Grade 4 Side-by-Side

2021 Knowledge and Skill Statement/Student Expectation	2021 Text	2017 Knowledge and Skill Statement/Student Expectation	2017 Text	Notes from TEA Staff
SCIENCE.4.1	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:	4.1	Scientific ~~investigation and reasoning.~~ The student conducts classroom and ~~outdoor~~ investigations ~~following home and school~~ safety ~~procedures and uses environmentally appropriate and ethical practices~~. The student is expected to:	
		4.2	Scientific ~~investigation and reasoning.~~ The student ~~uses scientific practices during~~ laboratory and ~~outdoor~~ investigations. The student is expected to:	
SCIENCE.4.1.A	ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	4.2.A	~~plan and implement descriptive investigations,~~ including asking ~~well-defined~~ questions, ~~making inferences, and selecting and using appropriate equipment or technology to answer his/her questions;~~	Planning descriptive investigations was moved to Student Expectation 4.1.B.
SCIENCE.4.1.B	use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems;	4.2.A	plan and ~~implement~~ descriptive investigations~~, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions;~~	Asking questions was moved to Student Expectation 4.1.A.
SCIENCE.4.1.C	demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;	4.1.A	demonstrate safe practices and the use of safety equipment as ~~described~~ in Texas Education Agency-approved safety standards during classroom and ~~outdoor~~ investigations using safety equipment, ~~including safety goggles or chemical splash goggles, as appropriate, and gloves, as appropriate; and~~	
SCIENCE.4.1.D	use tools, including 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, to observe, measure, test, and analyze information;	4.4	~~Scientific investigation and reasoning. The student knows how to~~ use ~~a variety of~~ tools, ~~materials, equipment, and models to conduct science inquiry. The student is expected to:~~	
		4.4.A	~~collect, record, and~~ analyze information using tools, including calculators, ~~microscopes~~, cameras, computers, hand lenses, metric rulers, Celsius thermometers, mirrors, ~~spring scales~~, balances, graduated cylinders, beakers, hot plates, meter sticks, magnets, ~~collecting nets~~, and notebooks; timing devices; and materials to support observation of habitats of organisms such as terrariums and aquariums.	
SCIENCE.4.1.E	collect observations and measurements as evidence;	4.2.B	collect and ~~record data~~ by observing and measuring, ~~using the metric system, and using descriptive words and numerals such as labeled drawings, writing, and concept maps~~;	Recording data and concept maps were moved to Student Expectation 4.2.C.
SCIENCE.4.1.F	construct appropriate graphic organizers to collect data, including tables, bar graphs, line graphs, tree maps, concept maps, Venn diagrams, flow charts or sequence maps, and input-output tables that show cause and effect; and	4.2.C	construct ~~simple~~ tables, charts, bar graphs, and maps ~~using tools and current technology to organize, examine, and evaluate data;~~	
SCIENCE.4.1.G	develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	4.3.B	~~represent the natural world~~ using models ~~such as the water cycle and stream tables and identify their limitations, including accuracy and size~~; and	The Student Expectation 4.2.A was created for the limitations of models.
SCIENCE.4.2	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:	~~4.3~~	~~Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:~~	
SCIENCE.4.2.A	identify advantages and limitations of models such as their size, scale, properties, and materials;			

SCIENCE.4.2.B	analyze data by identifying any significant features, patterns, or sources of error;	**4.2.D**	analyze ~~and interpret~~ patterns to ~~construct reasonable explanations from data that can be observed and measured~~	The Knowledge and Skill statement 4.3 was developed for explanations.
SCIENCE.4.2.C	use mathematical calculations to compare patterns and relationships; and			
SCIENCE.4.2.D	evaluate a design or object using criteria.	~~**4.2E**~~	~~perform repeated investigations to increase the reliability of results; and~~	
SCIENCE.4.3	Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:			
SCIENCE.4.3.A	develop explanations and propose solutions supported by data and models;	**4.2.D**	~~analyze and interpret patterns to construct reasonable~~ explanations from data ~~that can be observed and measured~~;	Analyzing and interpreting data have been moved into 4.2.B.
SCIENCE.4.3.B	communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	**4.2.F**	communicate ~~valid oral and written results supported by data~~.	Students are now being asked to communicate not only as scientists but also as engineers.
SCIENCE.4.3.C	listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion.	**4.3.A**	~~analyze, evaluate, and critique scientific~~ explanations ~~by using~~ evidence, ~~logical reasoning, and experimental and observational testing~~;	
SCIENCE.4.4	Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to:	**4.3.C**	~~connect grade-level appropriate science concepts with the history of science, science careers~~, and contributions of scientists.	
SCIENCE.4.4.A	explain how scientific discoveries and innovative solutions to problems impact science and society; and			
SCIENCE.4.4.B	research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.			
SCIENCE.4.5	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:			
SCIENCE.4.5.A	identify and use patterns to explain scientific phenomena or to design solutions;			
SCIENCE.4.5.B	identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;			
SCIENCE.4.5.C	use scale, proportion, and quantity to describe, compare, or model different systems;			
SCIENCE.4.5.D	examine and model the parts of a system and their interdependence in the function of the system;			
SCIENCE.4.5.E	investigate the flow of energy and cycling of matter through systems;			
SCIENCE.4.5.F	explain the relationship between the structure and function of objects, organisms, and systems; and			
SCIENCE.4.5.G	explain how factors or conditions impact stability and change in objects, organisms, and systems.			
SCIENCE.4.6	Matter and energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to:	**4.5**	Matter and energy. The student knows that matter has measurable physical properties and ~~those properties~~ determine how matter is classified, changed, and used. The student is expected to:	

SCIENCE.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);	**4.5.A**	~~measure, compare, and contrast~~ physical properties of matter, including mass, ~~volume~~, states (solid, liquid, and gas), temperature, magnetism, and the ability to sink or float;	Volume was moved to Grade 5.
SCIENCE.4.6.B	investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids; and	**4.5.B**	compare ~~and contrast~~ a variety of mixtures, including solutions;	
SCIENCE.4.6.C	demonstrate that matter is conserved when mixtures such as soil and water or oil and water are formed.			
SCIENCE.4.7	Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to 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.	**4.6.D**	~~design a~~ descriptive investigation to explore the effect of force on an object such as a ~~push or a pull~~, gravity, friction, or magnetism.	
SCIENCE.4.8	Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to:	**4.6**	Force, motion, and energy. The student knows that energy ~~exists in many forms and can be~~ observed in cycles, patterns, and systems. The student is expected to:	
SCIENCE.4.8.A	investigate and identify the transfer of energy by objects in motion, waves in water, and sound;	~~4.6A~~	~~differentiate among forms of~~ energy, ~~including mechanical,~~ sound, ~~electrical, light, and thermal;~~	
SCIENCE.4.8.B	identify conductors and insulators of thermal and electrical energy; and	**4.6.B**	~~differentiate between~~ conductors and insulators of thermal and electrical energy;	
SCIENCE.4.8.C	demonstrate and describe how electrical energy travels in a closed path that can produce light and thermal energy.	**4.6C**	demonstrate ~~that~~ electricity travels in a closed path, ~~creating an electrical circuit.~~	
SCIENCE.4.9	Earth and space. The student recognizes patterns among the Sun, Earth, and Moon system and their effects. The student is expected to:	**4.8**	Earth and space. The student ~~knows that there are~~ recognizable patterns ~~in the natural world and~~ among the Sun, Earth, and Moon system. The student is expected to:	
SCIENCE.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	**4.8C**	collect and analyze data to identify sequences and predict patterns of change in ~~shadows~~, seasons, and the observable appearance of the Moon ~~over time~~.	Shadows have been moved to Grade 5.
SCIENCE.4.9.B	collect and analyze data to identify sequences and predict patterns of change in the observable appearance of the Moon from Earth.			
SCIENCE.4.10	Earth and space. The student knows that there are processes on Earth that create patterns of change. The student is expected to:	**4.7**	Earth and space. The student knows that Earth ~~consists of useful resources and its surface is constantly~~ changing. The student is expected to:	The Knowledge and Skill statement has been split into two. Natural Resources have been moved to 4.11.
SCIENCE.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;	**4.8.B**	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;	
SCIENCE.4.10.B	model and describe slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice; and	**4.7.B**	~~observe and identify~~ slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice;	
SCIENCE.4.10.C	differentiate between weather and climate.	**5.8.A**	differentiate between weather and climate.	This Student Expectation was moved from Grade 5.
SCIENCE.4.11	Earth and space. The student understands how natural resources are important and can be managed. The student is expected to:	**4.7**	Earth and space. The student ~~knows that Earth consists of useful~~ resources ~~and its surface is constantly changing.~~	The Knowledge and Skill statement has been split into two. Earth's changes have been moved to 4.10.
SCIENCE.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;	**4.7.C**	identify and ~~classify~~ Earth's renewable resources, ~~including~~ air, plants, water, and animals, and nonrenewable resources, ~~including~~ coal, oil, and natural gas, ~~and the importance of conservation~~.	The advantages and disadvantages of resources were moved in from 6th grade. Conservation is covered in Student Expectation 4.11.B.
SCIENCE.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	**4.1.B**	~~make informed choices in the use and~~ conservation of natural resources and ~~reusing~~ and recycling of ~~materials such as paper, aluminum, glass, cans, and plastic.~~	

SCIENCE.4.11.C	determine the physical properties of rocks that allow Earth's natural resources to be stored there.	~~4.7.A~~	~~examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants;~~	The detailed study of soil types and properties has been removed from elementary science. In Grade 3, students learn about the formation of soil.
SCIENCE.4.12	Organisms and environments. The student describes patterns, cycles, systems, and relationships within environments. The student is expected to:	~~4.9~~	~~Organisms and environments. The student knows and understands that living organisms within an ecosystem interact with one another and with their~~ environment. ~~The student is expected to:~~	This Knowledge and Skill statement is now included in the Student Expectation 4.12.B.
SCIENCE.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;	**4.9.A**	investigate ~~that~~ most producers ~~need~~ sunlight, water, and carbon dioxide to make their own food, ~~while consumers are dependent on other organisms for food;~~	Consumers were deleted from this Student Expectation because the content is covered in Grade 2.
SCIENCE.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	**4.9.B**	describe the flow of energy through food webs, ~~beginning with~~ the Sun~~, and predict how changes in the ecosystem affect the food web;~~	
SCIENCE.4.12.C	identify and describe past environments based on fossil evidence, including common Texas fossils.	**5.9.D**	identify fossils ~~as evidence of~~ past ~~living organisms and the nature of the~~ environments ~~at the time using models.~~	This Student Expectation was moved from Grade 5.
SCIENCE.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:	**4.10**	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:	Animal behaviors were moved to Grade 5.
SCIENCE.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	**4.10.A**	explore how structures and functions ~~enable organisms~~ to survive in their environment;	Animal structures and functions were moved to Grade 5.
SCIENCE.4.13.B	differentiate between inherited and acquired physical traits of organisms.	**4.10.B**	~~explore and describe examples of~~ traits ~~that are~~ inherited ~~from parents to offspring such as eye color and shapes of leaves and behaviors that are learned such as reading a book and a wolf pack teaching their pups to hunt effectively;~~	Animal behaviors were moved to Grade 5.
KEY	**Blue double underline: indicates content new to the grade level**		**~~Orange strike through: indicates content was deleted~~**	