Texas Science

Grade 4

Adopted 2021

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

- **A.** ask questions and define problems based on observations or information from text, phenomena, models, or investigations; 4.1.A
- **B.** use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems; 4.1.B
- **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.C
- **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; 4.1.D
- **E.** collect observations and measurements as evidence; 4.1.E
- **F.** construct appropriate graphic organizers used 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 4.1.F
- **G.** develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem. 4.1.G

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 ex

- **A.** identify advantages and limitations of models such as their size, scale, properties, and materials; 4.2.A
- **B.** analyze data by identifying any significant features, patterns, or sources of error; 4.2.B
- **C.** use mathematical calculations to compare patterns and relationships; and 4.2.C
- **D.** evaluate a design or object using criteria. 4.2.D

Skip to main content

The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to: 4.3	**A.** develop explanations and propose solutions supported by data and models; 4.3.A
	B. communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and 4.3.B
	C. listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion. 4.3.C
The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to: 4.4	**A.** explain how scientific discoveries and innovative solutions to problems impact science and society; and 4.4.A
	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. 4.4.B
The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to: 4.5	**A.** identify and use patterns to explain scientific phenomena or to design solutions; 4.5.A
	B. identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems; 4.5.B
	C. use scale, proportion, and quantity to describe, compare, or model different systems; 4.5.C
	D. examine and model the parts of a system and their interdependence in the function of the system; 4.5.D
	E. investigate how energy flows and matter cycles through systems and how matter is conserved; 4.5.E
	F. explain the relationship between the structure and function of objects, organisms, and systems; and 4.5.F
	G. explain how factors or conditions impact stability and change in objects, organisms, and systems. 4.5.G
The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to: 4.6	**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); 4.6.A
	B. investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids; and 4.6.B
	C. demonstrate that matter is conserved when mixtures such as soil and water or oil and water are formed. 4.6.C

Skip to main content

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. 4.7	**7. 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.** 4.7
The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to: 4.8	**A. investigate and identify the transfer of energy by objects in motion, waves in water, and sound;** 4.8.A **B. identify conductors and insulators of thermal and electrical energy; and** 4.8.B **C. demonstrate and describe how electrical energy travels in a closed path that can produce light and thermal energy.** 4.8.C
The student recognizes patterns among the Sun, Earth, and Moon system and their effects. The student is expected to: 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** 4.9.A **B. collect and analyze data to identify sequences and predict patterns of change in the observable appearance of the Moon from Earth.** 4.9.B
The student knows that there are processes on Earth that create patterns of change. The student is expected to: 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;** 4.10.A **B. model and describe slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice; and** 4.10.B **C. differentiate between weather and climate.** 4.10.C
The student understands how natural resources are important and can be managed. The student is expected to: 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;** 4.11.A **B. explain the critical role of energy resources to modern life and how conservation, disposal, and recycling of natural resources impact the environment; and** 4.11.B **C. determine the physical properties of rocks that allow Earth's natural resources to be stored there.** 4.11.C

Skip to main content

The student describes patterns, cycles, systems, and relationships within environments. The student is expected to: 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; 4.12.A
	B. describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers; and 4.12.B
	C. identify and describe past environments based on fossil evidence, including common Texas fossils. 4.12.C
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: 4.13	**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 4.13.A
	B. differentiate between inherited and acquired physical traits of organisms. 4.13.B