and the ocean interact in the water cycle and affect weather;			8.10~~9~~.C describe the interactions among ocean currents and air masses that produce ~~el Niño, la Niña, and~~ tropical cyclones, including ~~cyclones,~~ typhoons, and hurricanes.	K-2 SEs on weather moved to align with weather SEs in 3-8 8.10.C removed el Nino, la Nina based on ESC focus group feedback; 2nd cyclone removed for redundancy.
K.10.C. ~~1.8.A~~ *describe 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. ~~8.D~~ 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 ~~5.9.A~~ *differentiate between weather and climate;*	~~*5.9.A differentiate between weather and climate;*~~	6.10~~9~~.A differentiate among the biosphere, hydrosphere, atmosphere, and geosphere and identify components of each system;		8.10~~9~~.A describe how energy from the sun, the hydrosphere and atmosphere interact and influence weather and climate ~~are influenced by interactions involving sunlight, the hydrosphere, and atmosphere;~~	K-2 SEs on weather moved to align with weather SEs in 3-8 8.10.A revised based on public and organization feedback and for clarity

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Science TEKS Review Work Group F Recommendations

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
	1.10.C ~~9.B~~ compare the properties of puddles, ponds, streams, rivers, lakes, and oceans including freshwater and saltwater, color, clarity, size, and shape; and								K-2 SEs on weather moved to align with weather SEs in 3-8
								8.10~~9~~.B identify global patterns of atmospheric movement and how they influence local weather; and	Add weather maps to tools in response to public feedback.
11.~~10.~~ Earth and Space. The student knows that earth materials are important to everyday life. The student is expected to:	**11.~~10.~~ 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:**	**11.~~10.~~ 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:**	**11.~~10.~~ Earth and Space. The student understands how natural resources are important and can be managed. The student is expected to:**	**11.~~10.~~ Earth and Space. The student understands how natural resources are important and can be managed. The student is expected to:**	**11.~~10.~~ Earth and Space. The student understands how natural resources are important and can be managed. The student is expected to:**	**11.~~10.~~ Earth and space. The student understands how resources are managed. The student is expected to:**	**11.~~10.~~ Earth and space. The student understands how human activity can impact the hydrosphere. The student is expected to:**	**11.~~10.~~ Earth and space. The student knows that natural events and human activity can impact global climate. The student is expected to:**	
K.11~~0~~.A observe and *generate examples of practical uses for rocks, soil, and water.* ~~*describe how plants, animals, and humans use rocks, soil, and water*~~.	1.11~~0~~.A ~~*generate examples of practical uses for rocks, soil, and water; and*~~ identify and *describe how plants, animals, and humans use rocks, soil, and water; and*	2.11~~0~~.A distinguish between natural and manmade resources; and	3.11~~0~~.A explore and explain how humans use natural resources ~~are used~~ such as in construction, agriculture, transportation and to make products ~~for human use~~	4.11~~0~~.A identify and explain ~~the~~ advantages and disadvantages of using ~~classify~~ Earth's renewable resources, such as ~~including~~ wind ~~air~~, ~~*plants*~~, water, sunlight, *plants,* and animals, and nonrenewable resources, such as ~~including~~ coal, oil, and natural gas; and			7.11~~0~~.B describe human dependence and influence on ocean systems and explain how human activities impact these systems.	8.11~~0~~.A use scientific evidence to describe how natural events such as volcanic eruptions, meteor impacts, abrupt changes in ocean currents, and the release and absorption of greenhouse gases influence climate; and	K.11.A and 1.11.A were switched based on public and ESC FG feedback 3.11.A revised to incorporate uses based on organization/CA feedback 4.11.A revised to include advantages and disadvantages of use of resources based on feedback; maintained renewable/nonrenewable resources based on K-12 Framework
	1.11~~0~~.B describe ways to conserve and protect natural sources of water such as turning off the faucet when brushing teeth and keeping trash out of bodies of water.	2.11~~0~~.B demonstrate how to limit human impact by making choices to conserve and properly dispose of materials such as reusing or recycling paper, plastic, and metal.	3.11~~0~~.B identify ways to conserve natural resources through reducing, reusing, or recycling.	4.11~~0~~.B explain how conservation, disposal, and recycling of renewable and non-renewable natural resources impact the environment.	5.11~~0~~.A design and explain solutions *such as conservation, recycling or proper disposal* to minimize environmental impact ~~on the environment~~ from the use of renewable and non-renewable natural resources ~~*such as conservation, recycling or proper disposal.*~~	6.11~~0~~.A research and describe why resource management is important and how conservation, increased efficiency, and technology can help manage air, water, soil, and energy resources.	7.11~~0~~.A analyze the beneficial and harmful influences of human activity on groundwater and surface water in a watershed; and	8.11~~0~~.B use scientific evidence to describe how human activities can influence climate such as the release of greenhouse gases.	5.11.A was revised to clarify based on organization/CA feedback 6.11.A was revised based on CA feedback 8.11.B was revised based on CA feedback

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Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
12.~~11.~~ Organisms and environments. The student knows that plants and animals depend on ~~factors in~~ the environment to meet their basic needs for survival. The student is expected to:	**12.~~11.~~ Organisms and environments. The student knows that the environment is composed of relationships between living organisms and nonliving components. The student is expected to:**	**12.~~11.~~ 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:**	**12.~~11.~~ Organisms and environments. The student ~~knows and~~ can describe patterns, cycles, systems, and relationships within ~~the~~ environments. The student is expected to:**	**12.~~11.~~ Organisms and environments. The student can describe patterns, cycles, systems, and relationships within environments. ~~The student knows and understands that organisms within an ecosystem interact with one another and with their environment.~~ The student is expected to:**	**12.~~11.~~ Organisms and environments. The student can describe patterns, cycles, systems, and relationships within environments ~~The student knows that there are relationships, systems, and cycles within environments.~~ The student is expected to:**	**12 ~~13~~. Organisms and environments. The student knows that interdependence occurs among living systems and the environment. The student is expected to:**	**12 ~~13~~. Organisms and environments. The student understands that ~~the stability of~~ ecosystems are ~~is~~ dependent upon ~~the biodiversity of the organisms,~~ the cycling of matter~~,~~ and the flow of energy. The student is expected to:**	**12 ~~13~~. Organisms and environments. The student understands stability and change in ~~how~~ populations and ecosystems ~~and populations change~~. The student is expected to:**	K.12 revised to make more concise For grades 6-8 KS 13 moved/renumbered as KS 12 to align with K-5.
K.12~~11~~.A observe and identify the dependence of ~~describe how~~ plants ~~depend~~ on air, sunlight, water, nutrients (in the soil), and space to grow; and	1.12~~11~~.C identify and illustrate ~~ways~~ that living organisms depend on each other through food chains.	2.12~~11~~.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~~11~~.B identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field;	4.12~~11~~.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~~11~~.A observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy ecosystem;	6.12.A~~6.13.B~~ 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 ~~quantity~~ of light~~,~~ and water, range of temperatures, or soil composition; and	7.12.B~~7.13.B~~ describe how ecosystems are sustained by ~~biodiversity~~, the continuous flow of energy, and the recycling of matter and nutrients within the biosphere; and	8.12.B~~8.13.B~~ describe how primary and secondary ecological succession affect populations and species diversity after ecosystems are disrupted by natural events or human activity.	K.12.A & B revised based on organization feedback and VA 2.12.C revised based on CA feedback Grades 6-8, SEs from KS 13 were moved to KS new 12 to better align to K-5. New 6.12.A revised based on CA feedback New 7.12.B revised based on public and organization feedback; biodiversity moved to grade 8
K.12~~11~~.B observe and identify the dependence of ~~describe how~~ animals ~~depend~~ on air, water, food, space, and shelter.	1.12~~11~~.B ~~analyze~~ describe and record examples of interactions and dependence among living and nonliving components in terrariums or aquariums; and	2.12~~11~~.B ~~design and~~ create and describe *food chains* identifying *producers and consumers*; ~~a model~~ to demonstrate how ~~the ways~~ animals depend on other living things ~~using food chains that include producers and consumers~~; and	*3.12~~11~~.A explain how temperature and precipitation affect growth and behavior of animals through migration and hibernation, and plants responses through dormancy;* ~~*describe how the physical characteristics of environments including the amount of rainfall support plants and animals within an ecosystem;*~~	4.12~~11~~.B describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers; and	5.12~~11~~.B predict how changes in the ecosystem affect the cycling of matter and flow of energy in a food web; and	6.12.B ~~6.13.A~~ describe and give examples of predatory, competitive, and symbiotic relationships between organisms including mutualism, parasitism, and commensalism;	7.12.A~~7.13.A~~ diagram the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids;	8.12.A ~~8.13.A~~ explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems; ~~A analyze the effects on food webs when new species are introduced, existing species are eliminated, and existing populations fluctuate; and~~	1.12.B revised based on ESC FG feedback 2.12.B revised for better VA with grade 1 3.12.A & 2.12.A were swapped based on organization and ESC FG feedback Grades 6-8, SEs from KS 13 were moved to new KS 12 to better align to K-5. New 6.12.B revised based on organization feedback New 8.12.A revised based on organization feedback

Kindergarten	Grade 1	Grade 2	Grade 2	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
		2.12~~11~~.A *describe how the physical characteristics of environments including the amount of rainfall support plants and animals within an ecosystem;* ~~*explain how temperature and precipitation affect growth and behavior of animals through migration and hibernation, and plants responses through dormancy;*~~	3.12~~11~~.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~~11~~.C describe a healthy ecosystem and how human activities can be beneficial or harmful to it.	6.12.C ~~6.13.C~~ describe the hierarchical organization of organism, population, and community within an ecosystem.	~~7.13.C~~ ~~*describe how biodiversity contributes to the sustainability of an ecosystem and the health of the organisms within the ecosystem*~~.	8.12C ~~7.13C~~ *describe how biodiversity contributes to the* stability and *sustainability of an ecosystem and the health of the organisms within the ecosystem*	3.12.A & 2.12.A were swapped based on organization and ESC FG feedback Grades 6-8, SEs from KS 13 were moved to new KS 12 to better align to K-5. New 8.12.C moved from grade 7 (originally 7.13.C) based on public and organization feedback.
	1.12~~11~~.A describe and classify living and nonliving things based upon whether they have basic needs and produce young;		3.12~~11~~.D identify fossils as evidence of past living organisms.	4.12~~11~~.C identify and describe past environments based on fossil evidence.					
13.~~12.~~ 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:	**13.~~12.~~ 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:**	**13.~~12.~~ 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:**	**13.~~12.~~ Organisms and environments. The student knows that organisms undergo similar life processes and have structures that ~~and~~ function~~s~~ to ~~that~~ help them survive within their environments. The student is expected to:**	**13.~~12.~~ Organisms and environments. The student knows that organisms undergo similar life processes and have structures that ~~and~~ function~~s~~ to ~~that~~ help them survive within their environments. The student is expected to:**	**13.~~12.~~ Organisms and environments. The student knows that organisms undergo similar life processes and have structures~~,~~ ~~functions~~ and behaviors that help them survive within their environments. The student is expected to:**	**13.~~11~~. Organisms and environments. The student knows that organisms have an organizational structure ~~and that cells are the fundamental unit of that structure~~ and variations can influence survival of populations. The student is expected to:** ~~12. Organisms and environments. The student knows how variations can influence survival of populations. The student is expected to:~~	**13.~~11~~. Organisms and environments. The student knows how system~~s~~ are organized and function to ~~functions~~ support the health of an organism and how traits are inherited. The student is expected to:** ~~12. Organisms and environments. The student knows that populations and species inherit many of their unique traits through gradual processes over many generations. The student is expected to:~~	**13.~~11~~. 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:** ~~12. Organisms and environments. The student knows the relationship between adaptation and variation in relation to survival. The student is expected to:~~	KS 11 moved to new KS 13 in grades 6-8 and revised to better reflect the student expectations after other changes and rearrangements were made.
K.13~~12~~.A identify the structures and functions of plants including roots, stems, leaves, flowers, and fruits;		2.13~~12~~.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;		4.13~~12~~.A explore and explain how structures and functions of plants enable them to survive in their environment such as waxy leaves and deep roots; and	5.13~~12~~.A analyze the structures and functions of different species to identify how organisms survive in the same environment; and	6.13.B ~~6.11.C~~ identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, autotrophic and heterotrophic.	7.13.A ~~7.11.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; and	8.13.A ~~8.11.A~~ identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells; and	SEs from grades 6-8 were moved from KS 11 and combined with SEs in new KS 13 to better align to K-5 standards. New 6.13B and 7.13A revised based on organization feedback

Science TEKS Review Work Group F Recommendations

Kindergarten	Grade 1	Grade 2	Grade 2	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Comments/Rationale
K.13~~12~~.B identify that animals have different structures that allow them to interact with their environment such as seeing, hearing, moving, and grasping objects;	1.13~~12~~.A identify the external structures of different animals and compare how those structures help different animals live, move, and meet their basic needs for survival;	2.13~~12~~.B record and compare how the structures and behaviors of animals help them find and take in food, water, and air; and	3.13~~12~~.A explore and explain how external structures and functions of animals enable them to survive in their environment such as the neck of a giraffe or webbed feet on a duck; and			6.13.C ~~12A~~ describe how variations within a population can be an advantage or disadvantage to the survival of a population as environments change ~~describe how advantages and disadvantages for the survival of a population can result from variations within the population as environments change.~~	7.13.D ~~12.A~~ describe and give examples of how natural and artificial selection ~~and how they~~ change the occurrence ~~frequency~~ of ~~genetic~~ traits in a population over generations.	8.13.C ~~12.A~~ describe how variations of traits within a population lead to structural, behavioral, and physiological adaptations that influence the likelihood ~~probability~~ of survival and reproductive success of a species over generations.	SEs from grades 6-8 were moved from KS 11 and combined with SEs in new KS 13 to better align to K-5 standards. New 6.13.C revised based on public feedback. New 7.13.D revised based on organization and public feedback. New 8.13.C revised based on public and organization feedback.
K.13~~12~~.D identify ways that young plants resemble the parent plant.	1.13~~12~~.C compare ways that young animals resemble their parents.	2.13~~12~~.C record and compare how being part of a group helps animals obtain food, defend themselves, and cope with changes;				~~*6.11.B describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals; and*~~	7.13.B ~~7.11.C~~ *describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals; and*	8.13.B ~~8.11.B~~ describe the function of genes within chromosomes in determining inherited traits of offspring.	New 7.13B was moved from grade 6 (original 6.11.B) based on CA feedback
K.13~~12~~.C identify and record the changes from seed, seedling, plant, flower, and fruit in a simple plant life cycle; and	1.13~~12~~.B record observations of and describe basic life cycles of animals including a bird, a mammal, and a fish; and	2.13~~12~~.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~~12~~.B explore, illustrate, and compare life cycles in organisms such as beetles, crickets, radishes, or lima beans.	4.13~~12~~.B differentiate between inherited and acquired physical traits of organisms.	5.13~~12~~.B explain how instinctual and learned behavioral traits increase chances of survival such as turtle hatchlings returning to the sea or orcas hunting in packs.	6.13.A ~~6.11.A~~ describe the historical development of cell theory and how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function ~~as explained by cell theory~~;	7.13.C ~~7.11.B~~ 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.		New 6.13.A revised based on CA feedback

Grade 6	Grade 7	Grade 8	Comments/Rationale
	14. Organisms and environments. The student knows how the taxonomic system is used to describe ~~understand~~ relationships between organisms. The student is expected to:		KS revised based on CA feedback
	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 ~~and their functions~~ such as bacteria aiding digestion or fungi decomposing organic matter.		7.14 B revised based on public feedback TEKS GUIDE should include a list of the currently recognized kingdoms

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