

Grade 5 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.5.1	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:	5.1	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:	
		5.2	Scientific investigation and reasoning. The student uses scientific practices during laboratory and outdoor investigations. The student is expected to:	
SCIENCE.5.1.A	ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	5.2.B	ask well defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology;	
SCIENCE.5.1.B	use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems;	5.2.A	describe, plan, and implement simple experimental investigations testing one variable;	
SCIENCE.5.1.C	demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;	5.1.A	demonstrate safe practices and the use of safety equipment as outlined 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.5.1.D	use tools, including calculators, microscopes, hand lenses, metric rulers, Celsius thermometers, prisms, concave and convex lenses, laser pointers , mirrors, digital scales , balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, notebooks, timing devices, materials for building circuits , materials to support observations of habitats or organisms such as terrariums and aquariums, and materials to support digital data collection such as computers, tablets , and cameras to observe, measure, test, and analyze information;	5.4	Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry.	
		5.4.A	collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices; and materials to support observations of habitats or organisms such as terrariums and aquariums.	
SCIENCE.5.1.E	collect observations and measurements as evidence;	5.2.C	collect and record information using detailed observations and accurate measuring;	
SCIENCE.5.1.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	5.2.G	construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information.	
SCIENCE.5.1.G	develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	5.3.B	draw or develop a model that represents how something that cannot be seen such as the Sun, Earth, and Moon system and formation of sedimentary rock works or looks; and	
SCIENCE.5.2	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:	5.3	Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:	
SCIENCE.5.2.A	identify advantages and limitations of models such as their size, scale, properties, and materials;			
SCIENCE.5.2.B	analyze data by identifying any significant features, patterns, or sources of error;	5.2.D	analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence.	The Knowledge and Skill statement 5.3 was developed for explanations.
SCIENCE.5.2.C	use mathematical calculations to compare patterns and relationships; and			
SCIENCE.5.2.D	evaluate a design or object using criteria.	5.2.E	demonstrate that repeated investigations may increase the reliability of results;	

SCIENCE.5.3	<u>Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:</u>			
SCIENCE.5.3.A	<u>develop explanations and propose solutions supported by data and models;</u>	5.2.D	analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence;	Analyzing and interpreting data have been moved into 5.2.B.
SCIENCE.5.3.B	communicate <u>explanations and solutions individually and collaboratively in a variety of settings and formats;</u> and	5.2.F	communicate valid conclusions in both written and verbal forms; and	
SCIENCE.5.3.C	<u>listen actively to others'</u> explanations <u>to identify relevant</u> evidence <u>and engage respectfully in scientific discussion.</u>	5.3.A	analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing;	
SCIENCE.5.4	<u>Scientific and engineering practices. The student knows the</u> contributions of scientists <u>and recognizes the importance of scientific research and innovation for society. The student is expected to:</u>	5.3.C	connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.	
SCIENCE.5.4.A	<u>explain how scientific discoveries and innovative solutions to problems impact science and society; and</u>			
SCIENCE.5.4.B	<u>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.</u>			
SCIENCE.5.5	<u>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:</u>			
SCIENCE.5.5.A	<u>identify and use patterns to explain scientific phenomena or to design solutions;</u>			
SCIENCE.5.5.B	<u>identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;</u>			
SCIENCE.5.5.C	<u>use scale, proportion, and quantity to describe, compare, or model different systems;</u>			
SCIENCE.5.5.D	<u>examine and model the parts of a system and their interdependence in the function of the system;</u>			
SCIENCE.5.5.E	<u>investigate the flow of energy and cycling of matter through systems;</u>			
SCIENCE.5.5.F	<u>explain the relationship between the structure and function of objects, organisms, and systems; and</u>			
SCIENCE.5.5.G	<u>explain how factors or conditions impact stability and change in objects, organisms, and systems.</u>			
SCIENCE.5.6	Matter and energy. The student knows that matter has measurable physical properties <u>that</u> determine how matter is <u>identified</u> , classified, changed, and used. The student is expected to:	5.5	Matter and energy. The student knows that matter has measurable physical properties and these properties determine how matter is classified, changed, and used. The student is expected to:	
SCIENCE.5.6.A	<u>compare and contrast</u> 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), <u>volume</u> , solubility in water, and the ability to conduct or insulate thermal energy and electric energy;	5.5.A	classify matter based on measurable, testable, and observable physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating using water as a reference point), solubility in water, and the ability to conduct or insulate thermal energy or electric energy;	Volume was moved from Grade 4.
SCIENCE.5.6.B	demonstrate <u>and explain</u> that some mixtures maintain physical properties of their <u>substances</u> such as iron filings and sand <u>or</u> sand and water;	5.5.B	demonstrate that some mixtures maintain physical properties of their ingredients such as iron filings and sand and sand and water;	

SCIENCE.5.6.C	<u>compare the properties of substances before and after they are combined into a solution and demonstrate that matter is conserved in solutions;</u> and	5.5.C	identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving salt in water or adding lemon juice to water;	
SCIENCE.5.6.D	<u>illustrate how matter is made up of particles that are too small to be seen such as air in a balloon.</u>			
SCIENCE.5.7	<u>Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to:</u>			
SCIENCE.5.7.A	<u>investigate and explain how equal and unequal forces acting on an object cause patterns of motion and transfer of energy; and</u>			
SCIENCE.5.7.B	design a simple experimental investigation that tests the effect of force on an object <u>in a system such as a car on a ramp or a balloon rocket on a string.</u>	5.6.D	design a simple experimental investigation that tests the effect of force on an object.	
SCIENCE.5.8	Force, motion, and energy. The student knows that energy <u>is everywhere</u> and can be observed in cycles, patterns, and systems. The student is expected to:	5.6	Force, motion, and energy. The student knows that energy occurs in many forms and can be observed in cycles, patterns, and systems.	
SCIENCE.5.8.A	<u>investigate and describe the transformation of energy in systems such as energy in a flashlight battery that changes from chemical energy to electrical energy to light energy;</u>	5.6.A	explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy;	Mechanical, light, heat, and sound energy are covered in Grade 3. Electrical energy is covered in Grades 4 and Grade 5.
SCIENCE.5.8.B	demonstrate that electrical <u>energy in complete</u> circuits can <u>be transformed into motion,</u> light, sound, <u>or thermal energy and identify the requirements for a functioning electrical circuit;</u> and	5.6.B	demonstrate that the flow of electricity in closed circuits can produce light, heat, or sound;	
SCIENCE.5.8.C	demonstrate <u>and explain how</u> light travels in a straight line and <u>can</u> be reflected, refracted, or <u>absorbed.</u>	5.6.C	demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted;	
SCIENCE.5.9	Earth and space. The student recognizes patterns among the Sun, Earth, and Moon system and their effects. The student is expected to demonstrate that Earth rotates on its axis once approximately every 24 hours and explain <u>how that</u> causes the day/night cycle and the appearance of the Sun moving across the sky, <u>resulting in changes in shadow positions and shapes.</u>	5.8	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:	
		5.8.C	demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky; and	Shadows were moved from Grade 4.
		5.8.D	identify and compare the physical characteristics of the Sun, Earth, and Moon.	
SCIENCE.5.10	<u>Earth and space. The student knows that there are recognizable patterns and processes on Earth. The student is expected to:</u>	5.7	Earth and space. The student knows Earth's surface is constantly changing and consists of useful resources. The student is expected to:	Resources were moved to 5.11.
SCIENCE.5.10.A	explain how the Sun and the ocean interact in the water cycle <u>and affect</u> weather;	5.8.B	explain how the Sun and the ocean interact in the water cycle;	
		5.8.A	differentiate between weather and climate;	
SCIENCE.5.10.B	<u>model and describe</u> the processes that led to the formation of sedimentary rocks and fossil fuels; and	5.7.A	explore the processes that led to the formation of sedimentary rocks and fossil fuels;	
SCIENCE.5.10.C	<u>model and identify</u> how changes to Earth's surface by wind, water, or ice result <u>in the formation of</u> landforms, <u>including</u> deltas, canyons, and sand dunes.	5.7.B	recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, or ice;	
SCIENCE.5.11	Earth and space. The student <u>understands how natural</u> resources <u>are important and can be managed.</u> The student is expected to <u>design and explain solutions</u> such as conservation, recycling, or <u>proper</u> disposal <u>to minimize environmental impact of the use of natural resources.</u>	5.7	Earth and space. The student knows Earth's surface is constantly changing and consists of useful resources. The student is expected to:	
		5.1.B	make informed choices in the conservation, disposal, and recycling of materials.	
SCIENCE.5.12	Organisms and environments. The student <u>describes patterns,</u> cycles, systems, and relationships within environments. <u>The student is expected to:</u>	5.9	Organisms and environments. The student knows that there are relationships, systems, and cycles within environments.	
SCIENCE.5.12.A	observe <u>and describe how a variety of</u> organisms survive by interacting <u>with biotic and abiotic factors in a healthy</u> ecosystem;	5.9.A	observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components;	

SCIENCE.5.12.B	<u>predict how changes in the ecosystem affect the cycling of matter and</u> flow of energy in a food web; and	5.9.B	describe the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers;	Producers, consumers, and decomposers are taught in Grade 4.
SCIENCE.5.12.C	<u>describe a healthy ecosystem and how human activities can be beneficial or harmful to an</u> ecosystem.	5.9.C	predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways;	
		5.9.D	identify fossils as evidence of past living organisms and the nature of the environments at the time using models.	Describing environments based on fossil evidence has been moved to Grade 4.
SCIENCE.5.13	Organisms and environments. The student knows that organisms <u>undergo similar life processes and</u> have structures and behaviors that help them survive within their environments. The student is expected to:	5.10	Organisms and environments. The student knows that organisms have structures and behaviors that help them survive within their environments.	
SCIENCE.5.13.A	<u>analyze</u> the structures and functions of different species <u>to identify how organisms</u> survive in <u>the same</u> environment; and	5.10.A	compare the structures and functions of different species that help them live and survive in a specific environment such as hooves on prairie animals or webbed feet in aquatic animals;	
SCIENCE.5.13.B	<u>explain how instinctual behavioral traits</u> such as <u>turtle hatchlings returning to the sea</u> and learned behavioral traits such as <u>prcas hunting in packs increase chances of survival.</u>	5.10.B	differentiate between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle;	Inherited traits have been moved to Grade 4.
KEY	<u>Blue double underline: indicates content new to the grade level</u>	Orange strike through: indicates content was deleted.		
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